German Literature and the World-view of Science in the Nineteenth and Twentieth Centuries

by

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Abstract

My thesis explores the response of imaginative literature to the epistemology of science in Germany and Austria from the beginning of the nineteenth century to the end of the Second World War. I examine key texts which thematize aspects of the contemporary scientific world-view and which interrogate science in its role as an ontological and cultural paradigm. An introductory discussion of literature and science in the context of the history and philosophy of science, focuses on science as a sociohistorical and linguistic phenomenon.

Johann Wolfgang Goethe’s novel *Die Wahlverwandtschaften* (1809) reveals the inherently anthropomorphic and ambiguous nature of all human discourse. The presence of metaphors in the language of chemistry serves to highlight and challenge the reductionism of mechanistic science. Ottilie personifies the interrelation of matter and metaphor (*Zusammenhang*). By contrast Eduard represents a fragmented approach to reality (*Scheidung*).

Georg Büchner’s plays *Dantons Tod* (1835) and *Woyzeck* (1836-37) illustrate the conflict between idealist *Naturphilosophie* and mechanistic science in defining the human condition. This issue is at the heart of Büchner’s own research into comparative anatomy. *Woyzeck* highlights the problem of value neutrality in science.

Adalbert Stifter’s stories *Bergkristall* and *Kalkstein* (1853) demonstrate the dichotomy between the scientific view of nature as an expression of mechanistic causality and an anthropomorphic world-view based on the Chain of Being. Analysis of contrasting narratorial viewpoints reveals tensions which subvert the quasi-scientism of the ‘Vorrede’.

Robert Musil’s *Die Verwirrungen des Zögling Törleß* (1906) expresses the epistemological uncertainty of an era when the paradigms of classical physics were being called into question. *Törleß* challenges Mach’s critical empiricism and the positivist world-view. In the psychological complexity of the protagonist both rational and meta-rational experiences of reality are accommodated.

Bertolt Brecht’s *Leben des Galilei* (1938-56) shows an understanding of the interrelation of science and society which reflects the twentieth century experience of both National Socialism and the dropping of the atomic bomb. *Galilei* challenges the notion of science as a metadiscourse operating outside of the forces of history.
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### List of Abbreviations

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<tr>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>AUMLA</td>
<td><em>Journal of the Australasian Universities Modern Language Association</em></td>
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<td>CL</td>
<td>Comparative Literature</td>
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<td>DVLG</td>
<td><em>Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte</em></td>
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<td>FMLS</td>
<td><em>Forum for Modern Language Studies</em></td>
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<td>GBJ</td>
<td><em>Georg Büchner Jahrbuch</em></td>
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<td>GJb</td>
<td><em>Goethe Jahrbuch</em></td>
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<td>GLL</td>
<td><em>German Life and Letters</em></td>
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<td>GQ</td>
<td><em>German Quarterly</em></td>
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<td>GR</td>
<td><em>Germanic Review</em></td>
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<td>GY</td>
<td><em>Goethe Yearbook</em></td>
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<td>IGS</td>
<td>Institute of Germanic Studies</td>
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<td>JDSG</td>
<td><em>Jahrbuch der Deutschen Schillergesellschaft</em></td>
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<td>MAL</td>
<td><em>Modern Austrian Literature</em></td>
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<td>MHRA</td>
<td>Modern Humanities Research Association</td>
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<td>MLQ</td>
<td><em>Modern Language Quarterly</em></td>
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<td>MLR</td>
<td><em>Modern Language Review</em></td>
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<td>PEGS</td>
<td><em>Publications of the English Goethe Society</em></td>
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<td>PMLA</td>
<td><em>Publications of the Modern Language Association of America</em></td>
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<td>StRom</td>
<td><em>Studies in Romanticism</em></td>
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<td>THESES</td>
<td><em>Times Higher Education Supplement</em></td>
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<td>VASILLO</td>
<td><em>Vierteljahrsschrift des A. Stifter-Instituts des Landes Oberösterreich</em></td>
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<td>ZDP</td>
<td><em>Zeitschrift für deutsche Philologie</em></td>
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Philosophy is written in that great book which ever lies before our eyes — I mean the universe — but we cannot understand it if we do not first learn the language and grasp the symbols, in which it is written. This book is written in the mathematical language, and the symbols are triangles, circles, and other geometrical figures, without whose help it is impossible to comprehend a single word of it; without which one wanders in vain through a dark labyrinth.

Galileo Galilei

He, who thro' vast immensity can pierce,
See worlds on worlds compose one universe,
Observe how system into system runs,
What other planets circle other suns,
What vary'd being peoples ev'ry star,
May tell why Heav'n has made us as we are.
But of this frame the bearings, and the ties,
The strong connections, nice dependencies,
Gradations just, has thy pervading soul
Look'd thro'? or can a part contain the whole?
Is the great chain, that draws all to agree,
And drawn supports, upheld by God, or thee?

Alexander Pope, An Essay on Man, Epistle I

What is wanted is an appreciation of the infinite variety of vivid values achieved by an organism in its proper environment. When you understand all about the sun and all about the atmosphere and all about the rotation of the earth, you may still miss the radiance of the sunset. There is no substitute for the direct perception of the concrete achievement of a thing in its actuality. We want concrete fact with a high light thrown on what is relevant to its preciousness.

Alfred North Whitehead

To us people of the West, a very strange thing happened at the turn of the century; without noticing it we lost science, or at least the thing that had been called by that name for the last four centuries. What we now have in its place is something different, radically different, and we don’t know what it is.

Simone Weil

Science cannot solve the ultimate mystery of Nature. And it is because in the last analysis we ourselves are part of the mystery we are trying to solve.

Max Planck
Chapter 1

Approaches to the Study of

Literature and Science
Chapter 1

Approaches to the Study of Literature and Science

In 1975, Martin Selge wrote that ‘die Geschichte des Verhältnisses von Naturwissenschaft und Dichtung ist noch ungeschrieben’. Selge’s statement is still true today, in spite of some admirable contributions to the study of science and literature. The reasons for this lacuna in cultural studies are complex and symptomatic of the fragmentation and specialization of knowledge that is a characteristic of modernity. With this thesis I would like to contribute to the closure of this gap. I shall offer readings of texts from writers central to the German literary canon, which span some one hundred and fifty years, and which demonstrate the important role literature has played in exploring the cultural implications of new

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1 Martin Selge, *Adalbert Stifter: Poesie aus dem Geist der Naturwissenschaft*, Studien zur Poetik und Geschichte der Literatur, 45 (Stuttgart: Kohlhammer, 1976), p. 9. Throughout the thesis, references will be given once in full and subsequently in an abbreviated form, according to the *MHRA Style Book* (4th edn, 1991). Where possible brief references have been included in the main text. Full references to editions consulted are also given in the bibliography, which has been subdivided into subject areas for ease of use.

scientific ideas. I argue that the two discourses, far from being divided by an unbridgeable gulf, have in the past existed in a close relationship, one which recent research into the history and philosophy of science would suggest is by no means unidirectional. It is my contention that both literature and science contribute to and are influenced by their sociohistorical context. The metaphors of science are as much part of our culture as are those of aesthetics or philosophy, but scientific metaphors acquire unique authority by virtue of their origin in a discourse which claims privileged access to true knowledge of reality. I argue that the plural and multivalent discourse of literature acts to deconstruct the univocal truth-claims of scientific metaphors, and in the process engenders new interpretations and new metaphors of reality.

What then do we understand when we read the phrase literature and science? As Gillian Beer has observed, in an essay for the Society for Literature and Science,

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3 According to Jürgen Habermas, science in the modern world affects the Lebenswelt of ordinary people only through its application in technology: 'Die Erkenntnisse der Atomphysik bleiben für sich genommen, ohne Folgen für die Interpretation unserer Lebenswelt — insofern ist die Kluft zwischen jenen beiden Kulturen unvermeidlich. Erst wenn wir mit Hilfe der physikalischen Theorien Kernspaltungen durchführen, erst wenn die Informationen für die Entfaltung produktiver oder destruktiver Kräfte verwertet werden, können ihre umwälzenden praktischen Folgen in das literarische Bewusstsein der Lebenswelt eindringen — Gedichte entstehen im Anblick von Hiroshima und nicht durch die Verarbeitung von Hypothesen über die Umwandlung von Masse in Energie.' (‘Technischer Fortschritt und soziale Lebenswelt’, in J. Habermas, Technik und Wissenschaft als Ideologie (Frankfurt a. M.: Suhrkamp, 1968), p. 107.) Although it is undeniable that the dropping of atomic bombs on Japan brought home to people the implications of nuclear research, I believe Habermas is incorrect to suggest that literature fails to understand the theoretical potentialities of science, as I hope my thesis will make clear. Emter’s work on literature and science takes as its point of departure Habermas’s comment and seeks to disprove its validity by investigating the attempts of writers to come to terms with the theoretical implications of the New Physics (on Habermas, see pp. 11-15). Although her work is conservative in its acceptance of the authority of scientific ideas, it is nonetheless a valuable contribution to the study of science and literature. For an excellent introduction to the issues involved in the study of science and culture, see Federico, pp. 1-13, which includes a discussion of Habermas. For a more positive estimation of Habermas, see Josef Kopperschmidt, 'Literarisches Sprechen im Zeitalter der Wissenschaften', in Sprachnot und Wirklichkeitszerfall: Dargestellt an Beispielen neuerer Literatur, ed. by Elisabeth Meier (Dusseldorf: Patmos, 1972), pp. 62-97, especially pp. 86-88.
the use of the seemingly neutral word 'and' introduces hermeneutic complexity, suggesting a possibly unnecessary relation between two terms:

**Literature and science: science and literature:** what is the force of the connective? It polarises the two domains; it yokes them together in a privileged pair, separated from other cultural expressions. It also sorts them hierarchically according to which is mentioned first, so that they become prime term and concessive term: *science* and literature; *literature* and science. One is given the originating role, the other that of dependent, providing 'context' or 'background'. Power struggles are masked by the deliberately evenhanded and non-directive 'and'.

As Beer suggests, the word 'and' can be understood as emphasizing and enforcing a hierarchy, asserting the primacy of one category over another. A possibly unwarranted privileging of one modality over another is thus implied. Moreover, one asks if a binary opposition is created by the phrase *literature and science*? Or are we perhaps dealing with a comparison rather than an opposition, a comparison in which each phrase serves to both challenge and modify its neighbour? That literature and science are in opposition has become a truism. It is suggested that two separate categories

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5 The trend in current research, and one to which I would also wish to contribute, is to look for common ground between the discourses whilst not seeking to deny the unique contributions each has to make to human understanding. Snow's famous analysis of the two inherently opposed cultures of scientists and 'literary intellectuals' seems now as passé as his prediction that science would eliminate the disparity between rich and poor nations by the year 2000 (C. P. Snow, *The Two Cultures, and A Second Look: An Expanded Version of the Two Cultures and the Scientific Revolution* (Cambridge: Cambridge University Press, 1964), pp. 22 and 42 respectively). Recently however, George Steiner appeared to re-open the debate concerning the two cultures by criticizing the arts for failing to recognize the 'intellectual challenge' of science (see reports in the *THES*, 16 August 1996, and the *Times*, 17 August 1996). On the theme of the two cultures, see Antoon Berentsen, 'Vom Urnebel zum Zukunftstaat': Zum Problem der Popularisierung der Naturwissenschaften in der deutschen Literatur (1880-1910), Studien zu deutscher Vergangenheit und Gegenwart, 2 (Berlin: Oberhofer, 1986), pp. 1-15, Thomas L. Buckley, *Nature, Science*,
exist, one of which — science — is informing and acting upon the other. However as I shall demonstrate, this is a position that, although now widely accepted, is by no means universally acknowledged.

It has been my intention in writing this thesis to examine the interrelation of literature and science from the perspective of literature, an activity which has often perceived, and indeed defined, itself as being in reaction to the claims of science. This has resulted in literature at times opposing and at other times imitating science, as for example can be seen in the work of D. H. Lawrence and Emile Zola respectively. In the following chapters I attempt to cast new light on the uneasy relationship between literature and science. I cannot stress too strongly that my thesis attempts neither to make a new contribution to the history and philosophy of science, nor to offer an exhaustive overview of all the literary texts that engage with science. Rather, my thesis is meant as a contribution to literary thematics; and to this end I have allowed myself to be selective: to work in detail on key texts whose interpretative richness is the measure of the complexity of their response to the implications of modern science.

Science is today popularly accepted as the sole arbiter of truth about our world. It operates as a powerful source of ontic and ontological authority in modern

Western culture. How can literature, or indeed philosophy, begin to challenge this formidable authority and justify its own claim to cultural authority? The linguistic turn has highlighted one approach that might lead to a more differentiated understanding of the relationship between science and literature. The philosopher Richard Rorty has been at the forefront of this movement to highlight the role of language in our understanding of the world. He writes:

The temptation to look for criteria is a species of the more general temptation to think of the world, or the human self, as possessing an intrinsic nature, an essence. That is, it is the result of the temptation to privilege some one among the many languages in which we habitually describe the world or ourselves. As long as we think that there is some relation called ‘fitting the world’ or ‘expressing the real nature of the self’ which can be possessed or lacked by vocabularies-as-wholes, we shall continue the traditional philosophical search for a criterion to tell us which vocabularies have this desirable feature. But if we could ever become reconciled to the idea that most of reality is indifferent to our descriptions of it, and that the human self is created by the use of a vocabulary rather than being adequately or inadequately expressed in a vocabulary, then we should at least have assimilated what was true in the Romantic idea that truth is made rather than found. What is true about this claim is just that languages are made rather than found, and that truth is a property of linguistic entities, of sentences.

6 A detailed analysis of the complex and fascinating relationship between philosophy and science is of course beyond the limits of this thesis, although I have tried to include references where they are relevant. For an account of the interrelations of science and philosophy during the period covered by my thesis, see Herbert Schnädelbach, Philosophy in Germany, 1831-1933, trans. E. Matthews (Cambridge: Cambridge University Press, 1984; German edn: Philosophie in Deutschland 1831-1933 (Franfurt a. M.: Suhrkamp, 1983). For an introduction to some of the problems science poses to philosophy, see Bryan Magee, Men of Ideas: Some Creators of Contemporary Philosophy (London: BBC, 1978), in particular the discussions with Isaiah Berlin (especially pp. 36-39), Hilary Putnam (pp. 226-39), and Willard van Quine (pp. 170-79).

Rorty's pragmatist view of language suggests that the relationship between sign system and world is an arbitrary one and hence no single vocabulary is better fitted to describe reality than another. There are merely different ways of seeing and saying. According to Rorty, the world does not necessarily conform with Newton's ideas any more than with Aristotle's; the world can no more affirm these ideas than it can the vocabulary of Blake or Dryden: 'the fact that Newton’s vocabulary lets us predict the world more easily than Aristotle’s does not mean that the world speaks Newtonian' (Rorty, *Contingency*, p. 6). Of course, the idea that science is one among many possible texted realities is in some ways a disturbing one. Indeed, it is one that most practising scientists would reject outright. And yet, as we shall see, it is a concept that informs much current writing on the relationship between literature and science as well as the philosophy of science.

Rorty asserts the 'contingency of language' and denies the possibility of any vocabulary ever achieving the status of what he terms a *metalanguage* (Rorty, *Contingency*, p. xvi). Rorty draws on the work of the philosophers Ludwig Wittgenstein and Donald Davidson to support this view:

Both philosophers treat alternative vocabularies as more like alternative tools than like bits of a jigsaw puzzle. To treat them as pieces of a puzzle is to assume that all vocabularies are dispensable, or reducible to other vocabularies, or capable of being united with all other vocabularies in one grand unified super vocabulary. (*Contingency*, p. 11.)

Rorty's philosophical pragmatism envisages a plurality of truths which are the property of diverse vocabularies. According to this view, the final truth about the

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8 Similarly: 'The world does not speak. Only we do. The world can, once we have programmed ourselves with a language, cause us to hold beliefs. But it cannot propose a language for us to speak. Only other human beings can do that.' (*Contingency*, p. 6; cf. pp. 18-19, 22, 27.)
world cannot be seen as the sole possession of one vocabulary. By this strategy the divisive opposition of science and literature — or indeed science and philosophy — can be circumvented. By obviating the need for a metalanguage, where one body of knowledge is able to claim privileged access to the final truth about the world, we avoid many problems which have dogged relations between the discourses:

we shall not be inclined to ask questions like ‘What is the place of consciousness in a world of molecules?’ ‘Are colours more mind-dependent than weights?’ ‘What is the place of value in a world of fact?’ ‘What is the place of intentionality in a world of causation?’ ‘What is the relation between the solid table of common sense and the unsolid table of microphysics?’ or ‘What is the relation of language to thought?’ We should not try to answer such questions, for doing so leads either to the evident failures of reductionism or to the short-lived successes of expansionism. We should restrict ourselves to questions like ‘Does our use of these words get in the way of our use of those other words?’ This is a question about whether our use of tools is inefficient, not a question about whether our beliefs are contradictory. (Contingency, pp. 11-12.)

Instead of discourses such as science and literature competing with each other for the prize of the most perfect description of the world, Rorty suggests that they all contribute equally to a plural understanding of reality. This is what ultimately unifies the diversity of language games. One of the unique qualities which literature brings to our understanding of the world is that it celebrates this multivalent truth. The value of narrative is that it allows vocabularies to be connected rather than homogenized; it facilitates what Rorty calls ‘an endless, proliferating realization of Freedom, rather than a convergence toward an already existing Truth’ (Contingency, p. xvi).  

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9 According to Rorty, the strength of language lies in its creative and metaphoric qualities, not in its supposed role as 'medium', as a bridge between subject and world: ‘To see the history of language, and thus of the arts, the sciences, and the moral sense, as the history of metaphor is to drop the picture of the human mind, or human languages, becoming better and better suited to the purposes for which God or Nature designed them, for example, able to express more and more meanings or to represent more and more facts. The idea that language has a purpose goes once the idea of language as medium goes.’ (Rorty, Contingency, p. 16; cf. pp. 8-11.) On Rorty’s view of
The implications of this approach to language for the traditional understanding of science are profound. According to Rorty, scientific revolutions are merely 'metaphoric redescriptions' of nature 'rather than insights into the intrinsic nature of nature':

we must resist the temptation to think that the redescriptions of reality offered by contemporary physical or biological science are somehow closer to 'the things themselves,' less 'mind-dependent,' than the redescriptions of history offered by contemporary culture criticism. We need to see the constellations of causal forces which produced talk of DNA or of the Big Bang as of a piece with the causal forces which produced talk of 'secularization' or of 'late capitalism.' These various constellations are the random factors which have made some things subjects of conversation for us and others not, have made some projects and not others possible and important. (Rorty, *Contingency*, pp. 16-17.)

Implicit within this approach is the notion that truth is a product of human beings operating within a specific vocabulary (or language game) and a time-frame. This view of science emphasizes the context within which scientific discoveries are made as, at least in part, determining what science says about the world at any specific period of history. Although today's scientific community regards such approaches as subversive, 10 Rorty himself has made it clear that he is far from opposed to science, but rather that he and other pragmatists see within the institutions of science 'a model of human solidarity':

[pragmatists] think that the habits of relying on persuasion rather than force, of respect for the opinions of colleagues, of curiosity and eagerness for new data and ideas, are the only virtues which scientists have. [Pragmatists] do not

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10 A continuing and heated debate surrounds the whole issue, as is evidenced by the public disagreement between the embryologist, Professor Lewis Wolpert, and Professor Harry Collins, an advocate of a more relativistic position as regards the history of science, at a meeting of the British Association for the Advancement of Science; see reports in the *THES*, 16 September 1994, p. 44, and 30 September 1994, pp. 17-19.
think that there is an intellectual virtue called 'rationality' over and above these moral virtues. (‘Science as Solidarity’, p. 39.)

In ‘Science as Solidarity’, Rorty pays tribute to the work of Thomas S. Kuhn (1923-96) for having provoked a debate concerning the rationality of science and having undermined the notion ‘that inquiry should someday converge to a single point — that Truth is “out there,” up in front of us, waiting for us to reach it’ (p. 38).^11 Thomas Kuhn’s seminal work *The Structure of Scientific Revolutions*, first published in 1962, is an investigation of the way scientific knowledge evolves. He challenged the textbook idea of scientific history as being one of ‘development-by-accumulation’, or a ‘process of accretion’ (p. 2). Instead he suggested that the growth of science was more complex than the notion of an ever-expanding body of facts and theories would allow. Kuhn noted that there had been an ‘historiographic revolution in the study of science’, and that these new studies differed from the traditional variety in that ‘rather than seeking the permanent contributions of an older science to our present vantage, they attempt to display the historical integrity of that science in its own time’ (Kuhn, p. 3).^13 These synchronic approaches to the history of science

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^11 See also Rorty’s comments on his ideal of a ‘nonteleological view of intellectual history’ as realized through the metaphorical quality of language (Contingency, p. 16).


^13 Traditional approaches to the history of science, such as Ernest Nagel’s *The Structure of Science*, viewed science as a vital motor force behind the rise of ‘liberal civilization’, contributing to: ‘the emancipation of men’s minds from ancient superstitions in which barbarous practices and oppressive fears are often rooted; the undermining of the intellectual foundations for moral and religious dogmas, with a resultant weakening in the protective cover that the hard crust of unreasoned custom provides for the continuation of social injustices; and, more generally, the gradual development among increasing numbers of a questioning intellectual temper toward traditional beliefs, a development frequently accompanied by the adoption in domains previously closed to systematic critical thought of logical methods for assessing, on the basis of reliable data of observation, the merits of alternative assumptions concerning matters of fact or of desirable policy.’ (The Structure of Science: Problems in the Logic of Scientific Explanation (London: Routledge, 1961), p. vii.) Here the privileging of the present and the conception of history as a triumphal progress towards a state of ultimate knowledge is clear. For a similar approach, see Herbert Butterfield’s classic ‘Whig’ history of science, *The Origins of Modern Science 1300-1800* (1949; repr. London: Bell, 1962). In his recent book, Lewis Wolpert reasserted this ‘Whig’
assumed that science was not — despite what many scientists believed to the contrary — a metalanguage. Science, like literature and other cultural phenomena, did not have privileged access to timeless truths which were present in nature and only describable in the language of science. Rather they suggested that science was embedded in a cultural context and embodied that culture in its beliefs and assumptions about the world. Clearly, it would be pointless to deny the vital and necessary role of observation in science, as Kuhn himself stressed:

view of the history of science, claiming that science is 'special' compared to other fields of knowledge: 'for the history of science is one of progress, of increased understanding. [...] Science is progressive in that the truth is being approached, closer and closer, but perhaps never attained with certainty.' (The Unnatural Nature of Science (London: Faber, 1992), p. 100.) This attitude should not be ignored, but it is true to say that it is a minority view as regards historians and philosophers of science, and the trend in research has been towards establishing a relativistic position as regards the status of discourses. Unfortunately limitations of space do not allow me to present a full account of the historiography of science. Instead I shall concentrate on showing how recent approaches to scientific knowledge enable the traditional positivistic view of its universal validity to be challenged.

Of course Kuhn was not the first to challenge positivism in the philosophy of science. See for example Karl R. Popper's The Logic of Scientific Discovery (London: Hutchinson, 1959; repr. Routledge, 1992) and his Conjectures and Refutations: The Growth of Scientific Knowledge (London: Routledge, 1963). Although Popper's Logic, in which he first developed his theory of falsification, was first published in the series edited by Moritz Schlick, a member of the Vienna Circle, (Logik der Forschung (Vienna: Springer, 1934; repr. Tubingen: Mohr, 1989) Popper’s view of science is profoundly different to that of the logical positivists (see K. Popper, 'Reason or Revolution?', in K. Popper, The Myth of the Framework: In Defence of Science and Rationality, ed. by M. A. Notturno (London: Routledge, 1994), pp. 65-77 (first publ. in Archives européennes de sociologie, 11 (1970): 252-62); also the brief discussion of Popper’s philosophy of science in Frederick Suppe, The Structure of Scientific Theories (Urbana: University of Illinois Press, 1974), pp. 166-70). However, Popper also discounted the value of investigating the role of discovery in science, as attempted by Kuhn. According to Popper, such an approach concerned psychology and as such was not susceptible to logical analysis. As Donald Gillies has suggested, Popper’s position on this issue brings the fields of science and literature together, as it posits a comparable creativity in the process of discovery to that of literary inspiration (Philosophy of Science in the Twentieth Century: Four Central Themes (Oxford: Blackwell, 1993), p. 30; on Popper generally, pp. 21-23). Kuhn’s approach is however primarily historical and as such is to be contrasted with that of the logical positivists for whom science was an autonomous logical system (see for example Rudolf Carnap’s Logical Foundation of Probability (1950)). For a full discussion of the positivist view of science (or the ‘Received View’), see Suppe, pp. 6-118.

Again, Kuhn was by no means the first to suggest this approach. For example the work of the biochemist and historian of science Joseph Needham (1900-95) on the history of Chinese science (Science and Civilization in China (1954- ), Heavenly Clockwork (1960), The Grand Titration: Science and Society in East and West (1969)). Similarly Walter Pagel’s Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance (Basel: Karger, 1958), Gerhard Hennemann’s Naturphilosophie im 19. Jahrhundert (Freiburg: Alber, 1959), and the work of J. D. Bernal (The Social Function of Science (1939), Science in History (1952)). Kuhn himself pays tribute to the work of Arthur O. Lovejoy (The Great Chain of Being: A Study of the History of an Idea, 8th edn (Cambridge, MA: Harvard University Press, 1936; repr. 1966)),
Observation and experience can and must drastically restrict the range of admissible scientific belief, else there would be no science. But they cannot alone determine a particular body of such belief. An apparently arbitrary element, compounded of personal and historical accident, is always a formative ingredient of the beliefs espoused by a given scientific community at a given time. (p. 4)

According to Kuhn, 'some accepted examples of scientific practice — examples which include law, theory, application, and instrumentation together — provide models from which spring particular coherent traditions of scientific research'; these 'models' he termed paradigms (p. 10).

Kuhn saw scientific knowledge at a particular time in history as being a function of the paradigm. He suggested that the paradigm encouraged the practice of 'normal science', which was typically 'an attempt to force nature into the preformed and relatively inflexible box that the paradigm supplies' (p. 24). In addition, it acts to further the process of discovery through the perception of 'anomaly', or 'the recognition that nature has somehow violated the paradigm-induced expectations that govern normal science' (pp. 52-53). Kuhn concluded that the paradigm was essential to the act of perception itself:

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16 The practice of normal science was crucial, Kuhn thought: 'The success of a paradigm [...] is at the start largely a promise of success discoverable in selected and still incomplete examples. Normal science consists in the actualization of that promise, an actualization achieved by extending the knowledge of those facts that the paradigm displays as particularly revealing, by increasing the extent of the match between those facts and the paradigm's predictions, and by further articulation of the paradigm itself.' (Kuhn, pp. 23-24.)

17 Kuhn emphasized discovery as a complex process rather than as a 'single simple act', the approach encouraged by the textbooks, which is why 'we so readily assume that discovery, like seeing or touching, should be unequivocally attributable to an individual and to a moment in time. But the latter attribution is always impossible, and the former often is as well.' (p. 55) Discovery was not however the primary aim of science: 'Normal science does not aim at novelties of fact or theory and, when successful, finds none.' (p. 52) The tendency of science according to Kuhn, is to oppose revolutionary change.
What a man sees depends both upon what he looks at and also upon what his previous visual-conceptual experience has taught him to see. In the absence of such training there can only be, in William James’s phrase, ‘a bloomin’ buzzin’ confusion’. (p. 113)

The paradigm provided a framework, or ‘map’, with which the scientist imposes order on the complexity of the natural world (p. 109). A new paradigm can transform the scientists’ view of the world: ‘It is rather as if the professional community had been suddenly transported to another planet where familiar objects are seen in a different light and are joined by unfamiliar ones as well.’ (p. 111) For Kuhn, paradigm shifts ‘cause scientists to see the world of their research-engagement differently’ (p. 111).

The new paradigm raised new sets of questions about the relationships between phenomena and necessitated fresh research strategies. Clearly, if the paradigm is a prerequisite of perception then it determines what is seen, an idea which led Kuhn to assert that ‘operations and measurements’ in science were not “‘the given” of experience’:

Far more clearly than the immediate experience from which they in part derive, operations and measurements are paradigm-determined. Science does not deal in all possible laboratory manipulations. Instead, it selects those relevant to the juxtaposition of a paradigm with the immediate experience that that paradigm has partially determined. (p. 126)

Furthermore, Kuhn questioned the notion of the cognitive transparency of the world and the idea that sense-impressions are purely objective:

Is sensory experience fixed and neutral? Are theories simply man-made interpretations of given data? The epistemological viewpoint that has most often guided Western philosophy for three centuries dictates an immediate and unequivocal, Yes! In the absence of a developed alternative, I find it impossible to relinquish entirely that viewpoint. Yet it no longer functions
effectively, and the attempts to make it do so through the introduction of a neutral language of observations now seem to me hopeless. (p. 126)\(^\text{18}\)

Kuhn foregrounds instead the role of the theoretical framework behind science in determining data, thus subverting the traditional notion of science as a necessary and unambiguous unravelling of nature's tangled skein. By focusing on the sociohistorical sphere of influence as a factor in the determination of scientific theory, Kuhn prepared the ground for a revolution in the study of science both as a philosophical discourse and as a social activity.\(^\text{19}\)

\(^{18}\) As Rorty has observed ('Science as Solidarity', p. 38), statements such as these provoked a fierce debate concerning the rationality of science. Although Kuhn was careful in the passage cited above not wholly to endorse the idea that scientific knowledge is simply 'man-made' he still felt it necessary, in the Postscript added to the 1970 edition, to counter the idea that perception is wholly subjective: 'What I have been opposing in this book is therefore the attempt, traditional since Descartes but not before, to analyze perception as an interpretive process, as an unconscious version of what we do after we have perceived.' (p. 195) Kuhn sought to reassure his readers that he was not attempting to undermine the value of science as a 'way of seeing' (p. 196). In support of science he cited the evolutionary value of the 'integrity of perception', asserting that 'an appropriately programmed perceptual mechanism has survival value' (p. 195). In other words, scientific observation has proved its worth through its very survival as a mode of knowing, a mode which is ultimately \textit{shared} and not merely private. Clearly in this Postscript, Kuhn was attempting to mollify his vociferous critics. On this see Margolis, \textit{Texts without Referents}, pp. 38-49. See also Popper's critique of Kuhn's view of science, in which Popper asserts the 'rationality' of science in opposition to the perceived shift towards 'relativism' ('The Myth of the Framework', in K. Popper, \textit{The Myth of the Framework}, pp. 33-64, especially pp. 54-58 (first publ. in \textit{The Abdication of Philosophy: Philosophy and the Public Good} (The Schilpp Festschrift), ed. by E. Freeman (La Salle, Ill.: Open Court, 1976))). Also, Popper's 'Normal Science and its Dangers', in \textit{Criticism and the Growth of Knowledge}, ed. by Imre Lakatos and Alan Musgrave, Proceedings of the International Colloquium in the Philosophy of Science, London 1965, 4 (Cambridge: Cambridge University Press, 1970), pp. 51-58. Kuhn replied to these and the other criticisms in 'Logic of Discovery or Psychology of Research?' and 'Reflections on my Critics', both in Lakatos and Musgrave, \textit{Criticism} (1970), pp. 1-23 and 231-78 respectively. See also Kuhn's 'Second Thoughts on Paradigms', in Suppe, pp. 459-82. For an account of the debate between Popper and Kuhn and its place in the historiography of science, see Joyce Appleby, Lynn Hunt and Margaret Jacob, \textit{Telling the Truth about History} (New York: Norton, 1994), pp. 163-73. On Kuhn's philosophy of science, see Rorty's \textit{Philosophy and the Mirror of Nature}, pp. 322-56.

\(^{19}\) According to Appleby, Hunt and Jacob: 'Kuhn did not intend to open the door to relativism. His model remained true to essentially realist assumptions about the relationship between what the scientist can know and how scientific laws mirror nature. For the classic philosophical realist, it is possible to imagine a tight, uncomplicated fit between the language of science and nature. In the Kuhnian model the paradigm shifts permit the scientist to adjust the angle from which the mirror is fixed on nature. The emphasis on paradigm shifts leaves the impression that at moments the mirrors can get a little fogged over by habits and clubbiness; but, in the Kuhnian model, science works because it corresponds to what is in nature, \textit{more or less}.' (p. 165) They note however that Kuhn's \textit{Structure of Scientific Revolutions} has had a significant effect on our understanding of science and had sold (by 1994) 750,000 copies worldwide: '[Kuhn's] sociological vision of
Mary Hesse, an influential theorist on the philosophy of science, has commented on the problematic status of science in the late twentieth century:

Various intellectual and moral tendencies are currently combining to dethrone natural science from the sovereignty of reason, knowledge, and truth which it has enjoyed since the seventeenth century. Far from being the paradigm of objective truth and control which will make us free of all natural ills and constraints, science is increasingly accused of being a one-sided development of reason, yielding not truth but a succession of mutually incommensurable and historically relative paradigms, and not freedom, but enslavement to its own technology and the consequent modes of social organization generated by technology.²⁰

In her opinion, the traditional empiricist view of science is now 'almost universally discredited':

In this traditional view it is assumed that the sole basis of scientific knowledge is the given of experience, that descriptions of this given are available in a theory-independent and stable language, whether of sense data or of commonsense observation, that theories make no ontological claims about the real world except in so far as they are reducible to observables, and that causality is reducible to mere external correlations of observables. (Hesse, Revolutions and Reconstructions, p. 172.)

Kuhn had cast doubt on the scientist's faith in a 'neutral language of observations'.²¹

Similarly, Hesse notes that in philosophy it has been a commonplace since Kant that science became synonymous with retreat from the heroic model of scientists with their special purchase on truth’ (p. 166).


²¹ Max Black states: 'I believe the hope of finding the essential grammar to be as illusory as that of finding the single true co-ordinate system for the representation of space.' He suggests that 'the conception of language as a mirror of reality is radically mistaken' (Models and Metaphors: Studies in Language and Philosophy, 4th edn (Ithaca, New York: Cornell University Press, 1968), pp. 15 and 16 respectively). Black developed an influential theory of language and philosophy based on metaphor, claiming that metaphors engender new ways of seeing the world and hence new understandings of reality (pp. 25-46). Of particular interest to the present discussion is Black's application of this idea to the use of models in science (see pp. 226-43). Black also discusses the Whorf-Sapir hypothesis (pp. 244-57), according to which language governs our understanding of the world: 'The fact of the matter is that the "real world" is to a
'experience is partly constituted by theoretical categories' (p. 172). This approach to epistemology has continued in the present century, with profound implications for the study of science:

the work of Wittgenstein, Quine, Kuhn, Feyerabend, and others has in various ways made it increasingly apparent that the descriptive language of observables is 'theory-laden', that is to say, in every empirical assertion that can be used as a starting-point of scientific investigation and theory, we employ concepts that interpret the data in terms of some general view of the world or other, and this is true however apparently rooted in 'ordinary language' the concepts are. There are no stable observational descriptions, whether of sense data, or protocol sentences, or 'ordinary language', in which the empirical reference of science can be directly captured. (Hesse, Revolutions and Reconstructions, p. 172.)


22 The idea that observations are inescapably 'theory-laden' is influential in the development of modern philosophy of science. As a result of the Industrial Revolution, the realist view of science, which teaches that 'things can be known in ways that correspond with their actual objective existence', attained an almost unquestionable authority in the eighteenth and nineteenth centuries:

'Scientific knowledge got credited with a degree of verisimilitude only possible if mirrors resided within the heads of the scientists. The mind was imagined to be a blank slate upon which sense impressions wove their messages. The clear scientific eye became transparent as it faced nature, made so by the method and rigor only experiment and mathematics could impart to its gaze. As the mirror image of nature — itself now rendered into value-free matter possessing only weight and measure — heroic science was eternally true. Not just true in certain controlled circumstances, nor true enough for the time being, but true always and absolutely.' (Appleby, Hunt and Jacob, Telling the Truth about History, p. 29.) Popper criticized this inductive element in science: 'the belief that we can start with pure observations alone, without anything in the nature of a theory, is absurd'. He continued: 'Observation is always selective. It needs a chosen object, a definite task, an interest, a point of view, a problem. And its description presupposes a descriptive language, with property words; it presupposes similarity and classification, which in its turn presupposes interests, points of view, and problems.' (Conjectures and Refutations, p. 46.) Similarly Pierre Duhem (1861-1916) stated: 'An Experiment in Physics Is Not Simply the Observation of a Phenomenon; It Is, Besides, the Theoretical Interpretation of This Phenomenon.' (The Aim and Structure of Physical Theory (1906), Part II, Chapter 4, p. 144; cited from Gillies,
This is known as a *post-empiricist* approach to the study of science. According to Hesse, the main aspects of this post-empiricist position which she believes have been generally accepted are, 'that data are not detachable from theory, and that their expression is permeated by theoretical categories; that the language of theoretical science is irreducibly metaphorical and unformalizable; and that the logic of science is circular interpretation, reinterpretation, and self-correction of data in terms of theory, theory in terms of data' (ibid., p. 173).  

Radical approaches to science such as these exemplify the revolution that has occurred in the study of the history and philosophy of science since the 1960s. Unreflected realism and a belief in the correspondence theory of truth in the practice of science have been undermined. Histories of science which assume a progressive revealing of truth — a position Hesse terms 'inductivist historiography' (p. xv) — are no longer tenable and historians tend instead to present science in the context of its own age: a synchronic rather than a diachronic methodology. Writers such as Hesse, Kuhn and Rorty have emphasized science as being a complex activity operating within a social, linguistic and historical matrix of influence, rather than as a free-standing rational discourse, independent of all contextualization. Indeed a new area of study has arisen in the last twenty five years, one which reflects this idea of science as a social construct, namely the Sociology of Scientific Knowledge, or SSK as it has

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23 According to Hesse this is not a new conception of science, as the work of Francis Bacon and Isaac Newton demonstrates this approach in some respects (p. 173). Like Kuhn (*Structure*, p. 195), Hesse considers that science offers a valuable 'learning device' (p. 174). As regards the suggestion that science uses circular reasoning, she notes that the 'logic of science implied in the [post-empiricist] account is virtuously rather than viciously circular' (p. 174).
come to be known. As a result of these developments, current work on the history and philosophy of science utilizes the research of 'historians, psychologists, sociologists and anthropologists, economists and political scientists'. The interdisciplinary nature of research reflects the perceived complexity of the phenomenon, but it also serves to counter the tendency to make what Barry Barnes has termed a 'fetish' out of science, to elevate it to the status of a quasi-religious, self-justifying cosmology:

Science is theoretical knowledge. And it is theoretical through and through, not just in part. Scientific knowledge is theories which we or our predecessors have invented and which we remain content to use for the time being as the basis of our understanding of nature. This is a very commonplace account of science, and it does not indicate a need for any major alteration in the way we habitually think about it. Certainly it does not imply that we should cease to trust and use scientific knowledge: on the contrary, scientific knowledge is just the knowledge we have found most trustworthy in use. But bearing this

24 According to Hesse, the 'sociology of knowledge' is 'a notorious black spot for accidents both sociological and philosophical' (Revolutions and Reconstructions, p. 30). The sociology of scientific knowledge, also known as the strong thesis or programme, undermines the ahistorical basis of rationality, seeking to show that it is determined by its social context. This remains a disputed approach, and detractors continue to assert science's putative 'correspondence with reality' and its 'internal logical consistency': 'While the initial stages of acceptance of one or other of competing theories may have a strong social aspect that involves fashion, power groupings and so on, the main criterion will eventually be how well the theory explains the phenomena.' (Wolpert, pp. 110 and 103.) Appleby, Hunt and Jacob rightly suggest that rather than being socially constituted it is more useful to see science as socially framed: 'social factors [...] blend into the assumptions and values that scientists bring to their research practices.' (p. 185) They note that recently a new approach (the 'hard program') has been developed which seeks to show how 'the social and the cognitive cohabit and interact' and which rejects purely sociological explanations of science (see W. Schmaus, U. Segerstrale, and D. Jesseph, 'Hard Program: A Manifesto', in Social Epistemology: A Journal of Knowledge, Culture and Policy, 6 (1992): 243-65). Appleby, Hunt and Jacob argue that 'the practice of science which can be value-laden, subjective, gendered, theory-oriented, and also metaphysically informed still occasionally leads — through contention, dispute, and testing — to reasonably true statements about nature' (p. 186). Sociological approaches to the study of science include: Barry Barnes, Scientific Knowledge and Sociological Theory (London: Routledge, 1974), Barry Barnes, David Bloor, and John Henry, Scientific Knowledge: A Sociological Analysis (London: Athlone, 1996), Joseph Ben-David, The Scientist's Role in Society: A Comparative Study (Eaglewood Cliffs, NJ: Prentice-Hall, 1971), Bruno Latour and Steve Woolgar, Laboratory Life: The Social Construction of Scientific Facts, Sage Library of Social Research, 80 (Beverly Hills: Sage, 1979). Margaret C. Jacob offers a critique of the epistemological basis of such approaches to historiography in her article 'Reflections on the Ideological Meanings of Western Science from Boyle and Newton to the Postmodernists', History of Science, 33 (1995): 333-57.

very commonplace account in mind can serve to keep us alert against claims and arguments which make a fetish of science — which assume that our scientific knowledge is permanently valid and is justified wholly and entirely by its correspondence to reality. (Barnes, About Science, p. 66.)

To question the authority of the scientific world-view is not necessarily to seek to subvert the *praxis* of science. On the contrary, for many writers in the field this questioning process is about deepening science’s understanding of itself as an evolving body of knowledge, one which can reflect changes within its social context without perceiving this as a threat to its integrity:

> the accepted knowledge of a scientific field cannot be thought of as a set of fixed truths: it is indeed continually changed as it is used. It is a developing interpretation of the world, or a part of the world, not a reflection of the world: it is not guaranteed and secured solely by reality itself. (Barnes, About Science, p. 67.)

Writers such as Barnes emphasize the transitory nature of scientific knowledge: ‘scarcely any fields make use of materials more than a few decades old, and such older material as is used is very rarely accepted just as it stands’ (p. 66). Similarly, as the theory of relativity and quantum mechanics have demonstrated, the lesson of science in the twentieth century is that all scientific knowledge is approximate: ‘The whole of the data is never in, and there is always room for further conceptual revolution, however accurate the current theory is for current purposes.’ (Hesse, Revolutions and Reconstructions, p. xi.)

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26 One scientist has recently described the effect of the new world-view introduced by the theories of relativity and of quantum mechanics, as follows: ‘Beginning with Planck’s discovery of the quantum, and continuing through the early formulations of quantum theory by Bohr and Heisenberg and of the theory of relativity by Einstein, observers were no longer seen as fully detached from their measurements. In quantum measurements, the way in which observers choose to arrange their apparatus determines the outcome. In relativity theory, observers’ measurements of time and length depend on their relative velocity and acceleration. Thus, the observers’ conscious choices in the one case and their physical location in the other must explicitly be taken into account. The outcome of efforts to rationalize these findings is well known: Quantum
be strictly limited and local: 'all pretensions to universalizability and metaphysical necessity in what we can know must be abandoned' (Hesse, p. xii). Scientific knowledge is therefore *transitory, approximate* and *local*, and if this is the case then science can no longer be regarded as the sole embodiment of truth about the universe. Tentativeness rather than certainty now defines the status of scientific theory in the late twentieth century.

One of the key aspects of the development of modern science has been the ever increasing trend towards specialization. Stephen Toulmin regards this aspect of science as having had a detrimental effect on our understanding of the world:


27 In order to answer the fundamental question of how things occur, science proceeds by 'distinguishing or isolating certain properties in the subject matter studied and by ascertaining the repeatable patterns of dependence in which these properties stand to one another' (Nagel, p. 4). Science relies for its success on the assumption that systems in nature can be isolated: 'Any philosophy that is at its core holistic must tend to be anti-science, because it precludes studying parts of a system separately — of isolating some parts and examining their behaviour without reference to everything else. If every process were dependent on its part in the whole then science could not have succeeded.' (Wolpert, p. 138; cf. p. 107.) This fundamental *a priori* assumption of scientific method has resulted in the institutional fragmentation of science, about which Robert Oppenheimer has said: 'Today, it is not only that our kings do not know mathematics, but our philosophers do not know mathematics and — to go a step further — our mathematicians do not know mathematics. Each of them knows a branch of the subject and they listen to each other with a fraternal and honest respect; and here and there you find a knitting together of the different fields of mathematical specialisation [...] We have in common the simple ways in which we have learned to live and talk and work together. Out of this have grown the specialised disciplines like the fingers of the hand, united in origin but no longer in contact.' (W. O. Hagstrom, *The Scientific Community* (New York: Basic Books, 1965), p. 226.) On this, see also Joseph Schwartz, *The Creative Moment: How Science Made Itself Alien to Modern Culture* (London: Cape, 1992), especially pp. 176-82.
charges, currents and radiation; approaching it as classical chemists, we have occasion to discuss atoms and molecules, elements and compounds; approaching it from the standpoint of evolutionary biology, we have occasion to ask questions about genotypes, mutations, selection pressures, and the like; but the disciplinary organization of scientific work deprives us of any standpoint from which to ask fully comprehensive questions, transcending the particular standpoint of any single discipline. Even today, indeed, natural scientists still tend to assume that the only truth about the Totality of Nature is the totality of the established truths about the different disciplinary aspects of nature, or sets of natural phenomena, taken one at a time.28

According to Toulmin, the effect of the institutional fragmentation of science, together with its philosophical inheritance and its methodological insistence on the isolated system, has produced a 'novel psychological attitude' which characterizes the scientist's relationship with the object of study: 'If it is the scientist's job to adopt "for the purposes of the investigation" the particular viewpoint of some specialized discipline, it has been natural for the scientist to do so also with a certain detachment — a certain psychological distance, even a lack of "cathexis."' (p. 230) Toulmin sees the modern scientist as being a 'Spectator', an objective observer of events, dedicated

28 Stephen Toulmin, *The Return to Cosmology: Postmodern Science and the Theology of Nature* (Berkeley: University of California Press, 1982), p. 7. According to Toulmin, the idea of cosmos is an essential ingredient of all cultures and in his view the practice and structure of modern science is inimical to the creation of cosmologies, as his rhetorical 'transcendental' question makes clear: 'In what respects, and on what conditions, can anything be said about the natural world in its entirety which is not dependent on our ability to subdivide natural phenomena into separate aspects, along disciplinary lines, and discover truths about those aspects one at a time?' (Toulmin, p. 8.) He also regards the philosophical foundations of science as being hostile to the notion of cosmos: 'all the dualisms and dichotomies that have been characteristic of science and philosophy since the year 1600 — separating Humanity from Nature, Mind from Matter, Rationality from Causality, and the rest — were foreign to the thought of antiquity, and became influential only during the modern period. So understood, the world view of Descartes and Newton no longer represents a genuine cosmos.' (Toulmin, The Future of Cosmology: Postmodern Science and Natural Religion', in *The Return to Cosmology*, p. 224 (based on the Tate-Willson lectures, Southern Methodist University, Dallas, March 1979, and the John Nuveen lectures, University of Chicago Divinity School, April 1979).) Similarly, Toulmin asserts that, 'the traditional cosmology was never preoccupied with any one isolated aspect or function of the traditional system in any exclusive or single-minded way' (p. 229). After the Renaissance however, science was governed by 'its single-minded preoccupation with the specific, narrowly defined questions proper to particular scientific disciplines' (ibid.). More recently see Toulmin's *Cosmopolis: The Hidden Agenda of Modernity* (Chicago: University of Chicago Press, 1992). On Toulmin's philosophy of science (The Philosophy of Science* (London: Hutchinson, 1953) and *Foresight and Understanding* (London: Hutchinson, 1961)), see Suppe, pp. 127-35, and Toulmin's own essay, 'The Structure of Scientific Theories', in Suppe, pp. 600-14.
to developing ‘sciences that would treat the entire world of nature as being itself an “object” about which the human mind could hope to reach perfectly accurate expectations and an exhaustively comprehensive theoretical understanding, free from irrelevant personal hopes and reliances’ (pp. 242-43). From this position it is but a small step to the assertion of the ‘value neutrality of science’:

If the scientist merely has to observe nature, so that it is no part of his responsibility to interact reciprocally with nature, his ethical position is considerably simplified. If he is only looking on from outside and reporting what he sees, not acting in ways that produce significant effects from within the World, he can the more easily claim that his involvement with nature is morally neutral — that he is concerned only with ‘facts’ and is not professionally concerned with values. (Toulmin, pp. 246-47.)

According to Toulmin, modern science is dominated by theory, in the Greek sense of theoria. In ancient Greece, a theoros was someone sent officially from a city-state to observe at events such as the Olympic Games. Thus ‘the abstract noun theoria began by denoting the activity of spectating, onlooking, or observing any activity or process, by contrast with intervening, participating, or being an agent in it’ (‘The Future of Cosmology’, p. 239). For Aristotle, ‘theoria came to refer to the detached intellectual posture, activity, and product associated with the philosopher’s study, observation, and reflection about the world, by contrast with the praxis of the carpenter, the farmer, or the fisherman. So, from very early on, philosophy — qua “theory” — became essentially the reflective thought of a spectator.’ (Toulmin, p. 240.) This important theme will be discussed further in Chapters 3 and 6.

According to Nagel: ‘The quest for systematic explanations requires that inquiry be directed to the relations of dependence between things irrespective of their bearing upon human values.’ (p. 10) Similarly, Koyré notes that the loss of the notion of ‘Cosmos’, the sense ‘of the world as a finite, closed, and hierarchically ordered whole’, and its replacement with the infinite universe, has brought a concomitant rejection by science ‘of all considerations based upon value-concepts, such as perfection, harmony, meaning and aim’ (From the Closed World, p. 2). The desire to escape the authority of theology and politics has resulted in a science which aspires to the status of value neutrality. In the modern era however, after the revelations concerning the role of scientists in the Nazi concentration camps and the devastation of Hiroshima and Nagasaki by weapons developed by an extensive scientific research programme, this is a goal which for many people is no longer desirable (see Berentsen, p. 11, Schwartz, pp. 88-90 and 107-16, Theodore Ziolkowski, ‘The Ethics of Science from Adam to Einstein: Variations on a Theme’, in T. Ziolkowski, Varieties of Literary Thematics (Princeton: Princeton University Press, 1983), pp. 196-97 (first publ. as ‘Science, Frankenstein, and Myth’, Sewanee Review, 89 (1981): 34-56); I shall return to this theme in Chapter 6). As Wolf Lepenies has shown, whereas science once promised to free people from the sometimes terrible forces of nature, now science itself has become the source of anxiety (‘Zivilisationspessimismus’) for the populace, as a result of atomic energy and genetic engineering (‘Angst und Wissenschaft’), in W. Lepenies, Gefährliche Wahlverwandtschaften: Essays zur Wissenschaftsgeschichte (Stuttgart: Reclam, 1989), pp. 42-59). On science and ethics, see William R. Shea and Beat Sitter, eds, Scientists and their Responsibility (Canton, MA.: Watson, 1989), in particular the following contributions: Yehuda Elkana, ‘The Epistemology of the Opposition to Science’ (pp. 171-88), Jürgen Mittelstrass, ‘Ethics of Nature’ (pp. 41-57), and W. Shea, ‘The Epistemology of the Disillusionment with Science’ (pp. 189-202). See also Géza von Molnár, ‘“What ever happened to ethics?”’, in Amrline, Literature and Science (1985), pp. 113-27, and Popper, ‘The Moral Responsibility of the Scientist’, in The Myth of the Framework,
For Stephen Toulmin, modern science has distorted our view of the world through its introduction of the opposition between the spectator-scientist and the object, an opposition which he thought was likely to be dismantled in the postmodern world.\(^{31}\)

Writing in 1924, the historian of science Edwin Burtt contrasted the anthropocentric world of the Middle Ages with Bertrand Russell's view of the modern scientific \textit{cosmos} from which humankind has been radically displaced.

According to Russell, the modern era assumes:

that man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms; that no fire, no heroism, no intensity of thought and feeling, can preserve an individual life beyond the grave; that all the labours of the ages, all the devotion, all the inspiration, all the noonday brightness of human genius, are destined to extinction in the vast death of the solar system, and that the whole temple of Man's achievement must inevitably be buried beneath the debris of a universe in ruins — all these things, if not quite beyond dispute, are yet so nearly certain, that no philosophy which rejects them can hope to stand. Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built.\(^{32}\)

\(^{31}\) Appleby, Hunt and Jacob have commented on the altered view of science in the post-war period: 'Compromised by two world wars and a long Cold War in which science and technology played critically important roles, the heroic model of science looks deeply flawed today, no longer workable as the foundation of all truth-seeking in this or any other culture. Science has lost its innocence. Rather than being perceived as value-free, it is seen as encoded with values, a transmitter of culture as well as physical laws. Even the truth still found in science seems different in character — more provisional, less absolute — than it did to the enlightened eighteenth-century forebears who first gloried in it.' (pp. 16-17) According to Toulmin, the moral dilemmas posed by genetic research and the issues raised in the past few years by the ecology movement have rendered the detached position of scientists untenable in the modern world: 'Far from being free to sit in the stands and watch the action with official detachment, like the original \textit{theoroi} at the classical Greek games, scientists today find themselves down in the dust of the arena, deeply involved in the actual proceedings.' (p. 252) 'The scientist as spectator is dead', he states, perhaps somewhat prematurely. Toulmin does accept that Cartesian methods are successful, but only within the limited area of 'objects' — Toulmin notes that the word \textit{Gegenstand} is 'revealing' in its embodiment of the subject-object dualism — and not in the realm of human affairs (p. 252). 'New \textit{criteria} of objectivity and rationality' are required, and he sees the encouragement of interdisciplinary studies in the sciences as one way to achieve this (pp. 13 and 255-56).

This conception of the scientific cosmos is fatalistic in the extreme, as Burtt observes: 'man is but the chance and temporary product of a blind and purposeless nature, an irrelevant spectator of her doings, almost an alien intruder on her domain' (p. 10). Russell's passage is clearly informed by scientific theory and metaphor. Its authority is scientific and therefore the arguments, upon which the passage is premised, are 'if not quite beyond dispute, [...] yet so nearly certain, that no philosophy which rejects them can hope to stand'. The reader is powerless, forced into a position of unquestioning acceptance by the putative authority of scientific truth. As Gillian Beer has shown, evolution, atomism, and entropy are powerful metaphors. Their effectiveness within their respective specialties is not to be doubted, but the act of translation into other modes of discourse — as can be seen in Russell's passage — strips them of whatever authority they could claim and transforms them into scientific myths. As Stephen Toulmin has pointed out, the validity of scientific metaphors transplanted from their original scientific context should be viewed with scepticism:

Granted that the theory of evolution or the laws of thermodynamics are all that a scientist can ask; granted that their position within biology and physics is as firmly established as it could be; if this may be allowed, just how much is accomplished? What sorts of conclusions are forced on us by our acceptance

being responsible for introducing divisions between people and nature, value and materiality: 'Wherever was taught as truth the universal formula of gravitation, there was also insinuated as a nimbus of surrounding belief that man is but the puny and local spectator, nay irrelevant product of an infinite self-moving engine, which existed eternally before him and will be eternally after him, enshrining the rigour of mathematical relationships while banishing into impotence all ideal imaginations; an engine which consists of raw masses wandering to no purpose in an undiscoverable time and space, and is in general wholly devoid of any qualities that might spell satisfaction for the major interests of human nature, save solely the central aim of the mathematical physicist.' (p. 299) On the implications of this mechanistic and materialistic worldview, see Chapter 4 of this thesis.

of these theories, and on which do they have no direct bearing? These are the
questions we must ask. If we find that the theories are regularly invoked in
support of conclusions of a kind to which, as scientific theories, they have no
relevance; further, if these conclusions are of a sort with which mythologies
have from the earliest times been concerned; then we can say with some
justice, not that the theories themselves are ‘only myths’, but rather that on
these occasions their conceptions are being inflated into Scientific Myths.\textsuperscript{34}

Toulmin challenges the use of scientific terms as if they are ‘pieces of a single,
cosmic jig-saw’ capable of building a ‘comprehensive “world view” of a
philosophical kind’: ‘Within science, we can at any rate prove our views in practice.
But when we put scientific terms to non-scientific uses, this, the chief merit of a
scientific approach, is lost. For all that experiment or observation can show, one
scientific myth is as good as another.’ (p. 32)\textsuperscript{35} Toulmin, like Whitehead before him,\textsuperscript{36}
casts doubt on the application of scientific metaphors beyond their fields of origin and,
in particular, their use in the construction of cosmologies.

\textsuperscript{34} ‘Scientific Theories and Scientific Myths’, in \textit{The Return to Cosmology}, p. 27 (first publ. as
‘Contemporary Scientific Mythology’, in \textit{Metaphysical Beliefs}, ed. by Alasdair MacIntyre
(London: SCM, 1957)). See also Hakfoort, ‘The Historiography of Scientism’.
\textsuperscript{35} Toulmin’s argument anticipates Rorty’s dislike of the way ‘alternative vocabularies’ are used as
‘bits of a jigsaw puzzle’ in order to create a metalanguage (Rorty, \textit{Contingency}, p. 11; see above).
\textsuperscript{36} The philosopher Alfred North Whitehead in his classic study of \textit{Science and the Modern World}
(based on the Lowell Lectures, 1925), similarly identified the detrimental effect of scientific ideas
beyond their proper fields of influence: ‘There persists, however, throughout the whole period the
fixed scientific cosmology which presupposes the ultimate fact of an irreducible brute matter, or
material, spread throughout space in a flux of configurations. In itself such a material is senseless,
valueless, purposeless. It just does what it does do, following a fixed routine imposed by external
relations which do not spring from the nature of its being. It is this assumption that I call
“scientific materialism”. Also it is an assumption which I shall challenge as being entirely
unsuited to the scientific situation at which we have now arrived. It is not wrong, if properly
construed. If we confine ourselves to certain types of facts, abstracted from the complete
circumstances in which they occur, the materialistic assumption expresses these facts to
perfection. But when we pass beyond the abstraction, either by more subtle employment of our
senses, or by the request for meanings and for coherence of thoughts, the scheme breaks down at
once. The narrow efficiency of the scheme was the very cause of its supreme methodological
success. For it directed attention to just those groups of facts which, in the state of knowledge then
22.) On Whitehead’s role in encouraging a contextual approach to the study of science, see
The growth of cultural studies as an area of research has highlighted the way the 'Myths' of science have imposed an arbitrary and unwarranted orthodoxy on certain sections of the population. Once again it is the trend towards an interdisciplinary approach to the study of science which has encouraged this inquiry.

In the Foreword to *Languages of Nature: Critical Essays on Science and Literature*, Raymond Williams points to 'the areas of silence, absence, writing out' in science, which are especially significant 'in the crucial linguistic complex of “Man”, “Mankind” “man/woman”, and the deeply implicated constructions of linguistic and biological gender’ (p. 12). Such formulations are, as Williams says, crucial in analysing ‘representations of the human body and [...] the nature of medicine’ (*Languages of Nature*, p. 12). Ludmilla Jordanova, in the Introduction to *Languages of Nature*, assumes a linkage exists between literature and science because of ‘their shared location within cultural history. Both fields are enriched by a more developed sense of their rootedness in a specific historical context.’ (p. 15) However, according to Jordanova, ‘virtually everything in our culture conspires to reinforce a separation between the study of science and the pursuit of the humanities’ (pp. 15-16), a state of affairs peculiar to twentieth-century society which ‘constantly reinforces and polices the boundaries between different areas of knowledge’ (p. 18). These ‘rigid disciplinary demarcations’ did not exist in the eighteenth and nineteenth centuries (p. 16). By emphasizing the interplay of ‘text and context’ and by establishing a ‘common ground’ for science and literature in ‘cultural and social history’, writers such as Jordanova hope to reveal the lacunae in the history of science in areas such as
‘gender, kinship and sexuality’ and thus inform present day scientific and public opinion (pp. 17 and 20). 37

It is generally accepted that in the modern world, science acts as a powerful source of ontological authority and to a great extent interlocks with and contributes to our common-sense view of the world:

The social standing of scientists and the cultural significance of scientific concepts and scientific knowledge have continued to increase. External opposition to science has continued to decline; amongst our political and intellectual elites it has all but petered out. As decade has succeeded decade everyday ways of thinking and accepted common sense knowledge have become recognizably more scientific: through the efforts of the schools and other educational institutions, and latterly through the mass media, they have been suffused with the idiom of science and to some extent with its knowledge and competences as well. A good proportion of what today is common sense knowledge is the scientific knowledge of yesterday in another guise. (Barnes, About Science, p. 20.) 38

Jordanova accepts that scientific ideas inform and condition people’s common-sense view of themselves and society, and for this reason she sees it as being imperative that the reader question their authority and current validity. 39 Literary criticism, by

37 Jordanova sees the essays in Languages of Nature as exemplifying an approach towards literature and science which assumes that ‘it is not enough to analyze what was written; it is also necessary to become aware of what texts exclude’ (p. 46). Jordanova’s book Sexual Visions: Images of Gender in Science and Medicine between the Eighteenth and Twentieth Centuries (Hemel Hempstead: Harvester Wheatsheaf, 1989) continues this exploration of the silences regarding gender in science and medicine. This has developed into an important area of research: see Ruth Bleier, Science and Gender: A Critique of Biology and Its Theories on Women (New York: Pergamon, 1984), Mary Jacobus, Evelyn Fox Keller and Sally Shuttleworth, eds, Body/Politics: Women and the Discourses of Science (New York: Routledge, 1990), Evelyn Fox Keller, Reflections on Gender and Science (New Haven: Yale, 1985), Evelyn Fox Keller and Helen E. Longino, eds, Feminism and Science (Oxford: Oxford University Press, 1996).
38 George Levine describes science as ‘our new mythology, still close enough to feel like reality rather than a story, yet distant enough to keep us unaware that it is constantly working on our sense of what is possible. It provides the images and language through which we know the material world, and it even shapes (often by indirection) our sense of what it means to be human.’ (‘One Culture: Science and Literature’, pp. 8-9.)
39 ‘To write is to assume a position of authority. To write as a scientist doubles the authority, because an authoritative account of reality is being established. Scientists and medical practitioners who put pen to paper are claiming to “tell it as it really is”.’ (Jordanova, Languages of Nature, pp. 20-21.)
focusing on texts as culturally contingent documents and on reading as an inherently pluralistic act, provides an example of the way this questioning process may be applied to science:

Treating scientific writings as literary texts involves, for example, asking questions about genre, about the relationship between reader and writer, about the use of linguistic devices such as metaphor, simile, and personification, about what is not being said, or cannot be said, and hence about the nature of conscious and unconscious constraints on writing, about the models and sources a writer employs, and about the relationship between the form and content of arguments. (*Languages of Nature*, p. 20.)

Literature and science can therefore be regarded as interrelated on the level of discourse, interrelated in the sense that they both operate within the realm of language and human cognition, and are both indebted to the culture in which they arose, with its concomitant historical, economic and social determining factors. As texts and as cultural phenomena they embody aspects of that which produced them, as well as contributing to a continued process of perceptual transformation, a process which should not be predicated upon the existence of passive readers, but ones who are able to challenge what is written.

If it is the case, as George Levine has said, that ‘science and literature reflect each other because they draw mutually on one culture, from the same sources, and they work out in different languages the same project’, then science and literature should be studied as dialectically connected, rather than one being seen as exclusively influencing the other, as was formerly the case (‘One Culture’, p. 7). According to Stephen J. Weininger, the beginning of the twentieth century saw the acceptance of the ‘proposition that science was an integral part of Western culture’. 40 Science, as we

have seen, was viewed as a privileged form of knowledge, being thought inherently ahistorical and thus immutable. The relationship between science and culture was seen as being fundamentally unequal: 'Science seemed always to be the active component, influencing some domain of essentially passive culture' (Weininger, p. xiv). Studies of literature and science were as a result dominated by a hierarchy of influence:

Literature and Science as an academic activity began as a study of the incorporation of scientific ideas into literary texts. Incorporation took several forms — scientific theories could directly alter the writers' perception of the world, or supply metaphors by which to capture it. The task of the cultural historian was then to ferret out the traces of these influences. (Weininger, p. xiv.)

This approach — which Jordanova has described as the search for 'the “borrowings” of writers from science' (Languages of Nature, p. 17) — is exemplified by many of the contributions to Literature and Science: Proceedings of the Sixth Triennial Congress of the International Federation for Modern Languages and Literatures, Oxford, 1954, as this quotation illustrates:

Looking back from the 1950s, one sees the nineteenth century as being, above all, the century of methodical surveys of the different fields of human knowledge. In the natural sciences, Cuvier, Geoffroy Saint-Hilaire, Lamarck, Darwin, all seek to impose a pattern on existing facts and to erect a scaffolding for the construction of further hypotheses; in economics, Karl

41 As Jordanova says, 'it is all too easy to be overwhelmed by lengthy lists of borrowings between the two areas without a sufficiently disciplined account of the exact respects in which science and literature are related' (p. 16). As she notes, this approach relies on the idea of influence, which is 'one of the main ways in which historians of ideas have conceptualized relations between individuals' (p. 17). However, the approach adopted by the contributors to Languages of Nature is different: 'By contrast, we tend to emphasize shared cultures, contexts and even philosophical structures, since historically specific ways of knowing the natural world give rise to related modes of writing about it.' (p. 17) In the Preface to One Culture, Levine sets out three assumptions common to the contributors to his volume: 'first, that science and literature are two alternative but related expressions of a culture’s values, assumptions, and intellectual frameworks; second, that understanding science in its relation to culture and literature requires some understanding not only of its own internal processes, but of the pressures upon it exercised by social, political, aesthetic, psychological, and biographical forces; third, that the idea of “influence” of one upon the other must work both ways — it is not only science that influences literature, but literature that influences science.' (p. vii)
Marx attempted the same gigantic task; with Sir James Frazer, the modern science of anthropology is born; in history with Michelet, in the history of religions with Renan, in the history of language, synthesis and pattern remain the chief preoccupations. Philosophers like Comte and Taine, political philosophers like the Utilitarians all participate. It is not surprising that the novel in its period of greatest expansion, and born without the privilege and discipline of ancient lineage, should be susceptible to the confident revelations of the sciences. [...] What concerns me is the attempt made by novelists in the nineteenth century to borrow scientific methods and thereby to confer on the novel something of the prestige then enjoyed by the sciences.\footnote{Garnet Rees, 'The Influence of Science on the Structure of the Novel in the Nineteenth Century (Balzac, Flaubert, Zola)', in \textit{Literature and Science: Proceedings of the Sixth Triennial Congress of the International Federation for Modern Languages and Literatures, Oxford, 1954} (Oxford: Blackwell, 1955), pp. 255-56. For a comparable approach to the relationship between science and literature, see the work of Marjorie Hope Nicolson: \textit{Newton Demands the Muse: Newton's Opticks and the Eighteenth Century Poets} (Princeton: Princeton University Press, 1946), and \textit{The Breaking of the Circle: Studies in the Effect of the 'New Science' upon Seventeenth Century Poetry} (Evanston, Ill.: Northwestern University Press, 1950).}

In this passage, and in others like it, it is suggested that literature 'borrows' from science. The exchange is unidirectional, with literature being clearly placed in a position of dependence and inferiority. The possibility of literature adopting a critical stance towards the scientific model is therefore rendered unlikely if not impossible. Such approaches to the study of literature and science, although not discredited, are now regarded as treating the relationship of the two discourses too simplistically. The literature and science equation is one which is far more complex and subtle than was previously thought to be the case:

We cannot \textit{derive} literary from scientific revolutions directly: post-modernism is collateral with plate tectonics, not dependent on it. Nor can we \textit{depend} on literature to provide blueprints or even harbingers of future scientific developments. The relationship between these diverse human activities is deeper than that and more mobile. Both draw on, are to some degree controlled by, and in their turn help to form, the common anxieties of the time. (Beer, 'Discourses of the Island', p. 18.)
I do not wish to suggest that literature and science are in all respects of a kind, but rather that what they share is significant enough to justify uniting the two in the phrase literature and science, without needing to imply a privileging of one term over the other, or seeking to avoid the undoubted complexities behind the linkage, for, as Jordanova has commented, "Science and literature", like "science and society", is a slippery phrase' (Languages of Nature, p. 17).

As we have seen, since the 1960s the study of the history and philosophy of science has undergone major changes. To write about literature and science today is to compare two interrelated and metaphorical discourses, each rooted in a shared culture. To privilege one is to credit it with access to some ultimate truth, a position which, as I have shown, is philosophically questionable. As Beer and Jordanova, amongst others, have shown, scientific texts can be analysed as literary texts, as sources of metaphor and authority, open to reinterpretation within each new historical context.⁴³

⁴³ Beer's book Darwin's Plots is premised on the notion of the inherently 'fictive' nature of scientific theories, which 'disturb assumed relationships and shift what has been substantial into metaphor' (p. 3). Reading Darwin's The Origin of Species 'is an act which involves you in a narrative experience', and this experience 'is always subjective and literary' (Beer, p. 5). However, Jordanova notes: 'It would be mistaken to assume that any reading of a text is possible; there are certainly limits within which it is construed.' (Languages of Nature, pp. 20-21.) Examples of a similar approach to the reading of scientific texts are: Kenneth J. Knoespel, 'The Mythological Transformations of Renaissance Science: Physical Allegory and the Crisis of Alchemical Narrative', in Amrine, Literature and Science (1989), pp. 99-112, and Stephen J. Weininger, 'Concept and Context in Contemporary Chemistry', in Slade and Lee, Beyond the Two Cultures (1990), pp. 39-49. John Neubauer has described how Novalis saw science and literature as being united through their use of metaphor, an attitude typical of Romanticism in general, which saw 'the practice of science as a fundamentally symbol- and metaphor-constructing activity: if poetics and poetry may be seen in terms of metaphors borrowed from science, science itself is a general "poetic" activity because it perceives and organizes the sense-data by means of metaphors borrowed from elsewhere. Though these metaphors need not be borrowed from poetry, their constitutive role in knowledge makes science an imaginative enterprise. This, I believe, is the common romantic platform and the premise for their attempts to synthesize literature and science.' ('Nature as Construct', in Amrine, Literature and Science (1989), p. 129.) He suggests that Novalis's idea of science was dominated by a sense of pluralism, a position Neubauer relates to that of the philosopher of science, Paul Feyerabend (Neubauer, pp. 132 and 138; for a similar view, see Joel Black, 'Part I: Newtonian Mechanics and the Romantic Rebellion', in Slade and Lee, Beyond the Two Cultures (1990), p. 132). A consideration of the work of Novalis is outside of the scope of this study. Much has of course been written on Novalis and science. See Fergus Roy Henderson, 'Novalis's Idea of "Experimentalphilosophie": A Study of Romantic Science in its Context' (unpublished doctoral thesis, University of London, 1995), and Peter Kapitza, Die
Thus the way is paved for the discussion of an uncompromised plurality of texts, one which includes not only the history of orthodox science but also ‘pseudo science’, such as magic and alchemy, for these can no longer be merely dismissed as manifestations of superstition with no bearing on the ‘progress’ of science. Rather they are to be seen as important cultural expressions of areas which mainstream science has chosen to ignore.\textsuperscript{44} If one of the prime motivating forces in science and the arts is ‘self-understanding’ then it is right that all these aspects should be open to analysis and comparison.\textsuperscript{45}

The myths of science penetrate every layer of our culture. The analysis of texts and contexts which follows attempts to reveal how literature has highlighted and indeed deconstructed key scientific metaphors and concepts in their process of translation from specialized discourse to generalized world-view. The focus of the present study is, as I have already stressed, primarily literary and by extension cultural, as it is my contention that literature, like science, embodies and reflects the essential concerns of an age. To repeat the point I made earlier: I am not attempting to offer a philosophical analysis of scientific method, but clearly the practice of science, its institutions, and the popularization of scientific ideas at specific historical periods are central to the present study. The scientific world-view which I attempt to delineate

\textsuperscript{44} Jordanova writes of the ‘unfortunate polarization between “genuine” and “pseudo” science’ (\textit{Languages of Nature}, p. 15). Mary Hesse also notes that works such as Pagel’s \textit{Paracelsus} have shown that our idea of science must be widened to include such areas as ‘magic, mythology, alchemy, [and] religious sectarianism’ (\textit{Revolutions and Reconstructions}, p. 29). Science can no longer claim to be the sole arbiter of what constitutes truth in the world.

in the following pages, is inseparable from its historical, linguistic and cultural context, and hence it will reveal different aspects during different periods. As Earl G. Ingersoll has recently stated, a growing body of writers in the field of literary and scientific studies have used 'literature as a measure of our attitudes', a strategy I have also followed, although unlike Ingersoll my purpose is not to attempt an analysis of a cultural malaise but rather to examine the interrelation and confrontation of literary text and the texted reality of the scientific world-view. The central question which guides my investigation of the issues is not merely whether literature derives themes from science, but whether it can also interrogate scientific models of the world and thus contribute to human knowledge and reflectivity. Goethe's complex and ambiguous text *Die Wahlverwandtschaften* provides an ideal point of departure for my thesis. I also explore themes such as the perceived threat of the scientific world-view to human autonomy and, as in Musil's *Die Verwirrungen des Zöglings Törleß*, the positivist challenge to the concept of Self. Indeed, the very idea of a human science, the search for which was a central preoccupation of the nineteenth century, has been consistently presented by literature as inherently problematic, not least in the work of Georg Büchner. Literature's relationship with science and technology remains problematic but nonetheless fruitful. Industrialization and the rapid

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46 *Representations of Science and Technology in British Literature Since 1880*, Worcester Polytechnic Institute Studies in Science, Technology and Culture, 9 (New York: Lang, 1992), p. 1. For Ingersoll, literature is a means of answering the question: 'Is decline an inevitable consequence of hegemony?', to which end he uses 'Great Britain as a paradigm of a world power whose decline may have been in part the product of its resistance to the need for change and encouragement of the innovative spirit which keep a culture dynamic' (p. 14).

advances technology in the twentieth century, culminating in the development of the atomic bomb, have resulted in science being both praised and feared. Figures of scientists within literary texts, such as the doctor in Woyzeck or Brecht's Galilei, also provide focal points for these issues and others in the debate between literature and science. Even those texts which do not address science directly, such as Stifter's Bergkristall and Kalkstein, reveal underlying tensions regarding the nascent scientific world-view. Through these and related themes I suggest that literature and science have been engaged in an exchange and transformation of metaphors and concepts, a mutual transmutation of ideas and vocabularies and a concomitant enrichment culture. The following chapters, although chronologically arranged, are not intended to contribute to any teleological interpretation of history. Rather, I have selected texts which are by any criterion major works of literature and which, through style and metaphor, reflect and reflect upon the role of scientific concepts in culture and in the lives of individuals.

Chapter 2

Texting the Book of Nature:

Goethe’s Die Wahlverwandtschaften
Chapter 2

Texting the Book of Nature:

Goethe's *Die Wahlverwandtschaften*

Johann Wolfgang Goethe's novel *Die Wahlverwandtschaften* raises important issues concerning the relationship between literature and science.¹ In particular, the text highlights the role of language and metaphor in constituting our understanding of the world and questions the ability of mechanistic science adequately to explain the complex and interrelated system that is nature. Human beings, as the most complex manifestation of nature, are especially foregrounded as being beyond the scope of the dominant Newtonian paradigm of science. In the 'Anzeige' which Goethe wrote for his novel, he states 'daß man in der Naturlehre sich sehr oft ethischer Gleichnisse

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¹ The word *science* was understood differently at the beginning of the nineteenth century. Science meant 'any organised body of knowledge', whereas art implied 'technique' (David Knight, *The Nature of Science: The History of Science in Western Culture since 1600* (London: André Deutsch, 1976), p. 12). According to David Knight: 'the then current classification of subjects would have put engineering among the arts, a useful rather than a fine art, while almost all other subjects now taught in universities, such as chemistry, history and theology, would have been sciences. The real division was between the realm of science, governed by reason, and that of practice, or rule of thumb; and apostles of science hoped to replace habit by reason in the affairs of life. Some aspects of natural science, such as pharmacy, were seen as professional: to discuss them in public would have been impolite, “talking shop”; but discoveries in the sciences were generally very appropriate for civilized conversation even when it included women.’ (‘Romanticism and the Sciences’, in Cunningham and Jardine, *Romanticism and the Sciences* (1990), p. 14.) Indeed, the word ‘scientist’ was not used until 1833, when William Whewell used it to describe those present at a meeting of the British Association for the Advancement of Science (Barnes, *About Science*, pp. 8-9). On the definition of science in this period, see also Barnes, pp. 8-15, Chapple, *Science and Literature*, pp. 1-12, Jordanova, *Languages of Nature* (1986), pp. 23-26 and 29-30, David Knight, ‘The Physical Sciences and the Romantic Movement’, *History of Science*, 9 (1970), p. 55, and David Knight, *The Age of Science: The Scientific World-view in the Nineteenth Century* (Oxford: Blackwell, 1989), pp. 3-7.
bedient, um etwas von dem Kreise menschlichen Wissens weit entferntes näher heranzubringen. 

For this reason, Goethe continues, the novel traces 'eine chemische Gleichnisrede zu ihrem geistigen Ursprunge' (MA ix, 285). The role of metaphorical language is clearly highlighted as an important element in our understanding of nature and as a link between human and natural realms. An implicit assumption in this statement is that our descriptions of the world — including those in the language of science — are inherently anthropomorphic and that the study of nature is inextricably bound up with human perceptions. The 'Anzeige' proposes that 'überall nur eine Natur ist, und auch durch das Reich der heitem Vernunft-Freiheit die Spuren trüber leidenschaftlicher Notwendigkeit sich unaufhaltsam hindurchziehen' (MA ix, 285).

This monistic world-view challenges simultaneously the Cartesian dualism which underpins the modern scientific approach (see Chapter 1 of this thesis), as well as the Kantian notion of the rational autonomy of the human subject. The 'Selbstanzeige' shows natural and human realms to be profoundly interrelated: our understanding of

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2 Johann Wolfgang Goethe, *Sämtliche Werke nach Epochen seines Schaffens*, ed. by Karl Richter and others (Munich: Hanser, 1985- ), IX: *Epoch der Wahlverwandtschaften, 1807-1814*, ed. by Christoph Siegrist and others (1987), p. 285. This 'Anzeige' appeared in the *Morgenblatt für gebildete Stände*, Number 211, on 14 September 1809. Subsequent references to the Münchner Ausgabe of Goethe's works will be given in the text and abbreviated to 'MA', followed by volume and page number.

the natural world is mediated by anthropomorphic tropes, and *Vernunft*, the defining principle of humanity for the Enlightenment, far from being characterized by its freedom is portrayed as subject to the material realm of Nature.

Goethe's commentary on his own novel is of course not the final word on the 'meaning' of *Die Wahlverwandtschaften*; rather, it provides clues to the historical context in which this complex and deeply ambiguous text was written. At the beginning of the nineteenth century, the natural sciences in Germany were greatly influenced by the ideas of the *Naturphilosophen*:


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4 Elm's critical attitude towards *Naturphilosophie* is typical of the positivist approach to the history of science resulting from the successes of applied science during the nineteenth century. According to Elm: 'Kein Zweifel, diese spekulativ überdrehten, mystisch noch von Paracelsus her inspirierten Naturforschung ist eine Hemmung im Prozeß des Fortschritts, ja ein Skandal aus der Sicht der seit den 30er Jahren vorandrängenden objektivistischen und pragmatischen Beweiswissenschaft.' (p. 12) As Elm points out, the total rejection of *Naturphilosophie* by scientists such as Justus Liebig, who termed it 'die Pestilenz, der schwarze Tod des Jahrhunderts', is typical of the science of the second half of the nineteenth century (p. 12; on this, see Chapters 3 and 4 of this thesis). In the twentieth century however, writers and philosophers have again begun to question the value of a rigidly mechanistic science which assumes that the true reality of nature is expressible solely in quantifiable terms: 'Daß vermittels des mechanisch-quantifizierenden Verfahrens "etwas herauskommt", Natur beherrschbar wird, beweist jedoch nicht seine Wahrheit. Die Wahrheit eines Prinzips folgt nicht aus seiner praktischen Brauchbarkeit; denn [...] "die Auslegung eines Erfolgs als eines Erfolgs wird ja mit Hilfe des vorausgesetzten, aber nicht begründeten Prinzips vollzogen". Die „naturlich“ genannte Einstellung zur Natur — handle es sich um die des Alltags oder der Wissenschaft — ist höchst unnatürlich; "die Tatsache, daß die Natur das Rechnen und die Berechenbarkeit mit sich geschehen läßt, spricht eher dafür, daß sie uns damit täuscht und von sich fernhält, als daß wir damit ein wirkliches Wissen erreichen".' (Alfred Schmidt, *Goethes herrlich leuchtende Natur: Philosophische Studie zur deutschen SpätAufklärung* (Munich: Hanser, 1984), p. 15, citing Martin Heidegger, *Schellings Abhandlung über das Wesen der menschlichen Freiheit* (1809), ed. by Hildegard Feick (Tubingen: [n. pub.], 1971), p. 165.) As I will show, this is an approach which Goethe attempts to reform. This theme will also be considered in Chapters 5 and 6.
This movement towards a speculative theory of nature represents a dissatisfaction with Cartesian and Kantian dualism as well as the rationalism of the Aufklärung with its faith in the universal applicability of the mechanistic paradigm of Newtonian science. The question which faced thinkers, such as Friedrich Wilhelm Joseph Schelling (1775-1854), at this time was:

wie aus der unbefriedigenden Dualität von Erscheinung und Ding an sich, von transzendentaler Subjektivität und realem So-sein der Natur, von sprechender Form und stummem Inhalt der Erkenntnis zurückgefunden werden könne zu einer einheitlichen Weltvorstellung, deren durch Kant zerstörtes Vorbild aus dem metaphysischen System des Spinoza und Leibniz noch herüberleuchtete.

‘The Newtonian mechanical-atomistic explanation of all natural phenomena’ was found wanting. It was felt that a new paradigm was required, one which could...

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7 H. A. M. Snelders, ‘Romanticism and Naturphilosophie and the Inorganic Natural Sciences 1797-1840: An Introductory Survey’, *StRom*, 9 (1970), p. 194. Snelders observes that the Newtonian paradigm was replaced by a ‘dynamical and organic concept, with a concomitant substitution, at
account for the seemingly inexplicable phenomena being discovered in biology and chemistry:

In chemistry it proved impossible to apply atomic ideas to give a detailed and falsifiable account of any phenomenon before the latter part of the nineteenth century; and interatomic forces proved much more intractable than celestial ones. In Newton’s mechanics, every particle of matter attracts every other particle; but in chemistry we meet with elective attraction — some substances readily react together, and others do not. Again, it was not until the mid-nineteenth century that a coherent account of chemical dynamics could be given. [...] Chemistry at the end of the eighteenth century thus became on the one hand a fundamental science, for physiology, electricity, and mineralogy seemed to depend upon it; and on the other a science without a general mechanical background or a satisfactorily quantifiable basis. (Knight, *The Nature of Science*, pp. 49-50.)

For Friedrich Schlegel (1772-1829), the French Revolution was a ‘chemische Bewegung’ and the period as a whole he described as a ‘chemisches Zeitalter’. At the extreme of sentiment for the critical mind, and experiment was largely replaced by intuition (p. 194). He summarizes the approach of this new philosophy of nature as follows: ‘The German Naturphilosophen held that everything in nature takes place by a polar interaction between mind and matter, through which all generation and decay take place. The whole of nature, inclusive of mind, was conceived as essentially equal and identical; animal, electricity, sun, god, copulation. It was maintained as a fundamental principle that everything operates by the action of antagonistic forces of attraction and repulsion, and it proved easy to accept the idea of a cycle at work in the macrocosm as well as the microcosm, and between both.’ (p. 195) On this, see also Joel Black’s Introduction to ‘Part I: Newtonian Mechanics and the Romantic Rebellion’, in Slade and Lee, *Beyond the Two Cultures* (1990), pp. 131-39. As I will show, this holistic and organicist view of nature informs *Die Wahlverwandtschaften*.

end of the eighteenth century, the exciting new field of chemistry was seen as epitomizing the dynamic, revolutionary spirit of the age and offering the possibility of a new understanding of the natural world.9

By the time he wrote *Die Wahlverwandtschaften*, Goethe had been actively interested for many years in new developments in science and the study of the natural world.10 In his student days he had also been intrigued by the ideas of alchemy and had undertaken alchemical experiments.11 In his official duties in the duchy of

9 On the evolution of chemistry as a discipline in the seventeenth and eighteenth centuries, see Mary Jo Nye, 'Physics and Chemistry', in The Invention of Physical Science: Intersections of Mathematics, Theology and Natural Philosophy since the Seventeenth Century. Essays in Honor of Erwin N. Hiebert, ed. by M. J. Nye, Joan L. Richards and Roger H. Stuewer, Boston Studies in the Philosophy of Science, 139 (Dordrecht: Kluwer, 1992), especially pp. 206-11. Nye details the opposition of Georg Stahl (1660-1734) and the French Stahlians, such as P. J. Macquer (1718-84), to attempts to treat chemistry as part of Newtonian mechanical philosophy (pp. 207-08). Antoine Lavoisier (1743-94) was instrumental in establishing chemistry as a discipline distinct from physics, by founding it securely in quantifiable experimentation and classification (see Arthur Donovan, 'Lavoisier and the Origins of Modern Chemistry', *Osiris*, n.s. 4 (1988): 214-31, and Evan Melhado, 'Chemistry, Physics, and the Chemical Revolution', *Isis*, 76 (1985): 195-211). Lavoisier was convinced that chemistry would eventually employ mathematical methods to solve problems (Nye, pp. 208-09). Kant argued that 'natural science [...] could be derived entirely from *a priori* principles' and that true science did not depend upon experience. In Kant's view, 'chemistry [...] could achieve only empirical certainty, and should thus be regarded as a systematic art rather than as a true science. [...] A metaphysical chemistry, firmly embedded in a unified mathematical natural philosophy, was [...] impossible.' (Trevor H. Levere, Affinity and Matter: Elements of Chemical Philosophy 1800-1865 (Oxford: Clarendon, 1971), p. 11.) At the beginning of the nineteenth century chemistry was 'an exciting discipline promising to reveal the unity of matter — a sphere in which mechanics had merely scratched the surface. [...] Chemistry seemed to exemplify a drive towards unity and simplicity.' (Knight, *The Physical Sciences*, p. 63.) Following the revolutionary work of Lavoisier, chemistry was 'in a state of flux' and it 'seemed that chemistry might somehow have the key to the universe': 'Chemistry with its elective affinities was really a science of forces rather than of matter. And in chemical reactions the clash of opposites resulted not in annihilation but in synthesis [...]'. The crude model of the dialectic of Hegel and Marx began in the chemistry of about 1800.' (Knight, *The Age of Science*, pp. 56-57.) According to Nye, the definition of the concepts 'Force' and 'Affinity' was central to work in physics and chemistry at the beginning of the nineteenth century and highlighted anomalies in the Newtonian world-view: "affinity" was "elective" power which depended on the kind of substance, not its mass; and thus affinity differed decisively from the mechanical "force" studied by Newton and Newtonians in astronomy, hydrodynamics, and mechanics generally.' (′Physics and Chemistry′, p. 210.)

10 Goethe's first reference to *Die Wahlverwandtschaften* is a diary entry of 11 April 1808. He began writing in Karlsbad on 29 May 1808: 'Angefangen an den Wahlverwandtschaften zu schematisieren.' By 25 July, Part I was complete. He began work again in Jena in April 1809, and continued writing whilst Part I was being printed. Part II was published finally in October 1809 (MA IX, 1211-12).

11 Much has been written on Goethe's interest in alchemy, which dates back to his friendship with Susanna Katharina von Klettenberg in Frankfurt during 1768-69. For Ronald D. Gray, 'almost the whole of his [Goethe]s scientific work might well be described as a more logical development of
Sachsen-Weimar-Eisenach he was directly involved in the practical application of science. According to Karl-Heinz Hahn, 'seit 1780 etwa [gehörte] naturwissenschaftliche Forschung zu seinem täglichen Geschäft' and his fields of interest included 'Anatomie, Zoologie, Mineralogie und Geologie, Licht und Farbe, Wolkenbildung und Wettererscheinungen, Physik und Chemie in ihrer Bedeutung für Technologie'.


"Die Wissenschaft erhält ihren Werth, indem sie nützt": Über Goethe und die Anfänge der technisch-wissenschaftlichen Welt', GJB, 96 (1979), p. 247. R. D. Gray notes: 'The move to Weimar in 1775 marks however a decisive swing towards the observation of facts for their own sake. Here Goethe assumed the control of the ducal estates; and the care of the parks, mines, greenhouses and museums demanded a thorough grounding in forestry, geology, botany and many other branches of knowledge.' (Goethe the Alchemist, p. 58.) Andreas B. Wachsmuth also observes that the 1780s are characterized by Goethe's 'gegenständliches Interesse', but denies this is due solely to his official duties ('Die Entwicklung von Goethes naturwissenschaftlicher Denkweise und Weltanschauung von den Anfängen bis zur Reife', in Wachsmuth, Geeinte Zwienatur: Aufsätze zu Goethes naturwissenschaftlichem Denken, Beiträge zur Deutschen Klassik, 19 (Berlin/GDR: Aufbau, 1966), p. 13 (first publ. in Goethe: Viersonatsschrift der Goethe-Gesellschaft, n.s. 6 (1941))). However, for Nicholas Boyle, Goethe's scientific studies in
of Jena University, ‘insbesondere hinsichtlich der Gründung wissenschaftlicher
Institute und der Einführung und Förderung moderner Wissenschaftsdisciplinen’
(Hahn, p. 246). Thanks to Goethe, Johann Friedrich August Göttling (1753-1809)
became the first Professor of Chemistry at Jena University in 1789. According to
Jeremy Adler, Göttling ‘war stets auf der Höhe der Zeit’ and Goethe praised him for
his rapid mastery of the new chemistry of Lavoisier. Significantly, Goethe was also
instrumental in bringing F. W. J. Schelling to Jena University in 1798, and the young

13 By 1800, Jena University was ‘die führende Universität in ganz Deutschland’, with Fichte,
Schelling and Hegel among its lecturers. Thanks to Goethe’s role as ‘vorausschauender
Wissenschaftsminister und Wissenschaftsorganisator’, many new institutes were founded during
this time: ‘Neben der Anatomie, einer Frauenklinik, einer medizinischen und chirurgischen Klinik
sind da der Botanische Garten und das dazugehörige Botanische Institut zu nennen, eine
Tierarzneischule, eine Sternwarte, ein Physikalisch-Chemisches Institut, ein Mineralogisches
Institut u. a. m.’ (Hahn, p. 247.) On the development of science as a university discipline in
Germany, see Schnadelbach, pp. 21-32.

14 Dorothea Kuhn, ‘Goethe und die Chemie’, p. 110, and Boyle, p. 388. Initially, the doctor and
chemist Wilhelm Heinrich Sebastian Buchholz influenced Goethe’s idea of chemistry and Goethe
‘bezeichnet ihn als Begründer der naturwissenschaftlichen Studien in Weimar’ (Kuhn, p. 110).
Buchholz followed keenly the new developments in chemistry: ‘Eifrig beobachte Buchholz die
nen ausländischen Entdeckungen und gab seine Kenntnisse vor einer “wissbegierigen
Gesellschaft” zum besten, die sich bei Goethe freitags versammelte.’ (ibid.) It was in his
laboratory that J. F. A. Gottling worked until he became Professor of Chemistry in 1789.
According to Karl-Heinz Hahn, Jena had the first Institute of Chemistry in Germany and ‘seit
1820 auch das chemische Praktikum für Studenten einführen konnte’ (p. 251).

15 Jeremy Adler, ‘Eine fast magische Anziehungskraft’: Goethes ‘Wahlverwandtschaften’ und die
Chemie seiner Zeit (Munich: Beck, 1987), p. 80. According to Adler, Goethe was greatly
influenced by Göttling’s ideas on chemistry. Adler sees ‘eine stille Huldigung an Göttling’ in the
Captain’s ‘chemisches Cabinet’ (MA IX, 316), as Göttling had such a ‘Cabinet’ made for sale
(‘Eine fast magische Anziehungskraft’, p. 80). Göttling wrote several works on chemistry with
which Goethe would have been acquainted. These included: Versuch einer physischen Chemie für
Jugendlehrer beim Unterricht wie auch Gebrauchsanleitung der Sammlung chemischer
Präparate zur unterhaltsamen und nützlichen Versuchen für Liebhaber der physischen
Scheidekunst (Jena: [n. pub.], 1792) and Handbuch der theoretischen und praktischen Chemie, 3
vols (Jena: [n. pub.], 1798-1800). (For details on other works by Göttling see Adler, pp. 80 and
233.) Adler notes that these two works contain ‘eingehende Schilderungen der “Verwandtschaft”’
(p. 80). Following Göttling’s death in 1809 (the year in which Die Wahlverwandtschaften
appeared), Johann Wolfgang Döbereiner (1780-1849) became Professor of Chemistry.
Döbereiner was a graduate of Jena University and his influential work on ‘triads’ of chemical
elements paved the way for Mendeleéff’s Periodic Table. Goethe took a keen interest in the work
of Döbereiner. During 1815-17, Döbereiner taught Goethe his method of stoechiometry, which
forms the basis for the current understanding of chemical reactivity (Hans Fischer, Goethes
idealistic philosopher's concept of nature clearly impressed Goethe. Goethe was therefore keenly aware of the main debates in chemistry and the Naturwissenschaften at the beginning of the nineteenth century.

Concomitant with the desire amongst the Naturphilosophen for a unified Weltanschauung that went beyond the mechanistic models of the Enlightenment, was a nascent awareness of the historicity of human understanding of the natural world.

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16 Much has been written on the influence of Schelling on Goethe, especially relating to the period 1798 to 1803, when Schelling was lecturing in Jena. According to Dorothea Kuhn: ‘Mit Schelling war Goethe gerade in dieser Zeit in enger persönlicher Verbindung und in regem wissenschaftlichen Gespräch. Dessen Naturphilosophie machte den Gedanken selbstverständlich, daß eine chemische Verbindung als Einheit aus Entgegengesetztem zu verstehen sei. Positiv und negativ geladene Teilchen stellten im Bereich der chemischen Verbindungen dieses Entgegengesetzte in Analogie zu den Polen des Magneten dar. In Vorträgen vor einer kleinen, vorwiegend aus weimarianischen Damen bestehenden Gesellschaft experimentierte Goethe auch selbst über elektrochemisches Verhalten und über Spannungsreihen. Der elektrischen Terminologie von Plus und Minus schloß er die galvanische an als Oxydation und Desoxydation, Säuerung und Entsauerung.’ (‘Goethe und die Chemie’, p. 112.) As A. Schmidt, amongst others, has said, Schelling’s Naturphilosophie was founded on the idea of polarity: ‘Der Weltprozeß entspringt einem — unendlich sich abwandelnd — Streit entgegengesetzter Tendenzen’ (Goethes herrlich leuchtende Natur, p. 120). Schelling opposed the Newtonian concept of matter as ‘hard, impenetrable, inert particles’ subject to external forces, and suggested instead ‘that matter is an equilibrium of active forces that stand in polar opposition to one another’ (Robert Stern, Introduction to Schelling’s *Ideas*, p. x). Following Kant’s ‘metaphysico-dynamical’ idea of matter, Schelling saw attractive and repulsive forces as constituting the essence of matter (Stern, p. xi). Chemical affinity occurred ‘between bodies with opposite degrees of basic forces’ and chemical reactions were necessary in order to achieve equilibrium. Likewise, Schelling thought that a chemical reaction was initiated by upsetting the existing equilibrium of forces between bodies (Stern, p. xii). The notion of Polarisierung was also fundamental to Goethe’s conception of nature, and as I shall show it is an important theme in *Die Wahlverwandtschaften* (on Goethe and Polarisierung, see Adler, pp. 82-83, and Uwe Pörksen, ‘Goethe Kritik naturwissenschaftlicher Metaphorik und der Roman Die Wahlverwandtschaften’, *JDSG*, 25 (1981), pp. 294-96). Goethe read Schelling’s Ideen zu einer Philosophie der Natur (1797) in 1798. Goethe’s diaries contain frequent references to meetings with Schelling whilst he was lecturing at Jena University and Goethe found his own idea of nature confirmed in the writings of the young Naturphilosoph (see Goethe, Gesamtausgabe der Werke und Schriften, ed. by Gerhart Baumann, 22 vols (Stuttgart: Cotta, 1956), xi, pp. 485-86, 523-27, 543, etc). Rühle even reports that Goethe credited Schelling with the original inspiration for *Die Wahlverwandtschaften* (Johann Wolfgang von Goethe, *Werke*, ed. by Erich Trunz, 14 vols, 6th edn (Munich: Beck, 1981), Hamburger Ausgabe, *V*: *Romane und Novellen t*, p. 641; subsequent references will be indicated by the abbreviation ‘HA’ followed by volume and page number). Whether or not this is true, what is significant is that Goethe’s concept of nature, and more specifically chemical affinity, was informed by diverse influences: ‘Neben den Ansichten eines Empirikers wie Götting konnte er sich auch mit denen eines reinen Idealisten auseinandersetzen.’ (Adler, p. 135.) On Schelling’s idea of polarity in nature and its influence on Goethe, see Hennemann, pp. 33-43; also Elm, pp. 11-12, Schmidt, pp. 120-23, and Wetzels, Johann Wilhelm Ritter, pp. 3-7.
According to Georg Lukács, the crisis in society at the end of the eighteenth century, reflected in the gradual acceptance of the idea of history as a process, can also be seen in the *Naturwissenschaften* of the time:

Mit der Entdeckung einer ganzen Reihe von neuen Phänomenen, hauptsächlich auf den Gebieten der Chemie und Biologie, rückt die Kritik des mechanisch-metaphysischen Denkens immer entschiedener in den Vordergrund; man empfindet immer deutlicher, daß das nur auf Geometrie und Mechanik basierte Denken, dem die Physik, die Astronomie des 17. und 18. Jahrhunderts ihre Triumphe verdanken, den neuen Aufgaben, der Erfassung der Totalität der Naturerscheinungen gegenüber versagen muß. Diese Wachstumskrise des naturphilosophischen Denkens beschränkt sich nicht auf die Probleme der bloßen Begriffsbildung. Auch hier beginnt die historische Betrachtungsweise sich durchzusetzen. Man denke an die astronomischen Theorien von Kant und Laplace, an die Entdeckungen von Geologie und Paläontologie, an die Anfänge der Evolutionslehre, an die beginnende Opposition gegen die großen mechanistischen Systematisierer wie Linné und Cuvier, an Goethe, Geoffroy de Saint-Hilaire, Lamarck usw.¹⁷

Indeed, the beginning of the nineteenth century has been typified by Wolf Lepenies as representing a ‘Krise der Naturgeschichte’, an awareness of the inability of past paradigms to cope with the wealth of information that was being collected concerning the natural world.¹⁸ The immutable and timeless continuum of the ‘Chain of Being’


¹⁸ Wolf Lepenies, *Das Ende der Naturgeschichte: Der Wandel kultureller Selbstverständlichkeiten in den Wissenschaften des 18. und 19. Jahrhunderts* (Munich: Hanser, 1976). Lepenies’s text is a standard work on the position of the sciences in this period. On the crisis in natural history, see especially pp. 16-17 and 61-63. For Schmidt, Goethe remained within the paradigm of eighteenth-
(natura naturata), which had dominated European thought on nature for centuries, was gradually being dismantled to make way for the idea of nature engaged in continual change (natura naturans). By the end of the nineteenth century Darwin’s evolutionary ‘Tree of Life’ would become the dominant metaphor of nature.

20 'The affinities of all the beings of the same class have sometimes been represented by a great tree. I believe this simile largely speaks the truth. The green and budding twigs may represent existing century natural history, and he notes ‘wie mühsam er [Goethe] sich aus dem zunehmend brüchiger werdenden Gehäuse unbeweglicher Naturgeschichte herausarbeitet’ (Goethes herrlich leuchtende Natur, p. 61). However, some later scientists, such as Ernst Haeckel (1834-1919), saw Goethe as a precursor of Darwin. According to Maren Partenheimer, Haeckel’s Generelle Morphologie: Allgemeine Grundzüge der organischen Formenwissenschaft, mechanisch begründet durch die von Charles Darwin reformierte Deszendenztheorie (Berlin: Reimer, 1866) develops ‘ein umfangreiches geschichtlich orientiertes Stammbaumsystem, worin die Lebewesen nicht mehr in der linnéischen Manier einfach schematisch einander zugeordnet werden, sondern sich aus Urformen in konsequenter Weise immer weiter entwickeln’ (Goethes Tragweite in der Naturwissenschaft: Hermann von Helmholtz, Ernst Haeckel, Werner Heiseberg, Carl Friedrich von Weiszäcker (Berlin: Duncker & Humblot, 1989), p. 43). Haeckel described Goethe’s ‘monistische Naturauffassung’ as a ‘Leitstern’ for his own work (Partenheimer, p. 45; citing Haeckel, Fünfzig Jahre Stammesgeschichte: Historisch-kritische Studien über die Resultate der Phylogenie (Jena: Fischer, 1916), p. 3).

19 Arthur O. Lovejoy describes the immutability of the Chain of Being as follows: ‘When the principle of plenitude was construed either religiously, as an expression of the faith in the divine goodness, or philosophically, as an implicate of the principle of sufficient reason, it was, as usually understood, inconsistent with any belief in progress, or, indeed, in any sort of significant change in the universe as a whole. The Chain of Being, in so far as its continuity and completeness were affirmed on the customary grounds, was a perfect example of an absolutely rigid and static scheme of things. Rationality has nothing to do with dates. If the non-existence of one of the links in the chain would be proof of the arbitrariness of the constitution of the world today, it would have been so yesterday, and would be so tomorrow.’ (The Great Chain of Being, p. 242.) The idea of nature as immutable and perfect which had dominated eighteenth-century thought, was challenged towards the end of the century: ‘Der Organismus als geordnetes und dynamisches Ganzes, als organisierte komplexe Struktur, die innovativ und erhaltend in andauernder Veränderung begriffen ist, kann so zur zentralen Metapher für Ganzheitsvorstellungen des späten 18. Jahrhunderts werden, die die Antinomien sowohl von Freiheit und Determination, wie von Prozeß und Struktur eint und die problematisch gewordene Vorstellung der einen und ganzen Natur partiell ersetzen kann.’ (Thadden, Erzählen als Naturverhältnis, p. 42.) On this paradigm shift in the sciences away from a classificatory approach towards a dynamic view of nature, see especially Lepenies, pp. 18-24 and 41-51. See also Michel Foucault’s account of the changing episteme in The Order of Things: An Archaeology of the Human Sciences [n. trans.] (1970; repr. London: Routledge, 1992), in particular Chapter 5, ‘Classifying’, pp. 125-65, and on Georges Cuvier, pp. 263-79. For Thadden, in contrast to Schmidt, Goethe was very much aware ‘daß die Naturordnung Geschichte hat, daß die belebte Materie in spezifischen Entwicklungprozessen steht und daß die Naturforschung selbst in einen Prozeß fortgesetzter Revisionsbedürftigkeit ihrer Wissensbestände und Erkenntnisverfahren eingetreten ist’ (Thadden, p. 14). Indeed it is this aspect of Die Wahlverwandtschaften which epitomizes the text’s ‘besondere Modernität’ and challenges the idea that Goethe’s intention was to depict an ideal, holistic vision of the natural world. As Thadden states, ‘das Verfassen einer zusammenhängenden, abgeschlossenen Darstellung der Natur ist zunächst als Intention und Problem der Goetheschen Arbeit zu verstehen’ (p. 14). It is Thadden’s thesis, and indeed my own, that Die Wahlverwandtschaften presents a highly reflexive and ironic view of human knowledge which resists reductionism of any form, showing the difficulties inherent in both mechanistic and holistic world-views.

20 'The affinities of all the beings of the same class have sometimes been represented by a great tree. I believe this simile largely speaks the truth. The green and budding twigs may represent existing
Goethe’s *Die Wahlverwandtschaften* reflects this new uncertainty that marks the paradigm shift in the study of nature at the beginning of the nineteenth century in four key areas: i) the formative role of language and metaphor on our perception and hence our knowledge of nature, ii) the temporalization of the concept of nature and the positing of flux as the condition of nature (*natura naturans*), iii) the challenge to the idea of a mechanistic science of nature, and iv) the problematic role of human autonomy within all concepts of nature.

John Noyes has written, concerning *Die Wahlverwandtschaften*, that ‘die Unverstandlichkeit [ist] zum Epitheton des Werks geworden’, a situation which more than one commentator has linked to the paradoxical implications of the title:

species; and those produced during each former year may represent the long succession of extinct species. At each period of growth all the growing twigs have tried to branch out on all sides, and to overtop and kill the surrounding twigs and branches, in the same manner as species and groups of species have tried to overmaster other species in the great battle for life. The limbs divided into great branches, and these into lesser and lesser branches, were themselves once, when the tree was small, budding twigs; and this connexion of the former and present buds by ramifying branches may well represent the classification of all extinct and living species in groups subordinate to groups.’ (Charles Darwin, *The Origin of Species* (Oxford: Oxford University Press, 1996), pp. 106-07.) Gillian Beer comments: ‘For Darwin, the old conviction that nature does not make leaps opened into some of his most radical insights, leading him away from the idea of the chain of being or the ladder, with its hierarchical ordering of rungs, towards the ecological image of the “inextricable web of affinities”. These affinities he perceives sometimes as kinship networks, sometimes as tree, sometimes as coral, but never as a single ascent with man making his way upward.’ (Darwin’s Plots, p. 23; see also Beer’s excellent Introduction to the Oxford edition of *The Origin of Species*, pp. vii-xxviii.) On the changes in the cultural understanding of the concept *nature* in the eighteenth and nineteenth centuries, see Jordanova’s Introduction to *Languages of Nature* (1986), pp. 36-40. See also the following essays in *Languages of Nature*: A. E. Pilkington, “‘Nature” as Ethical Norm in the Enlightenment’, pp. 51-85, and Gillian Beer, “‘The Face of Nature’: Anthropomorphic Elements in the Language of *The Origin of Species,*, pp. 207-43. See also Foucault, pp. 125-26, and more recently Kate Soper, *What is Nature?: Culture, Politics and the non-Human* (Oxford: Blackwell, 1995).

Nun ist aber die Wahl frei — jedenfalls dem Begriff nach. Verwandtschaft ist naturgegeben; in die Blutsverwandtschaft wird man, ob man will oder nicht, hineingeboren. Der erste Bestandteil des Wortes gehört also in den Bereich der Freiheit, der zweite in den der Naturnotwendigkeit; sie sind semantisch inkongruent. (Uwe Pörksen, ‘Goethes Kritik naturwissenschaftlicher Metaphorik’, p. 306.)

The origins of the word ‘Wahlverwandtschaft’ lie in the chemistry of the late eighteenth century, as Jeremy Adler has shown in his thorough examination of the subject, ‘Eine fast magische Anziehungskraft’: Goethes ‘Wahlverwandtschaften’ und die Chemie seiner Zeit. According to Adler, the text shows how the chemical theory of affinity is developed and expanded by its application to people: ‘Es zeigt sich dabei nicht nur der Einfluß der Naturwissenschaft auf die Literatur, sondern auch inwieweit es die Literatur vermag, auf naturwissenschaftliche Fragestellungen einzugehen und selbst zur Naturwissenschaft beizutragen.’ (p. 9) Adler’s work has revealed how the word ‘Wahlverwandtschaft’ gained currency in the German language through


Similarly, H. B. Nisbet comments: ‘For Wahl signifies free choice, which implies that an alternative could have been chosen, yet the chemicals always undergo the same reactions, as is implied by the word Verwandtschaft, which denotes a necessary, unvarying relationship, independent of any choice.’ (‘Die Wahlverwandtschaften: Explanation and its Limits’, DVLG, 43 (1969), p. 461.) Nisbet notes that ‘attempts at explanation have proved singularly inconclusive’ (p. 458), but himself concludes that the reader is faced with ‘insurmountable ambiguity’ (p. 485). In a letter to Goethe (27 October 1809), Zelter wrote: ‘Der Titel Ihres Romans macht eine ganz besondere Sensation auch unter Ihren Freunden. Manche können gar nicht darüber wegkommen, daß ihnen alles Urteil wie abgeschnitten ist; sie möchten doch gerne ihre Meinung sagen und können eigentlich zu keiner gelangen.’ (MA XX, Part 1: Briefwechsel zwischen Goethe und Zelter in den Jahren 1799 bis 1832, ed. by Hans-Günter Ottenberg and others (1991), p. 219.) See also Burkhardt Lindner, ‘Goethes Wahlverwandtschaften und die Kritik der mythischen Verfassung der bürgerlichen Gesellschaft’, in Bolz, Goethes Wahlverwandtschaften (1981), p. 24.

Elsewhere, Adler states that Goethe was confronting ‘chemistry with life, seeming thereby to inquire whether human life is governed by chemical laws. By extending the reference of an established chemical theory to encompass social interaction, the novel provides the basis for a universal theory of affinity.’ (‘Goethe’s use of chemical theory in his Elective Affinities’, in Cunningham and Jardine, Romanticism and the Sciences (1990), p. 263.)
Christian Ehrenfeld Weigel’s translation in 1779 of H. T. Scheffer’s *Chemische Vorlesungen über die Salze, Erdarten, Wässer, entzündliche Körper[,] Metalle und das Färben* (1774). This was edited by the Swedish chemist Torbern Olof Bergman, who in his Introduction gave a preliminary account of his own theory of ‘Verwandtschaft’, which was to become the basis of Bergman’s influential text *Disquisitio de attractionibus electivis* (1775). In 1779, Weigel translated Bergman’s phrase ‘attractio electiva simplex’ with ‘einfache Wahlverwandtschaft’, which according to Adler is ‘der früheste bekannte Beleg für das deutsche Wort “Wahlverwandtschaft”’. Some confusion has since entered into the history of this word’s relationship with Bergman. According to Oskar Walzel, who wrote the first analysis of Goethe’s *Die Wahlverwandtschaften* from the viewpoint of chemistry, the first translation of Bergman’s *Disquisitio* by ‘Hein Tabor’ also used the word ‘Wahlverwandtschaften’ as its title. However, as Adler has pointed out, this was not the case; rather the title was *Von der Attraction*. Tabor chose to translate ‘attractio electiva’ in the text with the phrase ‘auswählende Attraction’ (*Von der Attraction*, p. 364) which, according to Adler, more accurately reflects the original chemical process Bergman was describing (*Eine fast magische Anziehungskraft*, p. 104). Weigel

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24 Adler, *Eine fast magische Anziehungskraft*, p. 34. According to Adler, Bergman was by no means the first to use the phrase ‘attractio electiva’, the first recorded use being in English in Joseph Black’s *Experiments upon Magnesia Alba, Quick-Lime and Other Alcaline Substances*, which was given as a lecture in 1755 and printed in 1766. It is even possible that William Cullen (1710-90) used ‘elective attraction’ as early as 1748, at which time Black (1728-99) was studying medicine and anatomy under him at Glasgow University: ‘Aller Wahrscheinlichkeit nach konnen wir daher annehmen, Bergman habe seinen lateinischen Begriff “attractio electiva” in Anlehnung an die englische Form gebildet und nicht erst neugepragt. [...] Die Quelle für Goethes Romantitel ist älter als Goethe selbst wissen konnte.’ (Adler, ibid., pp. 66-70.)

25 Oskar Walzel, ‘Goethes Wahlverwandtschaften im Rahmen ihrer Zeit’, in Rösch, Goethes Roman *Die Wahlverwandtschaften* (1975), pp. 35-64 (first publ. in *GJb*, 27 (1906): 166-206). This error has been repeated most recently in the Münchner Ausgabe, ix, 1202.

however, in his translation of Bergman's Introduction to Scheffer's *Chemische Vorlesungen*, chose to create a word which was essentially anthropomorphic in character:

Beide Bestandteile des Wortes lassen eher an Humanverhältnisse denken, was den personifizierenden Charakter des Ausdrucks verstärkt. Wörter wie 'Kunstverwandte' und 'Glaubensverwandte' mögen als Vorbilder gewirkt haben. Anders als diese jedoch bringt die neue Zusammensetzung eine semantische Inkongruenz mit sich: 'Wahl' ist dem Begriff nach frei; 'Verwandtschaften' sind meistens vorgegeben. Der Ausdruck 'Wahlverwandtschaft' ist im Gegensatz zu 'attractio electiva' ein Paradox. Durch die Spannung zwischen den einander widersprechenden Bestandteilen gewinnt das Wort eine äußerst suggestive Prägnanz. (Adler, *Eine fast magische Anziehungskraft*, p. 103.)

Thus through Weigel's translation, both ambiguity and anthropomorphism have become constituents of a scientific concept.

Goethe's choice of title clearly encourages ambiguity and indeed paradox. *Wahlanziehung* might have proved a more accurate description of the chemical process which is discussed in Part I, Chapter 4, but instead 'Wahlverwandtschaft' is used. As Adler has shown, there were many sources for the ideas on chemistry and science in Goethe's novel: 'Goethe war nicht einem einzelnen Werk, etwa dem

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27 After Weigel introduced the word 'Wahlverwandtschaft' into the German language in 1779, it was quickly taken up by the scientific community, despite the existence of other, more precise terms. According to Adler, it allowed 'eine komplexe Reaktion' to be denoted in a 'knapp und anschaulich' way ('Eine fast magische Anziehungskraft', p. 103). Pierre Joseph Macquer, in his *Chymisches Wörterbuch* (trans. J. G. Leonhardi, 6 vols (Leipzig, 1781-83), V, p. 446), suggests alternatives to 'Wahlverwandtschaft', but in Adler's opinion the brevity of the term was the key to its popularity (p. 103). The word 'Wahlverwandtschaft' is used by J. C. Fischer (*Physikalisches Wörterbuch*), Gehler (*Physikalisches Wörterbuch*), Göttling (*Versuch*), and Gren (*Grundriß*), and it is even used before the end of the eighteenth century to refer to human relationships (Adler, *Eine fast magische Anziehungskraft*, pp. 103-04). The possibility of confusion arising from the term's metaphorical ambiguity was alluded to by Bergman himself: 'Diese Attractionen werden auch von andern Adfinitätäten [sic] genannt; beyde Benennungen sollen in der Folge ohne Unterschied gebraucht werden, obgleich die letztere mehr metaphorisch und sich in der Physik nicht zum besten gebrauchen läßt.' (T. O. Bergman, *Kleine physische und chymische Werke*, III, p. 365; cited from Adler, ibid., p. 104.) It is for this reason that Tabor chose 'Anziehung' and not 'Verwandtschaft' in his translation: 'Das Wort, das er und andere vorzogen, schloß menschliche Assoziationen am ehesten aus — und erinnerte an die Physik Newtons.' (Adler, p. 104.)
Eines fast magische Anziehungskraft, p. 83.) Although this inherently confusing word appears only four times in the text, all in the discussion of chemistry in Part I, Chapter 4, 'Wahlverwandtschaft' has been taken as being the key to the whole text, and as expressing the 'Idee' of the novel: 'Hier, in einem chemischen Gleichnis, treffen die zentralen Themen des Werks symbolisch gerafft zusammen: der Gegensatz von Freiheit und Notwendigkeit, von Sittlichkeit und Natur, der sich im tragisch verstrickten Widerstreit von Ehe und Leidenschaft auswirkt.' (Adler, p. 17.) However paradoxical or even oxymoronic the title may appear, it need not be seen as necessarily contradictory, for as Uwe Pörksen has shown, 'Wahlverwandtschaft' can be viewed as describing the state of marriage:

Eine gewählte Verwandtschaft ist schließlich die Ehe. Verwandtschaft ist in diesem Fall ein rechtliches Verhältnis, das durch Wahl und Willen begründet wird und wieder aufgelöst werden kann. Diese Verwandtschaft kann zwischen

28 As Adler has shown, Goethe's knowledge of chemical theories of affinity can be dated back to at least 1769 ('Eine fast magische Anziehungskraft', p. 75). It is known that Goethe read the following studies of chemistry: J. S. T. Gehler, Physikalisches Wörterbuch (1787-95), J. C. Fischer, Physikalisches Wörterbuch (1798-1804), F. A. C. Gren, Grundriss der Naturlehre (2nd edn, 1793), J. C. P. Erxleben, Anfangsgründe der Chemie (2nd edn, 1784). By 1793, Goethe was already acquainted with Tabor's translation of T. O. Bergman's Kleinen physischen und chemischen Werke (1782-90), which contained Von der Attraction, and was thus familiar with Bergman's concept of 'attractio electiva'. Goethe knew Claude Berthollet's Recherches sur les Lois de l'affinité (1801) through E. G. Fischer's translation of the same year. This is a brief resumé of Goethe's study of chemistry and serves to demonstrate his deep fascination with the subject. All details of Goethe's reading of chemistry are from Adler, 'Eine fast magische Anziehungskraft', pp. 75-83 and 231-33.

29 In conversation with Eckermann, Goethe stated that the novel was guided 'nach Darstellung einer durchgreifenden Idee' (see note 21). For this reason, many writers have seen the 'Idee' as the warp on which the cloth of the narrative is woven. Adler notes: 'Die "Verwandtschaft" bildet den Kern der "Idee"; die "Wahlverwandtschaft" ist ihre höchste Entfaltung. Symbolisch steht diese auch für den ganzen Komplex. Einmal äußert sich die "Idee" im Menschen, einmal in der Chemie. So liefert die "Idee" das "Modell" oder "Urbild" der Beziehungen und Verhältnisse im Roman.' (Eine fast magische Anziehungskraft', p. 140.) John Milfull sees the 'Idee' in Die Wahlverwandtschaften as an expression of Goethe's scientific theories and in particular his alchemical studies ('The "Idea" of Goethe's Wahlverwandtschaften', OR, 47 (1972), pp. 83-85). For Bernard Buschendorf, the 'Idee' lies in the text's 'materiale Tiefenschicht', in its interweaving of literary and art historical allusion with hermetic knowledge (Goethes mythische Denkform, pp. 62-64). For Friedrich Nemec, the 'Idee' of elective affinity is embodied in the cohesive structure of the text (Die Ökonomie der 'Wahlverwandtschaften', Münchener Germanistische Beiträge, 10 (Munich: Fink, 1973), pp. 11-14).
Partnern zustandekommen, die einander geistig und seelisch nicht ‘verwandt’ sind. Sie kann auf einem Irrtum beruhen. Im Gegensatz zu den chemischen Stoffen kann der Mensch sich täuschen, sich eine seelische Verwandtschaft einbilden. Eine eheliche Verbindung kann dadurch gestört werden, daß ein Teil oder beide Teile Menschen kennenlernen, die ihnen näher verwandt zu sein scheinen, zu denen sie eine engere Affinität haben. (‘Goethes Kritik naturwissenschaftlicher Metaphorik’, p. 306.)

This argument is significant in that it applies the scientific term ‘Wahlverwandtschaft’ to the area of human relations as opposed to chemistry. The human subject is characterized by the conscious and unconscious creation of images of the world and the subjective transformation of reality, in contrast to the inanimate chemical element.

Men and women can *deceive* themselves, whereas chemical elements can only follow physical laws: *Wahl-Verwandtschaft*. Loisa Nygaard’s excellent essay ‘“Bild” and

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30 For Pörksen, ‘Wahlverwandtschaft’ forms the perfect symbol for Goethe’s intention ‘soziale Verhältnisse und die Konflikte derselben symbolisch gefaßt darzustellen’ (note of a conversation with Goethe in Friedrich Wilhelm Riemer’s diary, Karlsbad, 28 August 1808, MA IX, 1215), and reveals ‘am Beispiel einer typischen Konstellation menschlicher Beziehungen die Unterschiedenheit der äußersten Pole der Natur, an denen der Mensch Anteil hat, und ihre Einheit synchron zu erfassen’ (Pörksen, pp. 306-07; on the theme of Polarität, see above, note 16). Milfull also sees in the term ‘Wahlverwandtschaft’ an allusion to marriage. Indeed the example of elective affinity cited in Part I, Chapter 4, is seen by Milfull as ‘a symbol of the inviolability of marriage’, whereby the ‘Gips’ represents the relationship of Eduard and Charlotte (Milfull, p. 88). Eduard and Charlotte represent the attraction of opposites (Milfull, pp. 90-91) and the attraction between Eduard and Ottilie (and likewise between Charlotte and the Captain) is a superior attraction between ‘complementary pairs’ (Milfull, p. 94). However, Milfull places too much emphasis on the indissoluble nature of marriage, on its function as a natural law in the lives of the characters, in his interpretation (p. 94). Norbert Puszkar makes a more valuable attempt to examine ‘Wahlverwandtschaft’ as a symbol of the marital relations in Goethe’s text. However, he wrongly assumes that Goethe was the first to exploit the metaphorical ambiguity of the term (see above, note 27) and thus deduces that Goethe’s stated intent to trace a chemical metaphor back to its ‘geistige Ursprüne’ (MA IX, 285) can only apply to ‘Verwandtschaft’ (Puszkar, ‘Verwandtschaft und Wahlverwandtschaft’, GY, 4 (1988), p. 162). In examining the relationships between the characters, Puszkar concludes that these are not the bonds present in any conventional ‘bürgerlichen Familienmodell’: ‘In dem Kreis der Hauptpersonen werden die wahlverwandtschaftlichen Anziehungen wirksam, weil eine geschlossene und eindeutige Familien- und Verwandtschaftsstruktur nicht mehr besteht, was z. B. darin zum Ausdruck kommt, daß Eduard und Charlotte in zweiter Ehe verheiratet sind, Ottilie Waise ist und der Knabe Otto nicht seinen biologischen Eltern ähnelt.’ (p. 172) It is a true ‘wahlverwandtschaftliche Familie’ and Puszkar sees in this the acknowledgement that ‘Wahl, Wille und Sittlichkeit keine Kriterien bzw. Garanten der Vernunftfreiheit sind’, and that the balance of ‘Notwendigkeit und Willkür’ normally present in relationships has been destroyed (pp. 178-79). Characters are caught in the paradox of believing themselves capable of choosing their relationships and yet seeing themselves as part of the inherent lawfulness of nature. ‘Wahlverwandtschaft’ is thus a symbol of the tension between concepts of nature and moral autonomy.
“Sinnbild”: The Problem of the Symbol in Goethe’s *Wahlverwandtschaften*, explores this approach:

In analyzing the symbolic implications of various phenomena, we are not necessarily gaining insight into the larger meaning of the novel or discovering ‘what Goethe was really trying to say,’ but are often merely retracing a chain of associations that the characters have already forged. We should be wary of regarding the symbols as magically powerful signs that overcome the basic dichotomies of human existence or as mystical revelations of the ineffable. The symbols often reflect more upon the individuals who produce them than upon the broader philosophical significance of the text.\(^1\)

Alternatively, it is possible to see Goethe’s novel, as does Waltraud Wiethölter, ‘als chemisch-alchemistisches Experiment’, as a ‘Palimpsest’ whose ‘Mythos’ is beyond the tools of rational analysis: ‘diese Alchemie aus Wissenschaft und Poesie, aus algebraischem Kalkül und Wortmagie, die den Roman — und das eben auf durchaus selbstkritische Weise — zum alchemistischen Werk, dem Opus alchymicum, macht und infolgedessen eine nachträgliche Aufklärung, die besserwisserische, “Rang” und

\(^{31}\) *GR*, 63 (1988), p. 59. Nygaard’s approach is interesting in that she attacks both Romantic interpretations, which suggest Goethe used ‘the symbol as a means of transcending the limits of ordinary language, expressing the mysterious and ineffable, and reflecting the essential oneness and unity of all being’ (p. 58), as well as the poststructuralist and deconstructivist approaches, which by making signs and language the focal point of criticism, are concentrating on the very reductionist symbols which are criticized by the text (pp. 58, 73, and 76, note 51). The import of her argument is to deny any physicochemical force of attraction between the characters, but to highlight instead the perceptual mechanisms which lead to the creation of subjective sign systems. Psychology rather than physiology is foregrounded: ‘Critics usually regard the love between Eduard and Ottalie as “eine Naturgewalt”, as an “echte und große Leidenschaft”, a true instance of “Wahlverwandtschaft”, and like to oppose it to all that is forced and artificial in his relationship to Charlotte. But one does not need a mysterious notion of “Wahlverwandtschaft” to explain what draws a middle-aged man to a beautiful young girl.’ (p. 60. Nygaard is here referring to the following sources: Hans Reiss, *Goethes Romane* (Berne: Francke, 1963), p. 165, H. A. Korff, *Geist der Goethezeit*, II: *Klassik*, 6th edn (Leipzig: Koehler und Amelang, 1962), p. 359, William J. Lillyman, ‘Analogies for Love: Goethe’s *Die Wahlverwandtschaften* and Plato’s *Symposium*’, in *Goethe’s Narrative Fiction: The Irvine Goethe Symposium*, ed. by W. J. Lillyman (Berlin: de Gruyter, 1983), p. 134.) According to Martin Swales, the narrative poses the question as to ‘whether consciousness is a reliable arbiter, whether it is not perhaps also subject to the natural laws of repulsion and attraction, indeed a function of them’ (‘Consciousness and Sexuality: Reflections on *Die Wahlverwandtschaften*’, *PEGS*, 50 (1979-80), p. 96). Swales rightly emphasizes the thematic importance of language in cognition: ‘*Die Wahlverwandtschaften* is a text which explores the complex sense in which man’s behaviour is inseparable from the processes of consciousness, of seeking, creating, perceiving images and patterns: man’s consciousness, like his language is an inherently metaphorical agency.’ (p. 104)
"Preis" aufrechnende Kritik der Interpreten so absurd erscheinen läßt.' (‘Legenden’, pp. 36-37.)

Common both to those critics who concentrate on the role of the creative human consciousness as a source of symbols, and to those who emphasize the (pre-)scientific and mythological elements in the text, is the theme of metaphorical language and the perception of its role in framing our knowledge of the world.

The theme of the metaphoricity of knowledge is highlighted in Part 1, Chapter 4. A metaphor becomes the cause of the first significant misunderstanding in the text: ‘Ich hörte von Verwandtschaften lesen, und da dacht ich eben gleich an meine Verwandten, an ein paar Vettern, die mir gerade in diesem Augenblick zu schaffen machen.’

Eduard has been reading aloud from a work which deals with the theory of chemical affinity. At one time, the reader is informed, Eduard preferred to read from books of a more literary nature: ‘Nun waren es andre Gegenstände, die ihn beschäftigten, andre Schriften, woraus er vorlas, und eben seit einiger Zeit vorzüglich Werke physischen, chemischen und technischen Inhalts.’

Thadden rightly praises Wiethölter’s ‘nicht überholter Entdeckung einer Mythologie der Erkenntnis in den sich überlagerten Sinnzusammenhängen einer antiken, einer christlichen und einer alchemistischen Bild- und Motivsicht’ in Die Wahlverwandtschaften (p. 30).

At the beginning of the nineteenth century, chemistry was a fashionable topic of conversation: ‘Nicht weniger als die tableaux vivantes oder die Gärtnerei ist die Chemie im Roman ein typisches Zeitmoment.’ (Adler, ‘Eine fast magische Anziehungskraft’, p. 84.) The form of the chemical discussion belongs to a long tradition, of which Jane Marcet’s Conversations on Chemistry, Intended more especially for the Female Sex, 2 vols (London: [n. pub.], 1806) is an example. By 1853 this text was in its 16th edition and had sold 160,000 copies in America alone (Chapple, Science and Literature, p. 6).

Dorothea Kuhn has described how the public demonstrations of chemistry by Alexander Nikolaus Scherer in Weimar at this time were attended by all polite society, including the Duke Carl August (‘Goethe und die Chemie’, in Typus und Metamorphose, pp. 110-11; Kuhn cites the contemporary account of Joseph Rückert, Bemerkungen über Weimar 1799, ed. by Eberhard Haufe (Weimar: [n. pub.], 1969)). Eduard has traditionally been seen as the embodiment of dilettantism: ‘Rich and attractive, spoilt in youth and in adult years childish and self-indulgent, basically without character, projecting his desires outside himself in the shape of the general good, Eduard throughout the work reacts rather than acts. In Viëtor’s words, “Eduard ist aus dem Geschlecht der romantischen Problematiker, ein Dilettant des Lebens.”’ (F. J. Stopp, ‘Ein wahrer Narziss’: Reflections on the Eduard-Ottilie Relationship in Goethe’s Wahlverwandtschaften, PEGS, 29 (1959-60), p. 56, citing Karl Viëtor, Goethe: Dichtung-Wissenschaft-Weltbild (Bern: Francke, 1949), p. 210.) Stopp sees Eduard as narcissistic and an aesthete, drawing an original comparison between his character and that of the
has clearly not been listening to her husband's reading, is confused by the ambiguous and inherently anthropomorphic word 'Verwandtschaft'.\(^{35}\) 'Es ist eine Gleichnisrede, die dich verführt und verwirrt hat', replies Eduard, who without realizing it has uttered a profoundly ironic judgement on his own behaviour in the subsequent course of events. Eduard adds: 'der Mensch ist ein wahrer Narziß; er bespiegelt sich überall gern selbst, er legt sich als Folie der ganzen Welt unter' (Wv 270). The Captain is quick to agree with Eduard on humanity's anthropomorphic tendencies: 'seine Weisheit wie seine Torheit, seinen Willen wie seine Willkürr leiht er den Tieren, den Pflanzen, den Elementen und den Götern' (Wv 270).\(^{36}\) In the discussion of chemistry,

\(^{35}\) 'Kaufmannsohn' in Hofmannsthal's \textit{Märchen der 672. Nacht} (p. 64, note). In his readiness to switch between literature and science, to mix metaphors between the realms of human behaviour and inanimate matter, one can see, as I shall show, not only an example of dilettantism but also of the increasing importance of fashion in fields such as chemistry, which is itself a reflection of the rapidly changing nature of science at this time. See also Theo Elm, for whom not only Eduard, but Charlotte, the Captain, the architect and Mittler are all dilettantes (p. 38).


It is ironic that it is the Captain who, in his subsequent enthusiastic description of the chemical process of elective affinity, says: 'In diesem Fahrenlassen und Ergreifen, in diesem Flichen und Suchen glaubt man wirklich eine höhere Bestimmung zu sehen; man traut solchen Wesen eine Art von Wollen und Wählen zu' (Wv 275). Indeed, it is Charlotte who denies the suitability of anthropomorphic attributes such as 'Wahl' to describe chemical reagents, seeing only 'Naturnotwendigkeit' (Wv 274). For Adler, there is no contradiction here between the Captain's statement on the anthropomorphic tendency in our observations of the natural world; rather the Captain is showing the impossibility of describing the natural world without anthropomorphizing it: 'Hier nimmt der Hauptmann die Einsicht in die Unmöglichkeit der Erkenntnis als Erfahrungsgrundsatz. Selten wird die geradezu absolute Trennung zwischen Objekt und Subjekt so ernst genommen, so kompromißlos gesetzt. In dieser Haltung und in seiner Reaktion auf das Problem kombiniert der Hauptmann eine ungewöhnliche Demut gegenüber dem Phänomen mit äußerster methodologischer Raffinesse, indem er ein Bewußtsein von seiner Anschauungsart in die eigene Hypothese einbezieht.' (Adler, \textit{Ein fast magische Anziehungskraft}, p. 117.) Dorothea Kuhn comments on the interpenetration of 'Dichtung' and 'Naturwissenschaft', of 'Wirklichkeit' and 'Einbildungskraft' in Goethe's work, an exchange which is only possible 'weil die Natur etwas Anthropomorphes hat, und weil der Mensch die ganze Natur verkörpert' ('Über den Grund von Goethes Beschäftigung mit der Natur und ihrer wissenschaftlichen Erkenntnis', in \textit{Typus und Metamorphose}, p. 104 (first publ. in \textit{JDSG}, 15 (1971): 157-73)). Goethe's study of nature is characterized by the 'Leitmotiv' of '[d]ieser Bezug auf den Menschen' (ibid., p. 104).
both the Captain and Eduard are in agreement that concepts, such as
‘Wahlverwandtschaft’, are inadequate to describe chemical processes to someone
unfamiliar with them. The Captain promises to demonstrate actual examples of
affinity once his ‘chemisches Kabinett’ arrives, which he assures Charlotte will give
her ‘einen bessern Begriff [...] als Worte, Namen und Kunstausdrücke.’ (Wv 273)37
But Charlotte challenges him to describe his example of ‘Wahlverwandtschaft’,
which he has suggested reveals that chemical elements display ‘eine Art von Wollen
und Wählen’:


The Captain presents the material world as being endowed with dynamic, vitalistic
force. Gone are the earlier inhibitions regarding the description of the natural world
through anthropomorphisms (see above, note 36). The Captain uses language skilfully
to assert a speculative unity of inanimate and animate realms. However, once the
Captain has described the dissolution and recombination, Eduard continues the

37 The ‘Kabinett’ (see above, note 15) never arrives and, as many commentators have observed, it is
not needed: ‘da die Protagonisten selbst das Kabinett anschaulich ersetzen’ (Thadden, p. 145,
ote 75). As Adler has noted, Eduard and Charlotte refer to their invitation to the Captain and
Ottlie as a ‘Versuch’ (Wv 256; Adler, ‘Eine fast magische Anziehungskraft’, p. 160). For
Thadden, Eduard’s whole estate becomes a ‘Retorte’ in which the ‘Versuch’ occurs (p. 130). See
also Elm, p. 38, Nisbet, ‘Die Wahlverwandtschaften’, p. 464. For Pörksen, the novel itself ‘ist
nach Art eines naturwissenschaftlichen Versuchs aufgebaut’, the events following the chemical
theory alluded to in the title (p. 307).
anthropomorphic trend of the discussion by adopting a formulaic approach to elective affinity and by applying the letters representing the reagents to himself, Charlotte, the Captain, and Ottilie.\textsuperscript{38} For Pörksen, language assumes magical qualities within the novel, the utterance of words and metaphors producing the conditions for an event in the real world. In particular, the discussion of chemistry has the effect ‘Schranken niederzulegen und neue Möglichkeiten ins Spiel zu bringen. Es erweitert den gegebenen Horizont, in den eingebunden man lebt, indem es Grenzen überspringt und bisher unbewusste und daher gefahrlose Möglichkeiten bewusst macht, Hypothetisches und Utopisches ins Spiel bringt. Das einmal Ausgesprochene öffnet einen Raum, der leicht betreten wird.’ (‘Goethes Kritik naturwissenschaftlicher Metaphorik’, p. 312.)\textsuperscript{39} In the discussion of chemistry as elsewhere in Goethe’s text, language and consciousness are shown to exist within a reciprocal relationship, exerting a powerful influence on the way characters perceive the world of experience.\textsuperscript{40} The theme of the confusion of figures of speech, of the use of potentially ambiguous language to denote

\textsuperscript{38} Even in the Captain’s formulaic description of ‘Wahlverwandtschaft’, the possibility of ambiguity is ever present: the use of ‘die beiden Paare’ suggests a human couple as much as it does a chemical compound; ‘sich [...] werfen’ suggests intentionality; and the relative pronoun ‘wer’, in the clause ‘wer das andere zuerst verlassen, [...]’, could refer equally to a person or an inanimate object. The inflected German language also encourages such ambiguity because of the inability to distinguish between a dative masculine or neuter pronoun, as in: ‘Denken Sie sich ein A, das mit einem B innig verbunden ist, durch viele Mittel und durch manche Gewalt nicht von ihm zu trennen’ (Wv 276, my italics).

\textsuperscript{39} Pörksen foregrounds the role of language in the novel: ‘Das Verführerische des Wortes [...] scheint unter die magischen Kräfte zu gehören.’ (p. 313) Pörksen also draws attention to Goethe’s ‘Sprachskesis’, the possibility of a gap between language and reality (p. 298). For Wiethölter, this leads Goethe to an ‘Angriff auf das Dogma der Bedeutung und ihrer absoluten Priorität’ (‘Legenden’, p. 57). The acceptance of ambiguity in language, of the inherently metaphorical nature of any statement about reality, results in the idea that true knowledge is only expressible through ‘eine unendliche Kette von Gleichniserden’, something Wiethölter sees exemplified in Die Wahlverwandtschaften (‘Legenden’, pp. 57-58). See Goethe’s ‘Selbstanzeige’, and above, note 22.

\textsuperscript{40} Martin Swales has commented on the ‘interplay of metaphorical and literal domains’ in Goethe’s work: ‘Neither matter nor mind, neither literalness nor metaphor, is allowed to be the essential arbiter in human experience because of the complex and ceaseless dialogue between the two.’ (“Die neue Sitte” and Metaphors of Secular Existence: Reflections on Goethe’s Iphigenie, MLR, 89 (1994), p. 914; cf. above, note 31.) On the way metaphors act to condition and frame our view of reality, see Max Black, Models and Metaphors, pp. 38-44. See also Chapter 1 of this thesis.
reality, either in scientific systems or in characters’ private sign systems, is one of the central concerns of the text. Here the important theme of the power of language to frame and colour our understanding of the world is raised. As I shall demonstrate, Die Wahlverwandtschaften shows how our descriptions of the world can lead paradoxically both to knowledge and to confusion. Eduard in particular is prone to misinterpreting the signs we use to describe our world. Indeed he falls victim to that tendency of which he accuses Charlotte: behaving like Narcissus and projecting one’s own desires onto reality rather than seeing and correctly interpreting the world.41

Perhaps the most significant example of the way Eduard transforms reality into potent symbols of his own ego is the incident with the glass engraved with the letters E and O ‘in sehr zierlicher Verschlingung’ (Wv 303). This had been given to the ‘Maurer’ to use as part of the ceremony to mark the laying of the foundation stone for the ‘Lustgebäude’:

Und so leerte er ein wohlgeschliffenes Kelchglas auf einen Zug aus und warf es in die Luft; denn es bezeichnet das Übermaß einer Freude, das Gefäß zu zerstören, dessen man sich in der Fröhlichkeit bedient. Aber diesmal ereignete es sich anders: das Glas kam nicht wieder auf den Boden, und zwar ohne Wunder. (Wv 302-03)

41 In Part I, Chapter 16, as Charlotte attempts to discuss their relationship, Eduard is characterized as the one ‘der nichts vernahm, als was seiner Leidenschaft schmeichelte’ (Wv 341). Both Stopp (see above, note 34) and Wiethölter have drawn comparisons between Eduard’s love for Ottilie and Ovid’s story of Narcissus and Echo: ‘Das mit Verlangen betrachtete stumme Ebenbild des Narzisß beginnt, mit vertrauter Stimme zu sprechen, die eigene Rede wird als die eines anderen vernehmbar, ohne dadurch entstellt und verstümmelt zu werden wie im Gedicht des Ovid, während Echo ihrerseits, indem sie Wort für Wort wiederholt und Narzisß die über alles geliebten Züge seines Bildes zeigt, zu der Überzeugung kommen muß, selbst der Gegenstand des Entzückens zu sein. Kein Wort und kein Reflex geht verloren im Kurzschluß dieser Selbstbestätigungen. Spiegel und Echo vereinigen sich zu einer vollkommenen Illusion’ (Wiethölter, ‘Legenden’, p. 9). As Eduard notes, concerning their propensity for headaches on opposite sides of their heads, they form ‘ein Paar artige Gegenbilder’ (Wv 281). Ottilie’s ‘Dienstbeflissenheit’ and her ‘Ergebenheit’ (Wv 283-84), expressed through her moulding of herself to Eduard’s style of flute playing (Wv 297) and her copying of his handwriting (Wv 323), provide the perfect ground for Eduard’s already developed ability to see only what is flattering to his desires.
The glass is caught by someone on the scaffolding, who ‘diesen Zufall als ein glückliches Zeichen für sich ansah’ (Wv 303). In Part I, Chapter 18 this glass reappears in the narrative, used now by Eduard, who has entered voluntary exile, as a sign that he is destined to be Ottilie’s partner:


Eduard sees his future and that of Ottilie as being embodied in some mysterious way in the preservation of the glass and the fact that it is engraved with their initials. That these initials are both his (see Wv 259) and that the glass was supposed to have broken as a symbol of ‘das Übermaß einer Freude’ does nothing to modify his conviction that it is a good omen for his future with Ottilie. The glass becomes a talisman for Eduard, a guarantor of his destiny and a ‘Leitstern’ in the ‘Ungewißheit des Lebens’ (Wv 357). Later, as he tells the Major, Eduard uses himself and his very survival as a sign of the necessity of his union with Ottilie: ‘mich selbst will ich an die Stelle des Glases zum Zeichen machen, ob unsre Verbindung möglich sei oder nicht’ (Wv 447). With this thought in mind he joins the army, living through the threat of death, in order that his destiny with Ottilie will be confirmed. Even when Ottilie

42 Even Mittler can see through Eduard’s superstitious reasoning: ‘auf die warnenden Symptome achtet kein Mensch, auf die schmeichelnden und versprechenden allein ist die Aufmerksamkeit gerichtet und der Glaube für sie ganz allein lebendig’ (Wv 357).

43 Eduard does not see this as trusting to chance, although Charlotte makes the accusation ‘daß du in zweifelhaften Fällen gerne wettest oder würfelst’ (Wv 248), a fact of which she clearly disapproves, despite her later admission that ‘alle solche Unternehmungen sind Wagestücke’ (Wv 256). The person who initially catches the glass views this as a chance occurrence and as ‘ein glückliches Zeichen für sich’ (Wv 303). For Eduard however, this is an event where chance had no role, rather it is like a miracle: ‘es ward aufgefangen’, a phrase he uses to both Mittler and the
is dead, the glass offers him solace: ‘Nur noch einige Erquickung scheint er aus dem
Glase zu schlürfen, das ihm freilich kein wahrhafter Prophet gewesen.’ (Wv 489) The
‘verschlungenen Namenszüge’ suggest an ultimate ‘Vereinigung’. However, the
revelation that the original glass is ‘unlängst zerbrochen’ and has been replaced with
another, is a blow to his faith in a symbol that has come to represent nothing less than
the very meaning of his existence: ‘Eduard kann nicht zürnen, sein Schicksal ist
ausgesprochen durch die Tat; wie soll ihn das Gleichnis rühren? Aber doch drückt es
ihn tief.’ (Wv 489) The full irony of his admonishing words to Charlotte, namely that
she has allowed herself to be ‘verführt und verwirrt’ by ‘eine Gleichnisrede’, now
becomes apparent. It is he who is ‘ein wahrer Narziß’ (Wv 270), as Eduard finally
realizes at the end of his life: ‘was bin ich unglücklich, daß mein ganzes Bestreben
nur immer eine Nachahmung, ein falsches Bemühren bleibt!’ (Wv 489) His whole
approach to life has been typified by a narcissistic projection of his desires on to
reality and a naive trust in the apparent transparency and truthfulness of the arbitrary
signs to which he has attributed significance.44 Throughout the text, Eduard is naively

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44 There are many other examples of Eduard’s misinterpretation of signs. For example the
‘Tintenfleck’ (Wv 257), which, in her haste, Charlotte spills on the invitation to the Captain, is
interpreted by Eduard as a sign of Charlotte’s impatience to see the Captain. Significantly, Eduard
tells this to the Captain in the same letter, an act which could be seen as encouraging intimacy
between the Captain and Charlotte. As well as describing the quiet Ottile as ‘unterhaltend’ (Wv
281), Eduard also misinterprets her behaviour towards him: ‘Gegen jedermann war sie dienstfertig
confident of his ability to interpret the world of appearances, including the realm of chemical affinity about which he speaks so glibly in Part I, Chapter 4. Ultimately however, he recognizes that true understanding is more elusive and knowledge more complex than he originally thought.

If Eduard is guilty of trusting too much in the symbols of his own subjective consciousness, then Ottilie is guilty of placing too much trust in the validity of symbols created by other people. According to Nygaard, ‘Ottilie, with her modesty, her self-effacement, her almost uncanny adaptability, forms the perfect ground’ for the ‘images and projections’ of others: ‘Everyone sees Ottilie in his or her own terms — even the narrator, who persistently sees her as “Kind”, as a naive and innocent being.’ (p. 65) Eduard, Charlotte, the architect, the ‘Gehilfe’, and even Nanny, all provide images which form Ottilie’s sense of self and others’ view of her. Ottilie is

45 According to W. J. Lillyman, Ottilie exerts a ‘fast magische Anziehungskraft’ on the narrator as well as on Eduard: ‘In regard to Ottilie, the narrator waxes sentimental, resorts to hyperbole, implies that he is the only person capable of appreciating her fully, and views her with the eyes of a lover. [...] The narrator too displays an elective affinity in his attitude to Ottilie.’ (‘Affinity, Innocence and Tragedy: The narrator and Ottilie in Goethe’s Die Wahlverwandtschaften’, GQ, 53 (1980), p. 47.)

46 For Nygaard, one of the most interesting aspects of Eduard’s character ‘is the crucial role that the image qua image plays in Eduard’s passion’ (p. 65). This image of Ottilie is intensified through his self-imposed exile, just as ‘his earlier love for Charlotte apparently also threw on distance and separation’ (p. 66). Ottilie too forms an intense image of Eduard on his departure, which she nurtures: ‘As her image of Eduard becomes more complete in itself, it is less reliant on the living and breathing person who gave rise to it. The image or “Bild” becomes detached from the reality, signifier from signified, and as a result, Ottilie’s love can grow into something far more perfect and more admirable than the very fallible and often childish man who inspired it.’ (p. 66) According to Nygaard, Ottilie retreats in the second part of the novel into a ‘world of images and
characterized by her dependence on others, both financially as an orphan, and psychologically in her need for role models, a condition which manifests itself, particularly in Part I, in an inability to speak for herself. The ‘Gehilfe’ states, before Otilie appears in the text in her own right, that ‘ich nur allzuwohl weiß, wie wenig die gute Otilie das zu äußern instande ist, was in ihr liegt’ (Wv 278), and indeed Otilie fails her examinations.47 True to character, Eduard’s description of Otilie after her arrival is a misrepresentation: “Es ist ein angenehmes, unterhaltendes Mädchen.” “Unterhaltend?” versetzte Charlotte mit Lächeln; “sie hat ja den Mund noch nicht aufgetan.” (Wv 281) The ‘Gehilfe’ — correctly or incorrectly — sees his own youth reflected in Otilie’s awkwardness at the ‘Pension’ (Wv 277). He also sees her as a future teacher: ‘sie lernt nicht als eine, die erzogen werden soll, sondern als eine, die erziehen will; nicht als Schülerin, sondern als künftige Lehrerin.’ (Wv 265) Indeed, as we will see, it is a view Otilie will later adopt, although it transpires that this comment is not wholly unbiased, for the ‘Gehilfe’ sees Otilie as a potential wife. One day he hopes to be headmaster at the ‘Pension’, and the current headmistress has

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47 Her handwriting is ‘langsam und steif’ (Wv 265). Otilie is however good at French: ‘Im Französischen übervarierten und übereoxponierten sie manche’ (Wv 278; cf. 282). Her diary in Part II is characteristically full of quotations from unnamed sources, continuing the theme of her dependence on the views of others.
given him reason to hope, providing he fulfils one condition: ‘Die Hauptsache schien hiebei, daß er eine einstimmende Gattin finden müsse.’ (Wv 412)\(^48\)

The architect is similarly enamoured of Ottilie, if with less obvious motives. For him she is not a professional companion but a model for his image of the ideal.\(^49\)

The faces of the angels on the azure ceiling of the side chapel painted by the architect ‘zeigten nach und nach eine ganz besondere Eigenschaft; sie fingen sämtlich an, Ottilien zu gleichen’ (Wv 372). According to the narrator, it is the ‘Nähe des schönen Kindes’ which has made such an impression on the ‘Seele des jungen Mannes, der noch keine natürliche oder künstlerische Physiognomie vorgefaßt hatte’ (Wv 372).

Gradually, as he paints the faces, his idea of the face is perfected until the last ones seem ‘als wenn Ottilie selbst aus den himmlischen Räumen heruntersahe’.\(^50\) Before the architect leaves Charlotte and Ottilie he expresses his gratitude to the two women by organizing a *tableau vivant* of the nativity, in which Ottilie is cast as the Virgin

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\(^48\) Charlotte is aware of the affection of the ‘Gehilfe’ for Ottilie (see Wv 265-66 and 467). Nevertheless, even in Part II, Chapter 10 she still sees a union between the Captain and Ottilie as possible (Wv 427).

\(^49\) Nygaard comments: ‘The image of womanhood that he is moulding her to fit was of course already a cliché in Goethe’s youth. Even the ecstatic Werther had rejected it: “Einen Engel! — Pfui! das sagt jeder von der Seinigen, nicht wahr?”’ (p. 65, citing from HA VI, 19.) Eduard too sees Ottilie as ‘ein himmlisches Wesen’ (Wv 291), and although the narrator is here using a form of ‘erlebte Rede’, the narrator frequently uses this adjective (see Wv 464 and 485). According to Nygaard, the architect is a Nazarene and therefore ‘the only clearly identifiable Romantic in the narrative’ (p. 68).

\(^50\) The process whereby Ottilie’s face becomes that of the angel’s is described as an unconscious one. It is noted by the narrator that ‘[d]urch eine anhaltende Übung gewannen Ottilie und der Architekt bei den letzten Bildern mehr Freiheit’ (Wv 372). A similar process seems to occur in the ‘Abschrift’ Ottilie prepares for Eduard: ‘Die ersten Blätter waren mit der größten Sorgfalt, mit einer zarten weiblichen Hand geschrieben, dann schienen sich die Züge zu verändern, leichter und freier zu werden; aber wie erstaunt war er, als er die letzten Seiten mit den Augen überließ! “Um Gottes willen!” rief er aus, “was ist das? Das ist meine Hand!”’ (Wv 323). The power of the unconscious mind to affect external reality is denoted, something Charlotte tries to suggest to Eduard at the beginning of the text, where she describes her ‘Ahnung’ as being the result of ‘unbewußte Erinnerungen glücklicher und unglücklicher Folgen’ (Wv 248). This possibility of an unconscious influence on characters’ actions stemming from past experiences, provides an important suggestion within the narrative for the process underlying the development of relationships in the text. Again the complexity of the processes of perception and cognition is highlighted. The transparency of reality is denied and the contribution of language, of unconscious influences and — as we shall see — unexplained natural forces is emphasized. See above, note 39.
Mary. This is done ‘zur Ehre der einen und zur Unterhaltung der andern’. His love for Ottilie is clear through his idolization of her: ‘Der junge Mann hatte sie in seinem Sinne zur Mutter Gottes erhoben’ (Wv 403). According to the narrator, the resulting scene is a total success: ‘Ottiliens Gestalt, Gebärde, Miene, Blick übertraf aber alles, was je ein Maler dargestellt hat.’ (Wv 404) Ottilie expresses ‘die reinste Demut, das liebenswürdigste Gefühl von Bescheidenheit bei einer großen, unverdient erhaltenen Ehre, einem unbegreiflich unermesslichen Glück bildete sich in ihren Zügen’ (Wv 404). The rapture of the Virgin and Christ-child in this traditional setting provides a stark and moving contrast to Ottilie’s despair at the drowning of the baby, Otto. When this occurs, Ottilie is alone in a boat in the gathering darkness ‘auf dem treulosen, unzugänglichen Elemente’:

Knieend sinkt sie in dem Kahne nieder und hebt das erstarrte Kind mit beiden Armen über ihre unschuldige Brust, die an Weiße und leider auch an Kälte dem Marmor gleicht. Mit feuchtem Blick sieht sie empor und ruft Hülfe von daher, wo ein zartes Herz die größte Fülle zu finden hofft, wenn es überall mangelt. (Wv 457-58)

The ideal image of Ottilie which the architect creates is shown to be a cruel deception. The irony of the ‘unverdient erhaltenen Ehre’ of the Virgin comes to typify for Ottilie her hybris in imagining that she could ever attain the independence and happiness for

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51 Ottilie does not however reciprocate his love: ‘Ihre Empfindungen für ihn blieben auf der ruhigen, leidenschaftlosen Oberfläche der Blutsverwandtschaft; denn in ihrem Herzen war kein Raum mehr; es war von der Liebe zu Eduard ganz gedrängt ausgefüllt’ (Wv 390). This passage is an allusion to Charlotte’s comment on the difference between acids and alkalis in the chemical discussion: ‘wenn Sie diese Ihre wunderlichen Wesen verwandt nennen, so kommen sie mir nicht sowohl als Blutsverwandte, vielmehr als Geistes- und Seelenverwandte vor. Auf eben diese Weise können unter Menschen wahrhaft bedeutende Freundschaften entstehen; denn entgegengesetzte Eigenschaften machen eine innigere Vereinigung möglich.’ (Wv 273) By implication, Ottilie has a similar character to that of the ‘Romantic’ architect; too similar, according to the narrator, to form a passionate attachment, for which Eduard’s dissimilar character is ideal (see Milfull’s views, cited above, note 30). Clearly the theme of Polarität as a principle underlying the unity of nature (of which humankind is a part) is raised here by the text. As I shall suggest, Eduard and Ottilie do indeed embody opposing, polar principles: ‘ein Paar artige Gegenbilder’ (Wv 281). See also above, notes 16 and 41.
which she longs. Otilie perceives this as a transgression of the conditions of her existence formulated after realizing that her ‘Schicksal’ was to remain ‘als eine arme Waise in der Welt’, condemned to an ‘abhängige Lage’ (Wv 462), and forever dependent on the good-will of Charlotte.\textsuperscript{52} In daring to believe in the love of Eduard and in the hope of a future in which she was no longer condemned to be a dependent orphan, she feels she has transgressed the unwritten laws of her existence: ‘ich bin aus meiner Bahn geschritten, ich habe meine Gesetze gebrochen, ich habe sogar das Gefühl derselben verloren’ (Wv 462; cf. 476-77). As Nygaard points out (p. 68), following the death of the child and the realization that her dream of happiness with Eduard is an illusion, Otilie attempts first to follow the image of herself as a teacher, which the ‘Gehilfe’ has created (Wv 466). Once Eduard foils this plan, she submits herself to ‘ein strenges Ordensgelübde’ consisting of silence and fasting (Wv 477), a religious asceticism suggestive of the architect’s image of her as an ethereal and saintly figure.\textsuperscript{53} Otilie is never allowed by circumstances, or by the other characters,

\textsuperscript{52} After having overheard the Major and Charlotte discussing her predicament, Otilie is reminded of a previous time, ‘kurz nach meiner Mutter Tode’ (Wv 462), when she had overheard Charlotte discussing her situation. From this discussion she had defined her role in life: ‘Ich faßte alles wohl und genau, vielleicht zu streng, was du für mich zu wünschen, was du von mir zu fordern schienst.’ (Wv 462) Awakening from her ‘Totenschlaf’, a word Otilie takes from Charlotte’s description of her (Wv 460 and 463), she again uses Charlotte’s analysis of her situation as the basis for her ‘neue Bahn’ (Wv 463). However, this time, instead of conforming to Charlotte’s desires, which are couched in the language of fatalism (‘Es sind gewisse Dinge, die sich das Schicksal hartnäckig vornimmt’ (Wv 460)), Otilie sees herself as the cause of the ‘Verbrechen’ for which she must ‘büssen’ (Wv 463). Thus Otilie seeks to avert through an act of will what Charlotte has accepted as inevitable. On Charlotte’s paradoxical espousal of free will, see above, note 43.

\textsuperscript{53} Eduard too sees Otilie as ‘ein himmlisches Wesen’ (Wv 291 and 354; see above, note 49) and, as Nisbet has shown, Otilie is increasingly described in religious terms towards the end of the text (‘Die Wahlverwandtschaften: Explanation and its Limits’, p. 478). For Nisbet this is a further symptom of the text’s ambiguity: ‘himmlisch’ is used in its erotic sense, and all that can be said is that Otilie ‘is invested with many heterogeneous religious associations’ (pp. 478-79). For Lillyman ‘Otilie’s sainthood is purely her own creation’ (‘Affinity, Innocence and Tragedy’, p. 55) and not a view shared by the narrator (p. 58). For Stopp, Otilie can be seen as either an ‘hysterical subject’ or as ‘divinely enlightened’ (‘Ein wahrer Narzissen’, p. 71). See also R. Peacock, who denies that Otilie’s sanctity is any more than ‘a figure of speech’ (‘The Ethics of Goethe’s Die Wahlverwandtschaften’, MLR, 71 (1976), p. 380). On Otilie’s origins in the patron saint of the blind, Saint Odilie, see Wiethölder, pp. 21-22.
to develop fully her own character.\textsuperscript{54} Even in death she becomes an icon, a symbol for others of what they want to believe, a mirror reflecting the viewer's desires, never an independent, creative human being.\textsuperscript{55} In contrast to Eduard, who projects his preconceptions onto the world, Ottilie is characterized by her willingness to accommodate the interpretations of others. Eduard and Ottilie thus embody contrasting yet complementary responses to the world, a motif which, as I shall demonstrate, is fundamental to the text as a whole. \textit{Die Wahlverwandtschaften} clearly foregrounds the theme of the destructive consequences of \textit{Nachahmung}, of imitating symbols (and by implication \textit{Gleichnisse}; see above) which are detached from reality, as well as the concomitant failure to respect the primacy of the experiential world. The processes of perception, cognition and of consciousness are problematized, underlining Charlotte's warning to Eduard: 'Das BewuBtsein, mein Liebster, [...] ist keine hinlängliche Waffe, ja manchmal eine gefährliche für den, der sie führt' (Wv 248).

Goethe's text raises important questions regarding our understanding of the world and the modes of representation we employ to denote our experience of reality.

\textsuperscript{54} The 'Gehilfe' is the only one who implicitly criticizes this process. He does not approve of the architect's attempts to represent Ottilie either in the decorations in the chapel or in the \textit{tableau vivant}: 'Das Höchste, das Vorzüglichste am Menschen ist gestaltlos, und man soll sich hüten, es anders als in edler Tat zu gestalten.' (Wv 407) Yet after the visit of the 'Gehilfe' in Part II, he disappears from the text and following Ottilie's death it is the architect who returns to pay his last respects. Her lifeless form is laid out beneath a 'Glasdeckel' in the chapel that they both decorated. He has little difficulty visualizing 'seine schöne Freundin [...] in einer höhern Region lebend und wirkend' (Wv 489), an ironic formulation, as above them are the angels with Ottilie's face, which he himself painted. Again the interplay of consciousness and materiality is suggested.

\textsuperscript{55} Wiethölder draws a comparison between Ottilie's final resting place and the architect's casing of her in the \textit{tableau vivant}: 'Wird Ottilie dadurch buchstäblich zum lebenden Bild, zum Bilde, das die anderen sich von ihr machen, erscheint sie nach ihrem Tode, regelrecht unter Glas verschlossen und abgeschirmt gegen Verfall und Zerstörung, endgültig "im Bilde"' ('Legenden', p. 26). In death she becomes the ultimate subject for the projections of other characters. As Nygaard says, 'it is uncannily appropriate that the last time we see her is in a glass-covered coffin, miraculously free from all signs of decay, for all the world like a picture within a frame, the last and eeriest of the \textit{tableaux vivants}, or, as Tanner more aptly puts it, a \textit{tableau mort}.' (Nygaard, p. 68, citing Tony Tanner, \textit{Adultery in the Novel: Contract and Transgression} (Baltimore: Johns Hopkins University Press, 1979), p. 221.)
If, as the narrative suggests, language and metaphor frame and colour our perception of reality, is all knowledge of nature reducible to signs and symbols, or can these representations interfere with understanding? The text contrasts the different approaches of the Captain and Charlotte to the problem of knowing and thus representing nature. In answering this question, the narrator presents the Captain as a ‘Spezialisten für Präzisionsarbeit’, a man of varied skills and talents who enjoys exercising his abilities: ‘Das Vielfache, was er an sich ausgebildet hat, zu anderer Nutzen täglich und stündlich zu gebrauchen, ist ganz allein sein Vergnügen, ja seine Leidenschaft.’ (Wv 244) In convincing Charlotte of the usefulness of the Captain, Eduard states that ‘ich hätte längst eine Ausmessung des Gutes und der Gegend gewünscht; er wird sie besorgen und leiten’ (Wv 245). And indeed, after Eduard has shown him the grounds of his ‘Schloß’, the Captain suggests: ‘Das erste, was wir tun sollten, [...] wäre, daß ich die Gegend mit der Magnetnadel aufnehme’ (Wv 260). The plans which he produces are the first Eduard has seen of his family estate: ‘Schnell war auch alles laviert und illuminiert, und Eduard sah seine Besitzungen auf das deutlichste aus dem Papier wie eine neue Schöpfung hervorgewachsen. Er glaubte sie jetzt erst kennenzulernen, sie schienen ihm jetzt erst recht zu gehören’ (Wv 261). The translation of his estate into a two dimensional representation allows Eduard to look at his lands in a new way. The abstraction seems more real to him than his direct observation.
experience and personal knowledge of the landscape. In the Captain’s map, nature has been analysed and schematized, re-presented in a diagrammatic form. A reductionist representation now guides Eduard’s understanding of his estate. Once again Eduard demonstrates his trust in the truth of signs and averts his gaze from the experience of the ‘plenitude’ of nature. Yet there are, of course, advantages to the maps of the estate. The narrator comments: ‘Es gab Gelegenheit, über die Gegend, über Anlagen zu sprechen, die man nach einer solchen Übersicht viel besser zustande bringe, als wenn man nur einzeln, nach zufälligen Eindriicken, an der Natur herumversuche.’ (Wv 261) The maps reveal the shortcomings of Charlotte’s approach to landscape design:

\[\text{infatuation for Ottilie is perhaps understandable. Charlotte’s lapse in memory is less easily explained.}\]

58 For Lovejoy, Aristotle originated the idea that nature is a continuum: ‘[Nature] passes so gradually from the inanimate to the animate that their continuity renders the boundary between them indistinguishable’ (The Great Chain of Being, pp. 56-57, citing Aristotle, De animalibus historia, viii, i, 588b). Such a conception of nature is opposed to the classificatory tendency in science: ‘There are not many differences in mental habit more significant than that between the habit of thinking in discrete, well-defined class-concepts and that of thinking in terms of continuity, of infinitely delicate shadings-off of everything into something else, of the overlapping of essences, so that the whole notion of species comes to seem an artifice of thought not truly applicable to the fluency, the, so to say, universal overlappingness of the real world.’ (p. 57) However, Goethe was impressed by the classificatory approach of Carl Linnaeus (1707-78) and stated that along with Spinoza and Shakespeare, Linnaeus had the greatest influence on his own intellectual development (Dorothea Kuhn, ‘Goethe’s Relationship to the Theories of Development of his Time’, in Amrine, Goethe and the Sciences (1989), p. 4). Goethe did not wholly agree with the binomial classificatory system Linnaeus created, seeing it as an over-simplification of the diversity, yet ultimate unity of nature (H. B. Nisbet, Goethe and the Scientific Tradition (London: IGS, 1972), p. 49). See also Elm, p. 17, Manfred Kleinschnieder, Goethes Naturstudien: Wissenschaftstheoretische und -geschichtliche Untersuchungen, Abhandlungen zur Philosophie, Psychologie und Pädagogik, 75 (Bonn: Bouvier, 1971), p. 14, and Pörksen, pp. 287-88. See above, note 19.

59 The role of the narrator has been the subject of much comment. According to Eric A. Blackall, ‘the narrator is much more of a presence in this novel than in Goethe’s other novels’ (Goethe and the Novel (Ithaca: Cornell University Press, 1976), p. 172). As with other aspects of the text, ambiguity remains an essential aspect of our understanding of the narrator; we cannot even say with certainty that the narrator is male (Nisbet, ‘Die Wahlverwandtschaften: Explanation and its Limits’, p. 459, note 3). Some writers see the narrator as ‘an elderly gentleman maintaining an attitude of distance and irony to what he relates’ (Lillyman, p. 46; referring to the attitude of writers such as Ludwig W. Kahn, ‘Erlebte Rede in Goethes Die Wahlverwandtschaften’, PMLA, 89 (1974): 268-77, and Roy Pascal, The Dual Voice (Manchester: Manchester University Press, 1977), pp. 37-45), whilst others see the narrator as expressing sympathy and even love for Ottilie (Lillyman, pp. 46-47). However, as Swales observes, the role of the narrator is extremely subtle, sometimes commenting on the actions of characters, sometimes allowing events and characters to
Es ist ihr wie allen denen, die sich nur aus Liebhaberei mit solchen Dingen beschäftigen, mehr daran gelegen, daß sie etwas tue, als daß etwas getan werde. Man tastet an der Natur, man hat Vorliebe für dieses oder jenes Plätzchen; man wagt nicht, dieses oder jenes Hindernis wegzuräumen, man ist nicht kühn genug, etwas aufzuopfern [...]. (Wv 261)

According to the Captain, Charlotte’s approach results in ‘ein Stückwerk’. Her path to the ‘Mooshütte’ lacks the precision and clarity of execution which the Captain likes, and which typifies his character: ‘sie hat sich mühsam durch das Gestein hinaufgequält und quält nun jeden, wenn du willst, den sie hinaufführt’ (Wv 261). Eduard, as usual, is easily influenced, and, ‘als er seine Gattin zuletzt beschäftigt sah, von der Mooshütte hinauf zur Anhöhe wieder mit Stüfchen und Pfädchen sich emporzuarbeiten’, he communicates his dissatisfaction to his wife (Wv 262). Charlotte is naturally upset by the criticism of ‘ihre kleine Schöpfung’ (Wv 262), but nevertheless agrees with the Captain’s criticisms. Thus the Captain’s idea of the landscape, which is formed after a few days of experience and is largely premised on the information provided by his survey and map, is one which is presented as offering a much more appropriate land-use. Yet Charlotte’s use of the land is based on personal experience of the landscape, and her work, typified by the ‘Mooshütte’, is guided by her own sense of ‘Zusammenhang’, a sense of the cohesive relationship between landscape, ‘Schloß’, and family.\(^60\) Such concerns are of course irrelevant to the analytical and geometric representations of the Captain.

\(^{60}\) In their initial discussion of whether to invite the Captain to stay with them, Charlotte establishes an important binary opposition between the approach to life of men, and that of women: ‘Die Männer denken mehr auf das Einzelne, auf das Gegenwärtige, und das mit Recht, weil sie zu tun, zuiren berufen sind, die Weber hingegen mehr auf das, was im Leben zusammenhängt, und das mit gleichem Rechte, weil ihr Schicksal, das Schicksal ihrer Familien an diesen Zusammenhang geknüpft ist und auch gerade dieses Zusammenhängende von ihnen gefordert wird.’ (Wv 245.) As I shall show, the motif of *Zusammenhang* is a key one, both in the text and in Goethe’s concept of the ultimate unity of the natural world.
The contrast between Charlotte’s style of garden design and the grand schemes embarked upon by Eduard and the Captain reflects the central issue of the representation of nature. Initially, Charlotte’s work in the ‘neue Anlagen’ is viewed as being an improvement. The gardener, who through his memory of the previous generation (namely Eduard’s father) symbolizes continuity and cohesion, offers a vivid description and appreciation of Charlotte’s work:

Die Mooshütte wird heute fertig, die sie an der Felswand, dem Schlosse gegenüber, gebaut hat. Alles ist recht schön geworden und muß Euer Gnaden gefallen. Man hat einen vortrefflichen Anblick: unten das Dorf, ein wenig rechter Hand die Kirche, über deren Turmspitze man fast hinwegsieht, gegenüber das Schloß und die Gärten. [...] Dann [...] öffnet sich rechts das Tal, und man sieht über die reichen Baumwiesen in eine heitere Ferne. Der Stieg die Felsen hinauf ist gar hübsch angelegt. Die gnädige Frau versteht es; man arbeitet unter ihr mit Vergnügen. (Wv 242)\footnote{The gardener is critical both of new trends in horticulture as well as the new plans for the estate embarked upon by Eduard and the Captain. Although Ottilie praises the progress of the new ‘Pfropfreiser’, the gardener takes the opportunity to criticize the new varieties: ‘Die jetzigen Herren Obstgärtnern sind nicht so zuverlässig, als sonst die Kartäuser waren. [...] Man pforpt und erzieht und endlich, wenn sie Früchte tragen, so ist es nicht der Mühe wert, daß solche Bäume im Garten stehen.’ (Wv 350) Although the gardener’s loyalty is unquestionable, this is an implied criticism of Eduard’s preference for the new varieties. In Part II, Chapter 9, after Ottilie has had to placate the gardener concerning ‘die zerstörte Symmetrie’ of his garden in the wake of ‘Lucianens Wildheit’ (Wv 423), the narrator again notes the gardener’s ‘Scheu’ ‘vor dem unendlichen Felde der Botanik, das sich nach der Zeit auftat, und den darin herumsummenden fremden Namen’ (Wv 424). This time there is clear criticism of the landscaping of the estate: ‘Was die Herrschaft voriges Jahr zu verschreiben angefangen, hielt er um so mehr für unnützen Aufwand und Verschwendung’ (Wv 424). The gardener is clearly to be seen as a conservative presence, approving of Charlotte’s landscaping which makes the ‘Schloß’ the focal point and thus looks back to the traditions of living established by Eduard’s father. Furthermore, Ottilie, who expressly enjoys the gardener’s company, is seen as closely aligned with his approach to life, in contrast to Luciane, who is presented as a destructive force within the estate.}

The gardener appreciates Charlotte’s attempt to create a landscape that expresses her sense of \textit{Zusammenhang}. In a little over twenty pages this attitude is challenged by Eduard, who is now under the influence of the Captain and his ‘topographische Karte’, whose truthfulness is guaranteed by ‘trigonometrische Messungen’ (Wv 266). The ‘Mooshütte’ and its picturesque views of ‘Schloß’, village, church and valley,
communicates Charlotte’s sense of the Zusammenhang that exists between Eduard, the history of his family, his role as ‘einen reichen Baron im besten Mannesalter’, and indeed her own position within this nexus as wife, lady of the house and future mother of his heirs.\textsuperscript{62} It is therefore highly ironic that it is not until Eduard has the Captain’s map in his hands that he feels truly able to survey his family estate, for Charlotte’s ‘Mooshütte’ is designed for just this purpose:

An der Türe empfing Charlotte ihren Gemahl und ließ ihn dergestalt niedersitzen, daß er durch Tür und Fenster die verschiedenen Bilder, welche die Landschaft gleichsam im Rahmen zeigten, auf einen Blick übersehen konnte. Er freute sich daran in Hoffnung, daß der Frühling bald alles noch reichlicher beleben würde. ‘Nur eines habe ich zu erinnern,’ setzte er hinzu, ‘die Hütte scheint mir etwas zu eng.’ (Wv 243)

Clearly, Charlotte’s work is not appreciated by Eduard, whose mind is on other matters at this time.\textsuperscript{63} The ‘Mooshütte’ provides a static point of reference amidst the many changes that occur affecting both landscape and characters, its relation to house

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\textsuperscript{62} Given Charlotte’s interest in preserving and propagating the Zusammenhang of family history and the structures of family life, it is not surprising that she should misunderstand the chemical metaphor ‘Verwandtschaft’. Norbert Puszkar’s article, ‘Verwandtschaft und Wahlverwandtschaft’, focuses on ‘der Anteil der Verwandtschaft als biologisch-sozialer Struktur am Drama der wahlverwandtschaftlichen Reaktionen’, an approach he sees as being original (p. 171). According to Puszkar, ‘Verwandtschaft und Familie’ constitute not only a structural device but also one of the central thematic strands in the narrative: ‘Familie und Verwandtschaft stellen sich auch als Symbole oder symbolische Ordnungen dar, in denen sich die Menschen ihre sozialen Verhältnisse vorstellen. Als Symbole ist ihnen jedoch auch ein arbiträrer Charakter eigen, der einen ideologischen Aspekt hat. Der Begriff der Familie und der Verwandtschaft, der von den Schloßbewohnern — besonders von Charlotte — vertreten wird, negiert den Aspekt des Sozialen und setzt Familie als Natur. Bemerkenswert ist hieran, daß dies willkürliche und destruktive Eingriffe in die sozialen Verhältnisse nach sich zieht.’ (p. 166) See above, note 30.

\textsuperscript{63} In contrast, when he sees the newly laid out graveyard, for which Charlotte is also responsible, Eduard is immediately impressed: he is ‘verwundert’ and ‘drückte Charlotten die Hand, und im Auge stand ihm eine Träne’ (Wv 254). Nygaard comments: ‘In relocating the tombstones, Charlotte deliberately breaks the totality of the sign, separates signifier from signified, because neither she nor Eduard wants to deal with what the graveyard actually means; they want the permanence of the monument without any reminder of the decayed or decaying body beneath the ground.’ (p. 64.) Charlotte’s view of nature tends towards a denial of change, of which death is the ultimate expression. By bringing a picturesque order to the graveyard she seeks to resist change. See also Nemec, pp. 26-27. Compare Charlotte’s attempt to resist change with Ottilie’s description of the ideal relationship, which has no need of communication; above, note 46.
and gardens epitomizing both the cohesion which Charlotte posits as her ideal of aristocratic family life, as well as the stable relationship which exists prior to the arrival of the Captain and Ottilie. Yet the cohesive vision of Charlotte is replaced by the reductionist approach of the Captain, whose plans, although lacking Charlotte’s sense of Zusammenhang, are at least efficient and practical. However, the text raises questions regarding the validity of a reductionist judgement about something as fundamentally human-centred as Charlotte’s plans for the garden: is it true to say that one understands a landscape better through a two dimensional diagrammatic representation rather than through the mediation of one’s senses? Of course it would be untrue to suggest that the Captain and Eduard rely wholly on the map.

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64 Richard Beitl described the function of the ‘Mooshütte’ as ‘leitmotivisch’ (Goethes Bild der Landschaft: Untersuchungen zur Landschaftsdarstellung in Goethes Kunstdprosa (Berlin: de Gruyter, 1929), p. 60). The ‘Mooshütte’ is indeed the setting for certain key moments, allowing the characters to step out of events and reflect upon their actions. Apart from being the scene of Charlotte and Eduard’s initial discussion concerning the invitation to the Captain, it is also the place where they take the Captain when he arrives (Wv 258). In Part I, Chapter 6, Charlotte betrays her annoyance at the criticisms of her garden design by not inviting the Captain and Eduard to the ‘Mooshütte’ (Wv 287). In the following chapter, after they have visited the mill, ‘mian stieg zur Mooshütte hinunter und saß zum erstenmal darin zu vieren’ and they discuss possibilities for creating pathways through the landscape in which they have just walked (Wv 293). In Part I, Chapter 10, Charlotte rushes to the ‘Mooshütte’ to recover her composure after the ‘Donnerschlag’ of hearing that the Graf intends to offer the Captain employment: Charlotte ‘warf [...] sich in den engen Raum der kleinen Einsiedelei’ (Wv 314). In the second half of the text, the ‘Mooshütte’ does not feature so frequently. In Part II, Chapter 10, Charlotte and Ottilie, together with Otto, walk to the ‘Mooshütte’ on their way to the new house. Charlotte places the baby on the table ‘als auf einen häuslichen Altar’ and, as she sees the two empty seats, ‘gedenkt sie der vorigen Zeiten’ (Wv 427). Christian Caius Laurenz Hirschfeld, in his five volume Theorie der Gartenkunst (Leipzig: Weidmanns Erben und Reich, 1779-85), discusses the use of ‘Einsiedeleien’, or ‘Eremitagen’, as picturesque elements in garden design: ‘Die Einsiedeleien, die man zuweilen in den Garten anlegt, sind [...] Werke der Nachahmung, nicht sowohl zur Bewohnung, als vielmehr zum kurzen Genuß der Ruhe und der Einsamkeit, und zur Verstärkung der Eindrücke bestimmt, die stille und melancholische Reviere machen sollen.’ (Hirschfeld, III, p. 96; cited from Siegmard Gerndt, Idealisierter Natur: Die literarische Kontroverse um den Landschaftsgarten des 18. und frühen 19. Jahrhunderts in Deutschland (Stuttgart: Metzler and Poeschel, 1981), p. 36.) According to Gerndt they were of simple construction: ‘Stein, Lehm, Holz, Stroh oder Moos sollen kunstlos gefügt sein. Im dunklen Innern herrsche Dürftigkeit, Bescheidenheit und Mäßigkeit.’ (Idealisierter Natur, p. 36.) On the ‘Mooshütte’, see also Nemec, pp. 24-26.

65 The walk which the Captain and Eduard take through the village in Part I, Chapter 6 leads directly to their decision to introduce ‘Schweizer Ordnung und Sauberkeit’ to the village, and the walk which all four undertake in Part I, Chapter 7, gives them the idea of creating pathways and building the ‘Lusthaus’. According to Petra Raymond, by the end of the eighteenth century ‘die Fußwanderung’ (often reduced to a mere ‘Spaziergang’) was ‘eine regelrechte Modeerscheinung’
Nevertheless, the influence of the Captain’s map on their plans to develop the estate is clear, as is their reliance on the book of ‘die englischen Parkbeschreibungen mit Kupfern’ (Wv 287). Therefore, through the opposition established between Charlotte’s very personal landscape and the efficient land-use of the Captain, based on the supposedly more truthful information provided by the survey ‘mit der Magnetnadel’, the text thematizes the recurrent debate in the history of science between qualitative and quantitative approaches to the study of nature. As Roger Stephenson has pointed out, Goethe’s aesthetic approach to the world attempted to restore the validity of sense-impressions (which since the seventeenth century had been denigrated as merely secondary qualities) in our understanding of the world and thus to restrict the universal applicability of the paradigms of quantitative science. In this way, Die Wahlverwandtschaften raises questions as to whether the representations of nature which science provides are necessarily more truthful than others.

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(Von der Landschaft im Kopf zur Landschaft aus Sprache: Die Romantisierung der Alpen in den Reiseschilderungen und die Literarisierung des Gebirges in der Erzählprosa der Goethezeit, Studien zur Deutschen Literatur, 123 (Tubingen: Niemeyer, 1993), p. 29; on the origins of this fashion in Rousseau’s Julie ou La Nouvelle Héloïse (1761) and on the popularity of Switzerland, where both Eduard and the Captain have been (Wv 285), see Raymond, pp. 21, 27, and 196). According to Gerndt, the motif of the walks (he counts twenty five references to walks in the text; p. 154) is part of Goethe’s reflexive use of landscape in the text: ‘Damit weist Goethe auf die Verfahrensweise hin, der er selbst im Romanaufbau folgt. Erst Beschreibung der Naturlandschaft mit den Augen der handelnden Personen, dann die bewußten Umgestaltungen im Sinne einer Verschönerung und ästhetischen Nutzbarmachung.’ (Idealisierte Natur, p. 155.)

As Nemec has stated (Die Ökonomie der ‘Wahlverwandtschaften’, p. 30, note 30), this is probably an allusion to Humphry Repton’s Sketches and Hints on Landscape Gardening (1794). On this, see Edward Hyams, Capability Brown and Humphry Repton (London: Dent, 1971), pp. 192-93.

R. H. Stephenson, Goethe’s Conception of Knowledge and Science (Edinburgh: Edinburgh University Press, 1995), pp. 43-45, and 56. Frederick Amrine has also raised this issue: ‘Goethe opposed the exclusive claims of the scientific paradigm inaugurated by Galileo, justified philosophically by Descartes, and best exemplified by Newtonian mechanics: that of a dualistic world in which the observer does not participate and all qualities are reduced to quanta or dismissed as subjective. For Galileo, the “text” of nature is written in the language of mathematics, not in the forms and other qualities of its immediate sensory presentation; thus he exhorts the scientist to measure everything measurable, and to make everything that cannot be measured measurable. Goethe saw here the roots of scientific reductionism.’ (‘Readings in the Text of Nature: Three Contemporary Goetheans’, in Slade and Lee, Beyond the Two Cultures
The rational and quantifiable approach to life of the Captain is however disturbed by the growing intimacy between himself and Charlotte (Wv 288-89). As Eduard spends more time with Ottilie, the work of estate management is ‘gewissermaßen in Stocken geraten’ (Wv 290) and their attempts at catching up are in vain: ‘Gleich der erste Aufsatz wollte dem Hauptmann, gleich der erste Brief Eduarden nicht gelingen’ (Wv 290). This situation has more noticeable effects on the ‘ernst[er] und bestimmt[er] Sinn[ ]’ of the Captain (Wv 288-89), rather than the ‘etwas Kindliches’ (Wv 289) character of Eduard: ‘Da zeigte sich denn, daß der Hauptmann vergessen hatte, seine chronometrische Sekundenuhr aufzuziehen, das erstemal seit vielen Jahren; und sie schienen, wo nicht zu empfinden, doch zu ahnen, daß die Zeit anfange, ihnen gleichgültig zu werden.’ (Wv 290) Time itself is disrupted as the world of human emotion impinges on the domain of rationality. The constructor of maps experiences ‘das Unermeßliche’ of human feeling. His attempt to establish an order


68 A dichotomy is suggested between those aspects of nature which are quantifiable and those which are beyond measurement: ‘unermeßlich’. Human emotions belong to this latter category and ‘die entstehenden wechselseitigen Neigungen’ (Wv 290-91) between the four protagonists are described in terms which suggest the alienness of restrictions and ratiocination to love: ‘Ein solcher Zustand erhebt den Geist, indem er das Herz erweitert, und alles, was man tut und vornimmt, hat eine Richtung gegen das Unermeßliche. So waren auch die Freunde nicht mehr in ihrer Wohnung befangen. Ihre Spaziergänge dehnten sich weiter aus, und wenn dabei Eduard mit Ottilien, die Pfade zu wählen, die Wege zu bahnen, vorauswählte, so folgte der Hauptmann mit Charlotten in bedeutender Unterhaltung, teilnehmend an manchem neuendockten Plätzchen, an mancher unerwarteten Aussicht, geruhig der Spur jener raschen Vorgänger.’ (Wv 291)
in which work and life are strictly divided, is destroyed.\textsuperscript{69} What is important here is not so much the opposition of feeling versus rationality, or of Charlotte's sense of Zusammenhang between human and natural worlds versus the Captain's analytical approach to life, in order to valorize one or other concept, but rather the very incompleteness of each approach, when applied in isolation, in the face of the rich diversity of life and nature, of history and material being. Charlotte's approach to gardening may well be criticized as a 'Stückwerk' which ignores the passage of time, but equally the Captain's strictly rational and quantitative' approach to life is unsustainable. That both have advantages is undeniable and indeed supported by the text. They are fundamentally different, yet equally valid, ways of seeing the world. Indeed I would argue that the juxtaposition of these contrasting approaches to nature is central to the necessarily plural understanding of reality which the text posits as the

\textsuperscript{69} At the beginning of Part i, Chapter 4 the Captain presents Eduard with the finished 'topographische Karte', but before they proceed to the next stage, the 'Gutsbeschreibung', the Captain establishes some rules by which to work: 'Nur Eines laß uns festsetzen und einrichten: trette alles, was eigentlich Geschäft ist, vom Leben! Das Geschäft verlangt Ernst und Strenge, das Leben Willkür; das Geschäft die reinst Folge, dem Leben tut eine Inkonsequenz oft not, ja sie ist liebenswürdig und erheiternd. Bist du bei dem einen sicher, so kannst du in dem andern desto freier sein, anstatt daß bei einer Vermischung das Sichere durch das Freie weggerissen und aufgehoben wird.' (Wv 266) It could be said that in the chemical discussion which follows in this same chapter, the four characters are guilty of allowing 'das Sichere' to be undermined by 'das Freie', namely the careless mixing of observations and metaphors from one area (chemistry) with those from another (human relations) resulting in a 'Vermischung'. This indeed is the thesis of Uwe Pörksen who sees in Goethe's science a warning against a 'Sphärenvermengung', a lesson demonstrated in the chemical discussion: 'Der anthropomorphe Charakter mancher Wendungen und Termini führt noch entscheidender dazu, daß das Gespräch zwischen den chemischen und menschlichen Verhältnissen hin und her springt, daß die Bereiche z. T. vermischt werden und der Fall aus der Chemie scherzhaft und spielerisch auf den eigenen Fall angewandt wird. Die ständige Sphärenvermengung wirkt sich aus als Verführung.' (p. 308) I would suggest however that the text does not oppose the existence of a plurality of vocabularies with which the world is described and represented. Rather the text warns against the attempt to make all vocabularies subject to the authority of another. By so doing it highlights the limits of the mechanistic scientific world-view particularly in the realm of human affairs.
condition of being. Ancient myth, hermetic lore, eighteenth-century theories of chemistry, and animal magnetism — these approaches to nature, as well as others, are all reflected in Goethe’s text, in a way which one contemporary of Goethe saw as self-consciously allusive and fragmented:

wie konnte G[oethe] dieses Machwerk (denn etwas Gemachtes ist es freilich) einen Roman nennen, und erwarten, daß wir es für einen Roman, als für ein echtes Kunstwerk nehmen würden? Wissen wir denn etwa nicht was ein Roman ist? Sein Buch ist ein farrago, ein Mischmasch von Dialogen und Vorlesungen über Gartenkunst, Baukunst, Dekorationskunst, Malerei, Bildnerei, Musik, Mimische Kunst, u. Gott weiß über wie vielerlei Künste, und von Auszügen aus andern Büchern, die eben so gut in jedem andern stehen könnten.

This richly allusive quality has contributed to the text’s reputation for ambiguity and difficulty, and yet also to its portrayal as a many-layered work which rewards repeated and close reading — a text which is truly ‘scriptible’. Interpretations have sought to

70 I share Elisabeth von Thadden’s view, that it is through the multivalent and combinatorial qualities of the text that the true significance of Goethe’s Die Wahlverwandtschaften is to be found: ‘Das Besondere dieses Romans erhebt nicht über die Rekonstruktion partieller Sachgehalte der Chemie-, Sozial- oder Kunstgeschichte, sondern über das Verfahren des Romans, Wissensbestände, Wirklichkeitsbilder und Wirklichkeiterfahrung literarisch so miteinander ins Spiel zu bringen, daß in genau nicht beliebiger Weise Vielbezüglichkeit und Mehrdeutigkeit entstehen, die über die Grenzen des Textes hinausgreifen. Erst durch die Analyse jener Verschränkung und Fokussierung, welche nur narrativ und durch sprachliche Organisation erfolgen kann, ist auffindbar, was diesen Text in seiner Literarizität von der epistemologischen oder historiographischen Quelle, aber auch von dem Projekt einer poetischen Naturlehre unterscheidet.’ (p. 24)

71 MA IX, 1233; letter from Christoph Martin Wieland to Karl August Bottiger, Weimar, 16 July 1810. On the subject of Goethe’s choice of title, Wieland notes: ‘Wie kommt dieser sogenannte Roman zu dem lächerlichen Titel Wahlverwandtschaften? Was sind Wahlverwandtschaften? [...] Wer kann seinen Vater, Oheim, Sohn, Enkel oder Vetter wählen? Daß einige neuere Chemiker gewisse Affinitäten p. Wahlverwandtschaften nennen, ist offenbar ein bloßes Witz- und Wortspiel, und was Goethe seinen Hauptmann darüber sagen läßt, ist und bleibt, trotz seiner a, b, c, allen vernünftigen Lesern non-sense oder willkürliche kindische Spielerei.’ (MA IX, 1233)

72 C. M. Wieland, in a letter to Charlotte Géfner (10 February 1810), states that, ‘[d]as Buch muß (wie Goethe selbst sagt) dreimal gelesen werden’ (MA IX, 1231). According to Barthes: ‘The writerly text is a perpetual present, upon which no consequent language (which would inevitably make it past) can be superimposed; the writerly text is ourselves writing, before the infinite play of the world (the world as function) is traversed, intersected, stopped, plasticized by some singular system (Ideology, Genus, Criticism) which reduces the plurality of entrances, the opening of networks, the infinity of languages.’ (Roland Barthes, S/Z, trans. Richard Miller (Oxford: Blackwell, 1990), p. 5.) See above, notes 21 and 22.
show how one discourse out of many is accorded a privileged place in the narrative, limiting some vocabularies by positing an authorial metalanguage, whether that be informed by science or myth. And yet if there is one thing that characterizes the text it is the serpentine ability to elude such monovalent interpretation. Indeed, it is precisely this approach to nature and life in general — whereby one interpretation or theory claims privileged access to ultimate knowledge about the world — that the profoundly intertextual nature of the work denies. I suggest that science, represented in the text by chemistry, is shown to be just one among many modes of knowing nature (or, to use a phrase taken from Goethe’s own scientific studies, ‘Vorstellungsarten’), all of which contribute to and develop humanity’s understanding of its position within the unity of nature referred to in the ‘Selbstanzeige’ (see above).

As we have seen, at the beginning of the nineteenth century the methodological approaches to the understanding of nature were in crisis: what Thomas Kuhn would term a paradigm shift. In Part I, Chapter 4, the Captain prefaces his comments with the disclaimer that his knowledge of chemistry is based on his

73 Goethe’s view that science was characterized by competing Vorstellungsarten, has been seen as anticipating recent developments in the philosophy of science, in the way it foregrounds the role of the hypothesis in determining what is seen by the scientist-observer (see Frederick Amrine, ‘The Metamorphosis of the Scientist’, GY, 5 (1990), pp. 187-13). According to Manfred Kleinschnieder, Goethe’s scientific writings suggest that increased understanding of nature can only be obtained by seeing beyond the limited claims of any one scientific theory (or way of seeing, Amrine, ‘The Metamorphosis of the Scientist’, p. 195), and intuitively grasping the fundamental laws which unite all of nature (Goethes Naturstudien, pp. 91-136). Only through a plurality of approaches can new ways of seeing be developed: ‘Thus pluralism is not just one among many desiderata but an absolute prerequisite for a constructive and progressive science, whose goal is less to produce a set of true propositions and indoctrinate scientists into their intention than to amplify the human experience of nature — which includes amplifying the store of technical means — and to enrich our comprehension of it by cultivating our ability to see natural wholes (e.g. the unity of a potentially infinite class of prismatic experiments) and to recognize the complex of their interrelationships to which “nature” refers.’ (Dennis L. Sepper, ‘Goethe against Newton: Towards saving the Phenomenon’, in Amrine, Zucker and Wheeler, Goethe and the Sciences (1989), p. 186.) See also Adler, ‘Eine fast magische Anziehungskraft’, pp. 21-23. See above, note 69.
reading of the subject from ten years ago, and that 'ob man in der wissenschaftlichen Welt noch so darüber denkt, ob es zu den neuern Lehren paßt, wüßte ich nicht zu sagen' (Wv 270). Eduard then complains about the brief lifetime of ideas in the 'modern’ world:

Es ist schlimm genug [...], daß man jetzt nichts mehr für sein ganzes Leben lernen kann. Unsre Vorfahren hielten sich an den Unterricht, den sie in ihrer Jugend empfangen; wir aber müssen jetzt alle fünf Jahre umlernen, wenn wir nicht ganz aus der Mode kommen wollen. (Wv 270)

According to Thadden, Eduard is a ‘Modespezialist’ and the focus of Goethe’s dislike of dilettantism (p. 67). This awareness of the role of fashion in ideas is part of a growing sense of the historicity of knowledge that, as we have seen, is typical of this time. It is a cultural phenomenon which Goethe saw as being ideally represented through the narrative form:

das Erzählen ist die eigentliche Konsequenz einer Naturforschung und eines Naturbegriffs, deren dominante Merkmale es sind, nicht abschlußhaft fixierbar zu sein und auf dem unhintergehbaren, historisch immer neue Formen des Wissens freisetzenden Zusammenhang von Natur und ihren Deutern zu gründen. Das Erzählen erweist sich zuletzt auch als eine literarische Kunst der Verknüpfung von zeitlich und räumlich Disparatem, von Vergangenem und Gegenwärtigem, von ungleichzeitigen Deutungen der Welt und ihren spezifischen Erkenntnisleistungen, welche die moderne wissenschaftliche Theoriebildung als ihre veraltete Vorgeschichte ausscheidet. (Thadden, p. 16.)

Goethe disliked the increasing rate of change in scientific knowledge at the beginning of the nineteenth century and criticized the 'veränderliche[modische] Art’ of life in the modern world (Aus Goethes Brieffusche (1776), HA XII: Kunst und Literatur, p. 25; cf. Thadden, pp. 64-67). Eduard has been seen by many commentators as representing Goethe’s dislike of dilettantism (see Elm, pp. 38-39, Gerndt, pp. 150-54, Stopp, p. 56; see above, note 34). An alternative view is suggested by Stuart Atkins, who disagrees with attempts to show Eduard as an irresponsible dilettante, asserting instead that ‘the novel’s socially responsible aristocrats are at least adequate representatives of the well-established enlightened ideal of a class-transcending humanism to which Goethe gave full allegiance’ (‘Die Wahlverwandtschaften: Novel of German Classicism’, GQ, 53 (1980), p. 6).

She comments further: ‘Als Kern des Spannungsverhältnisses von Wissenschaft und Literatur ist das Problem der Fiktion selbst zu erörtern, das sich für Goethe um 1800 neu stellt als Problem der Vermittlung zwischen der als zeitlich erkannten gegenständlichen Welt, den fortgesetzt
Thadden argues that, from the time of Goethe’s unrealized project for a ‘Roman über das Weltall’ (1781) up to and including the writing of *Die Wahlverwandtschaften*, there is a pronounced move from ‘statisch-klassifizierenden zum entwicklungsgeschichtlich geprägten Denken’, a change which is reflected in Goethe’s awareness ‘daß die Naturordnung Geschichte hat, daß die belebte Materie in spezifischen Entwicklungsprozessen steht und daß die Naturforschung selbst in einen Prozeß fortgesetzter Revisionsbedürftigkeit ihrer Wissensbestände und Erkenntnisverfahren eingetreten ist’ (p. 14). Nature began to be seen as engaged in a continual process of creation and change (*natura naturans*), rather than being a perfect and immutable order of being (*natura naturata*). The human understanding of nature was also increasingly seen as subject to change: truth was no longer a stable given but a fluid and dynamic value. This new world-view is reflected in the tone of

76 Thadden notes that Goethe never succeeded in his oft stated intention of representing the world as a dynamic whole (something to which he alludes in the ‘Anzeige’ for *Die Wahlverwandtschaften*; see above) as did Alexander von Humboldt (1769-1859) in his *Kosmos: Entwurf einer physischen Weltbeschreibung* (Stuttgart: Cotta, 1845-62). According to Thadden: ‘Die Einheit der Welt darzustellen, ist ein zunächst vorwissenschaftlicher Goethescher Vorsatz, der im wenig dokumentierten Projekt eines “Romans über das Weltall” von 1781 zuerst zum Ausdruck kommt.’ (p. 50) *Über den Granit* (1784) was another attempt to represent nature as ‘verzeitlicht, als genetischer, erdgeschichtlicher Zusammenhang’ (Thadden, p. 51). Eckehard Czucka has also compared Goethe’s attempt to achieve a union of different discourses in *Über den Granit* with Humboldt’s *Kosmos* (see Emphatische Prosa: Das Problem der Wirklichkeit der Ereignisse in der Literatur des 19. Jahrhunderts. Sprachkritische Interpretationen zu Goethe, Alexander von Humboldt, Stifter und anderen (Stuttgart: Steiner, 1992), pp. 201-05; see also Chapter 4 of this thesis). It is clear that narrative was the ideal literary form in which to express Goethe’s cohesive vision of nature, being ideally suited to synthesizing alternative viewpoints and juxtaposing past and present times. *Die Wahlverwandtschaften* is thus the realization of his earlier project (see also Rorty’s view of narrative as an inherently plural form; above, Chapter 1). H. B. Nisbet has also reached this conclusion, seeing *Die Wahlverwandtschaften* as ‘a late echo’ of the ‘Roman über das Weltall’ (*Lucretius in Eighteenth-century Germany: With a Commentary on Goethe’s Metamorphose der Tiere*, MLR, 81 (1986), p. 105). Interestingly, Nisbet comments that in eighteenth-century France the word ‘roman’ was applied ‘to imaginative theories of the universe’ and that Goethe described Buffon’s *Époques de la nature* (1778) as a ‘Roman’. Nisbet further suggests: ‘This use of the word “Roman” to denote an imaginative, systematic account of the world’s origins explains what Goethe must have had in mind when he planned, in the early 1780s, to write a “Roman über das Weltall”’ (p. 104).

77 On Goethe and the idea of *natura naturans*, see Frederick Amrine and Francis J. Zucker, ‘Postscript. Goethe’s Science: An Alternative to Modern Science or within It — or No Alternative
reflexive fictionality created by the opening sentence: ‘Eduard — so nennen wir einen reichen Baron im besten Mannesalter’ (Wv 242). The act of naming is foregrounded as a possibly arbitrary act, the invention of an equally fictional narrator: as in the Book of Nature, truth is not fixed and stable in this text. Thus the narrative form provides the ideal *tabula rasa* for both the ‘Versuch’ which Eduard and Charlotte embark upon — namely the translation of the chemical concept of ‘Wahlverwandtschaft’ into the realm of human relations — and the epistemological experiment, conducted at the metafictional level, into humanity’s relationship with nature itself.

Our changing views of nature are represented in *Die Wahlverwandtschaften* by Eduard’s estate. Within the text two contrasting modes of landscape design are juxtaposed. During the eighteenth century there had been a heated debate between the supporters of the Baroque French style and the Romantic English style of garden:


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78 Elm comments on the opening sentence of *Die Wahlverwandtschaften*, that ‘[d]er Satz weist den Helden als pure Erfindung aus’ (p. 43), and that the unconcealed fictionality runs against a general trend towards realism in the literature of the nineteenth century. According to Adler: ‘Im Augenblick des Benennens reflektiert der Satz auf das Nennen selbst. So macht der Erzähler auf sich selbst aufmerksam, indem er darauf vorbereitet, daß Eduard Otto heißt. Er betont die Fiktion, die kommende Erzählung sei wahr, indem er Eduard gleichsam als Decknamen erscheinen läßt. Ferner suggeriert er die Geste eines Experimentators. Wie immer man im einzelnen interpretiert, die Worte weisen unmittelbar auf den Unterschied zwischen Sprache und Welt hin. Sie verdeutlichen, wie hier die Welt durch ein reflektierendes Bewußtsein dargestellt wird.’ (*Eine fast magische Anziehungskraft*, pp. 141-42.) An inherent instability is suggested within the denotative system, prompting the thought that the words of the Book of Nature might themselves be more flexible and open to negotiation than was once thought to be the case. See also Nemec, p. 23, and Thadden, p. 117, note 1.

Originating in England after the Glorious Revolution of 1688-89, the English Garden came to typify the ideal of natural freedom and the rejection of the ‘artificial’ geometry of the French style. The landscape paintings of Claude Lorrain with their idealized images of Italian landscape and nostalgic Classical themes, provided the models for these ‘natural’ gardens. Clearly, the designers of the English garden did not merely hold up a mirror to nature and create a reflection of pure Nature. Their work was an interpretation, but one which attempted to conceal its own artificiality: ‘the landscape garden, a work of art intended not to look like a work of art, blurred

79 Raymond comments: ‘Als eine der bestimmenden, der Natur abgeschauten Maximen der neuen Gartenkunst galt die Kontrasttechnik; die unnatürliche Geradlinigkeit und Geometrisierung des Barockgartens wurde durch das Prinzip der gewundenen Linie ersetzt; neben gekrümmten Wegen forderte man entsprechend dem neuen Landschaftsideal eine möglichst freie, mannigfaltige Komposition von Felsen, Wasserfällen, düsteren Grotten und lichten Baumgruppen. Der Gartenkünstler “machte sich also die Freiheit, so wie sein architektonischer Vorgänger die Regelmäßigkeit zum obersten Gesetz”.’ (p. 34, citing Schiller, Gartenkalender auf das Jahr 1795.) Ironically, Eduard’s ideas for the landscaping of his estate, although in the non-geometric English style, are made possible by the Captain’s ‘topographische Karte’ which is based on ‘trigonometrische Messungen’ (Wv 266).

80 In The Story of Art (London: Phaidon, 1950), E. H. Gombrich comments: ‘It was Claude who first opened people’s eyes to the sublime beauty of nature, and for nearly a century after his death travellers used to judge a piece of real scenery according to his standards. [...] Rich Englishmen went even farther and decided to model the piece of nature they called their own, in their parks on theirs estates, on Claude’s dreams of beauty. In this way, many a piece of the lovely English countryside should really bear the signature of the French painter who settled in Italy and made the programme of the Carracci his own.’ (p. 295) On the theme of Nature in this period, see Basil Willey, The Eighteenth Century Background: Studies on the Idea of Nature in the Thought of the Period, 4th edn (London: Chatto & Windus, 1950), pp. 205-08, 244. More generally on nature as a cultural construct, see Chapter 1 of this thesis.
the long-established demarcation between artifice and reality'. The English garden did not merely extend the architectural style of the house into the landscape as at Versailles, but sought to express the contemporary ideal of the 'naturalness' of nature, an idea which, by the time Goethe came to write *Die Wahlverwandtschaften*, could already be viewed with irony:

For Thadden, Goethe's text is a study of 'künstlicher Natur und natürlicher Kunst' (p. 20), of the ways human culture has sought to understand, interpret, and represent nature. Despite the generally negative presentation of the French style in gardening


82 Goethe and Schiller's essay on dilettantism appeared in 1799, in the same year as Goethe's own essay *Über den sogenannten Dilettantismus oder die praktische Liebhaberei in den Künsten*. Compare with the narrator's favourable comment on dilettantism at the beginning of Part II, Chapter 3 (Wv 370). See above, note 74.

83 Thadden insists, 'auf den Faktor der ahnungslosen Vergegenwärtigung von Wissenschaftsgeschichte durch Protagonisten, die sich eine bewußte Relationierung ihrer Gegenwart mit dem Vergangenen verstellt haben' (p. 152, note 103). It is central to her argument that the characters are unaware of the historical context of the ideas which they discuss, and she emphasizes the 'Zeitenthobenheit des Parks' (ibid.). The text is in Thadden's view a 'Gewebe' (p. 150), a synchronous presentation of metaphors, theories and myths about nature and the cosmos (see above, note 69). Indeed, she suggests another sense in which 'Verwandtschaft' is thematized in the text: 'als Verwandtschaft zwischen Autoren von Werken nämlich, welche die Entstehung und den Zusammenhang der Welt zum Gegenstand haben' (p. 157). She echoes Adler, who sees in Goethe's text 'eine neue, bahnbrechende Synthese gegebener Denkweisen' ('Eine fast magische Anziehungskraft', p. 119), and asserts that: 'Er [Goethe] schafft [...] sprachlich eine fortgesetzte und nicht abschließbare, vor- und rückwärts verweisende Variation von Verhältnisbestimmungen, die anders als durch poetische Syntheseleistungen nicht zum Ausdruck kommen kann.' (p. 157) Gerndt also sees the characters' failure to understand time as being key: 'Eine wichtige Quelle für die fatale Bewußtseinsentwicklung der handelnden Personen ist auch in
in the late eighteenth century, Goethe’s text does not favour either style. The natural world *per se* is the focus of Goethe’s interest: as symbol within the scheme of human intentionality, as metaphorical construct (whether aesthetic or scientific), and as a phenomenal realm of both utilitarian and ontological significance to the percipient. Neither style of garden is presented by the text as being more valid than the other. Both are shown to be products of changing cultural trends in human history, or of contrasting *Vorstellungsarten*, to borrow Goethe’s own term.

The figure of Ottilie plays an important role in developing the themes of nature and science, as can be seen in her diary entry in Part II, Chapter 7. Luciane, who misses her pet monkey, has been consoled by ‘einen ganzen Band der wunderlichsten Affenbilder’: ‘Der Anblick dieser menschenähnlichen und durch den Künstler noch mehr vermenschlichten abscheulichen Geschöpfe machte Lucianen die größte Freude’ (*Wv* 382). For Luciane, the pictures bear resemblance to human acquaintances, an idea which Ottilie and the narrator find in poor taste (*Wv* 383).^85

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84 According to Gerndt, although Goethe was interested in the debates about garden design, he did not attack the geometric, French style of gardening. Indeed, he praised the formal style of gardens at Frankfurt and Leipzig, which he knew well (*Idealisierte Natur*, p. 129). On 1 September 1797, Goethe visited the English gardens at Hohenheim, near Stuttgart. However, his impression was not favourable, and he found the garden lacking in cohesion. His view contrasts with that of Schiller, who had praised the gardens in *Über den Gartenkalender auf das Jahr 1795* (Gerndt, p. 138). According to Gerndt, it was not so much the ideals behind the English style of gardening that Goethe disliked, rather it was the association of the English style with dilettantism. ‘Gartenkunst’ remained the domain of a few ‘begüterten Personen’ and these people became the focus of Goethe’s and Schiller’s criticisms regarding their tendency to ‘Schein, Spielwerk, Phantasterei, Gesetzlosigkeit, Willkür und Sentimentalität’ in their English gardens (pp. 141-42).

85 Luciane is a very different character from Ottilie. Her arrival at Eduard’s ‘Schloß’ is described by the narrator as ‘ein wildes Heer’ which keeps Ottilie outwardly occupied (*Wv* 376). Luciane’s arrival coincides with a meteorological storm, yet for Ottilie, it also creates a metaphorical storm of activity, and her ability to create order is contrasted to Luciane’s creation of chaos: ‘Diesem ungestümen Treiben begegnete Ottilie mit gleichmütiger Tätigkeit, ja ihr heiteres Geschick erschien im schönsten Glanze; denn sie hatte in kurzer Zeit alles untergebracht und angeordnet.’ (*Wv* 377) Luciane is ‘wie ein brennender Kometenkern, der einen langen Schweif nach sich zieht’; she is characterized by the ‘Schnelligkeit ihres Wesens’ (*Wv* 378) which contrasts with the slow
Later, the ‘Gehülfe’ happens to pick up the same book but, ‘als er sah, daß darin nur Affen enthalten waren, schlug er ihn gleich wieder zu’ (Wv 415). In her diary entry, Ottilie criticizes both those who seek similarities between the illustrations of monkeys and people and those who see them ‘nur als Tiere’ (Wv 415). The implication is that, as with the Captain’s map of the estate, something essential has been lost in the representation. Ottilie is grateful that she never had to study ‘Naturgeschichte’: ‘ich konnte mich mit den Würmern und Käfern niemals befreunden’ (Wv 415). Ottilie then cites a long statement from the ‘Gehülfe’ on his attitude to learning about nature:

Von der Natur [...] sollten wir nichts kennen, als was uns unmittelbar lebendig umgibt. Mit den Bäumen, die um uns blühen, grünen, Frucht tragen, mit jeder Stau(de, an der wir vorbeigehen, mit jedem Grashalm, über den wir hinwandeln, haben wir ein wahres Verhältnis; sie sind unsere echten Kompatrioten. (Wv 416)

What the ‘Gehülfe’ proposes is an approach to nature based on direct experience of one’s environment, and a notion of natural science which is by implication holistic. According to this view, objects are fundamentally interrelated within an organic whole and any attempt to analyse something outside of this Zusammenhang will result in only partial explanations. Such holistic reasoning includes the observer in the experimental context: ‘Es gehört schon ein buntes, geräuschvolles Leben dazu, um Affen, Papageien und Mohren um sich zu ertragen.’ (Wv 416)

of argument, Ottilie criticizes the naturalist’s collection of specimens: ‘Ein Naturalienkabinett kann uns vorkommen wie eine ägyptische Grabstätte, wo die verschiedenen Tier- und Pflanzengötzen balsamiert umherstehen.’ (Wv 416) In this we see the second aspect of her attack on Naturgeschichte, namely the criticism of the classificatory approach to natural history. The study of nature is criticized both for its destructively analytic approach which isolates objects from their context, and for its application of artificial, fixed systems to the seamless flux of nature. ‘[E]in jedes fremde, aus seiner Umgebung gerissene Geschöpf’ (Wv 416) will always appear strange and even grotesque (as do the illustrations of the apes juxtaposed with the aristocratic soireé) as long as science uses reductionist concepts to explain it. The ideal is an approach to nature which seeks to retain the sense of Zusammenhang, an approach personified significantly by A. von Humboldt (see above, note 76): ‘Nur der Naturforscher ist verehrungswert, der uns das Fremdeste, Seltsamste mit seiner Lokalität, mit aller Nachbarschaft jedesmal in dem eigensten Elemente zu schildern und darzustellen weiß. Wie gern möchte ich nur einmal Humboldten erzählen hören!’ (Wv 416) Ultimately, for Ottilie and presumably the ‘Gehülfe’, the study of nature is an anthropomorphic activity: ‘das eigentliche Studium der Menschheit ist der Mensch’ (Wv 417). A teacher ‘der das Gefühl an einer einzigen guten Tat, an einem einzigen guten Gedicht erwecken kann’ achieves more than one who imparts ‘ganze Reihen untergeordneter Naturbildungen der Gestalt und dem Namen nach’ (Wv 416). The artificiality of the scientific approach to nature is clearly suggested in Ottilie’s diary, together with the idea of the separation of the scientist from the course of life: ‘Einer Priesterkaste geziemt es wohl, sich damit in geheimnisvollem Halbdunkel abzugeben’ (Wv 416). The text suggests that Naturgeschichte, in common with other
approaches to the study of nature, will only be of value to humanity if it gains its knowledge with regard to the full panoply of natural life, otherwise the knowledge it yields will be limited and, like the different fashions of garden design, subject to the vagaries of taste.

The themes of cohesion and division, of Zusammenhang and Scheidung — which in my view are the symbolic representation of Polarität — are both overtly and implicitly thematized. Much has been written on the ‘durchgreifende Idee’ in Die Wahlverwandtschaften, on the text as an interrelated whole whose parts conform to some unspoken principle or law.87 Structurally, the text appears to be symmetrically constructed, being neatly divided into two parts of eighteen chapters each. Yet the content of the chapters does not follow a regimented scheme of parallels.88 As I have suggested, the text is densely seeded with words, motifs, and themes which appear time and again. Indeed it resembles the rope which is ‘dergestalt gesponnen, daß ein roter Faden durch das Ganze durchgeht, den man nicht herauswinden kann, ohne alles aufzulösen’ (Wv 368; cf. 383).89 It is significant that this metaphor is used to describe

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88 According to Nemec, the superficial symmetry is misleading and the true symmetry of the text is less obvious: ‘Zunächst ist festzuhalten: seiner äußeren Form nach scheint der Roman symmetrisch angelegt: zwei Teile zu je achtzehn Kapiteln. Nach flüchtiger Lektüre scheint er disproporioniert: die Einschübe der Auszüge aus Ottilies Tagebuch, die Lucianekapitel, die Novelle u.a. in bezug auf die Handlung überflüssig; die erzählte Zeit, gleichem Raum einnehmend, ist im zweiten Teil beträchtlich länger als im ersten. Mit Ausnahme der Anfangs- und Schlußkapitel lassen sich die entsprechenden Kapitel der beiden Teile keineswegs ohne weiteres vergleichen.’ (p. 73)

89 Thadden comments that the idea of the text as a ‘Gewebe’ is taken from Lucretius who saw an analogy between nature and verse in that they were both ‘textura’, that is, made up of individual elements which exist in relationship to each other (Thadden, pp. 178-80; cf. above, note 76). The choice of names for the four protagonists is an example of this subtle interweaving of motifs and themes. All four have as their first name, or as part of it, the name ‘Otto’: The Captain’s name is Otto, as Charlotte reveals (Wv 258), and Eduard surrendered the name in childhood to avoid confusion with the Captain (Wv 259). The name Otto is also reflected in Charlotte and Ottilie’s names. Significantly the child is also named Otto. Goethe’s use of a common element in the characters’ names is seen by Adler as signifying a ‘chemische Verwandtschaft’: ‘Diese Art Namengebung entspricht der modernen chemischen Nomenklatur, welche die gemeinsamen Bestandteile verschiedener Substanzen veranschaulichen soll. Die Symbolik war auch schon in
Ottilie’s diary, for it is in the character of Ottilie that the quality of Zusammenhang is most clearly illustrated. One of the first descriptions of Ottilie’s character uses a metaphor derived from the natural world. The ‘Gehülfe’, in his progress report to Charlotte, suggests that although Ottilie shows few outward signs of progress, her period of education at the ‘Pension’ will eventually bear fruit: ‘es gibt auch verschlossene Früchte, die erst die rechten, kernhaften sind und die sich früher oder später zu einem schönen Leben entwickeln. Dergleichen ist gewiß Ihre Pflegetochter. Solange ich sie unterrichte, sehe ich sie immer gleichen Schrittes gehen, langsam, langsam vorwärts, nie zurück.’ (Wv 264) Here and elsewhere in his letter, the ‘Gehülfe’ notes Ottilie’s slowness and her inability to grasp ‘das Unzusammenhängende’ in contrast to her ‘Mitschülerinnen’, who ‘immer vorwärts eilen’ (Wv 265). Unlike her fellow pupils, Ottilie is unable to express what she knows: ‘sie weiß vieles und recht gut; nur wenn man sie fragt, scheint sie nichts zu wissen’ (Wv 265). Ottilie is clearly identified in the narrative as an outsider at the school, a sensitive and insecure child alienated by what the text implies is the inherently unnatural inculcation of abstract knowledge in the context of an unimaginative institution, a theme which in German literature will produce such memorable characters as Hanno Buddenbrook, Karl Gruber, Hans Giebenrath, and Zögling Törleß.90 Despite Charlotte’s assertion that women have an innate sense of Zusammenhang in contrast to men, who ‘denken mehr auf das Einzelne, auf das

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90 Thomas Mann, Buddenbrooks: Verfall einer Familie (1901), Rainer Maria Rilke, ‘Die Turnstunde’ (1902), Hermann Hesse, Unterm Rad (1903), Robert Musil, Die Verwirrungen des Zöglings Törleß (1906). Although he does not attend school as such, the priest in Kalkstein is similarly alienated by his experience of the learning process (see Chapter 4 of this thesis).
Gegenwärtige' (Wv 245; above, note 60), it is clear that Ottilie’s awareness of this quality is exceptional even in comparison with her ‘Mitschülerinnen’ (see Wv 264-65). Indeed, it is this quality that contributes to her poor performance in the examinations:

Im Schreiben hatten andere kaum so wohlgeformte Buchstaben, doch viel freiere Züge; im Rechnen waren alle schneller, und an schwierige Aufgaben, welche sie besser löst, kam es bei der Untersuchung nicht. [...] Zum musikalischen Vortrag ihrer wenigen bescheidenen Melodien fand sich weder Zeit noch Ruhe. Im Zeichnen hätte sie gewiß den Preis davongetragen; ihre Umrisse waren rein und die Ausführung bei vieler Sorgfalt geistreich. Leider hatte sie etwas zu groß unternommen und war nicht fertig geworden. (Wv 278)

The emphasis on the rote learning of unconnected facts (quantifiable as opposed to qualitative knowledge) and the inflexibility of the time-span allowed within examinations, contribute to Ottilie’s inability to express the knowledge which, according to her teacher, she undoubtedly has. The cohesive and ultimately holistic nature of Ottilie’s understanding prevents her from expressing it within the artificial and inflexible conditions of the examinations.\(^{91}\)

Given Ottilie’s alignment with the natural world and with the quality of \textit{Zusammenhang}, it is not surprising therefore that she should be the character most closely identified with the gardener. It is clear that part of her pleasure in the gardener’s company arises from his habit of talking about Eduard: ‘Ottilie hörte dem guten alten Manne [dem Gärtner] so gern zu. Er verstand sein Handwerk vollkommen und hörte nicht auf, ihr von Eduard vorzusprechen.’ (Wv 350) The passage in Part I,

Chapter 17, from which these lines are taken, is significant in that it exemplifies Otilie’s relation to natural time. Eduard has left the estate — and Otilie — in the care of Charlotte. Otilie admires the ‘Pfropfreiser’ which, unknown to her, Eduard grafted in the spring of that year (see above, note 61). She also admires the plants which she and Nanny have tended and grown, in particular ‘die späteren Blumen, die sich erst anzeigten, deren Glanz und Fülle dereinst an Eduards Geburtstag, dessen Feier sie sich manchmal versprach, prangen, ihre Neigung und Dankbarkeit ausdrücken sollten!’ (Wv 350-51) In Part II, Chapter 9, Otilie is once again together with the gardener. It is now spring of the following year and the sight of the plants beginning their growth cycle reminds her of arriving at Eduard’s estate: ‘Indem nun die Pflanzen immer mehr Wurzel schlugen und Zweige trieben, fühlte sich auch Otilie immer mehr an diese Räume gefesselt. Gerade vor einem Jahre trat sie als Fremdling, als ein unbedeutendes Wesen hier ein’ (Wv 424). In this chapter there is a strong sense of Otilie’s closeness to the time of the natural world: she unconsciously measures the passage of time by the rhythm of the seasons and the growth cycle of plants. Significantly, Eduard’s birthday is to be celebrated through the blooming of flowers specially planted for this event, as is stated in Part I, Chapter 17.

In Part II, Chapter 9 Otilie and the gardener decide to plant asters, which flower in the autumn: ‘Alle sogenannten Sommergewächse, alles, was im Herbst mit Blühen nicht

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92 It is suggested that Otilie likes the gardener for his dedication to his craft: ‘Die Pflanze gleicht den eigensinnigen Menschen, von denen man alles erhalten kann, wenn man sie nach ihrer Art behandelt. Ein ruhiger Blick, eine stille Konsequenz, in jeder Jahrszeit, in jeder Stunde das ganz Gehörige zu tun, wird vielleicht von niemand mehr als vom Gärtner verlangt.’ (Wv 424) His care for the garden suggests Otilie’s own ‘Dienstbeflissenheit’.

93 This passage is a clear example of ‘erlebte Rede’ (see above, note 59). Her description of herself as ‘unbedeutend’ is indicative of Otilie’s sense of worthlessness. Indeed as an orphan this is exactly what she is, as Nemec has pointed out: ‘Eduard ist der reichste, er besitzt im Grunde alles, er ist der Grundherr; Charlotte ist ihm durch Heirat angeschlossen; der Hauptmann ist auf Gelderwerb angewiesen; Otilie aber ist mittellos, sie besitzt faktisch nichts.’ (p. 57)
enden kann und sich der Kälte noch keck entgegenentwickelt, Astern besonders, waren in der größten Mannigfaltigkeit gesetzt und sollten nun, überallhin verpflanzt, einen Sternhimmel über die Erde bilden.’ (Wv 425) Eduard’s birthday is in the autumn, and indeed he does return for his birthday, but by then the death of the baby has altered everything, and it is decided that his birthday ‘sollte ohne Festlichkeit in stillem, freundlichem Behagen diesmal gefeiert werden’ (Wv 479):

Doch je näher diese Epoche heranrückte, vermehrte sich das Feierliche in Ottiliens Wesen, das man bisher mehr empfunden als bemerkt hatte. Sie schien im Garten oft die Blumen zu mustern; sie hatte dem Gärtner angedeutet, die Sommergewächse aller Art zu schonen, und sich besonders bei den Astern aufgehalten, die gerade dieses Jahr in unmaßiger Menge blühten. (Wv 479-80)

Once again Ottilie is linked to the time cycle of the natural world, in stark contrast to the mechanical time of the Captain’s watch (see above). The reader is not informed as to her thoughts as she stands in front of the asters, and yet the connection between the development of the natural world and Ottilie’s own psychological growth has already been established and a narratorial comment is scarcely necessary. It is not mentioned whether Eduard notices this attempt at a floral celebration of his birthday.94 The ironic

94 Thadden draws an interesting comparison between Chapter 9 in Parts I and II, the former describing the laying of the foundation stone and the latter depicting Ottilie’s relationship with the gardener and the spring garden (pp. 215-21). For Thadden, an opposition is established between Eduard’s hurried construction of the ‘Lusthaus’ and the slow, almost organic, passage of time in Part II: ‘Nicht als Ort der real gelingenden Vermittlung von Natur und Kultur und ihrer Zeitrhythmen also wird hier der Garten gezeigt. Vielmehr ist die Evozierung naturaler, langsam fortgesetzter Entwicklung innerhalb der Textur des Romans eine fiktiv bleibende Gegenfigur zur überreiten Baukunst des ersten Romanteils. Sie ist ein Hinweis auf den literarischen Versuch, in sukzessiver Konsequenz Facetten der Transformation Ottilies aufzuweisen, deren Entwicklung sie nun in das Zentrum des Gartenkapiels führt. Sie ist zudem ein Hinweis auf die durch den Roman aktualisierte Vorstellung einer historischen Sukzession der Deutungen der natürlichen Welt, als wie auch immer segmentiert und unterbrochen diese Sukzession in Goethes Sinne aufzufassen ist: Innovationsprozesse sind, nimmt man an der Natur Maß, langsame, grobräumige Prozesse.’ (p. 220) That Ottilie should wish to celebrate her loved one’s birthday with a display of flowers she herself has planted, clearly accords with the view of Ottilie as representing a closeness to the true, unaestheticized natural world as opposed to Eduard’s empty imitation of past styles. According to Richard Beitl, Ottile has a ‘seilsam inniges, aber nicht ungestümtes Verhältnis zu den Naturdingen’ (Goethes Bild der Landschaft, p. 66). See above, note 91.
culmination of this motif is that in death, the flowers intended for Eduard become Ottilie’s own wreath: ‘man setzte ihr einen Kranz von Asterblumen auf das Haupt, die wie traurige Gestirne ahnungsvoll glänzten’ (Wv 485). Thus nature becomes Ottilie’s symbol in death as in life; the flowers she had tended are cut down to decorate the chapel, and the gardens ‘lagen verödet, als wenn bereits der Winter alle Freude aus den Beeten weggetilgt hätte’ (Wv 485).

If Ottilie is characterized by a sense of the inherent Zusammenhang and order in nature, then Eduard represents the opposite tendency, that of Scheidung. Within the text characters display varying attitudes towards these two qualities. Charlotte states that she herself represents, along with other women, the quality of Zusammenhang, and in her relation to the landscape and attempt to construct a garden that reflects this, she does indeed represent the concept of the interrelatedness of humankind and nature. Her daughter Luciane is however the living proof that her essentialist argument, concerning women’s innate sense of Zusammenhang, is false.

The Captain, like his childhood friend Eduard, is aligned with the concept of Scheidung, although it is clear that his approach to life is by no means as disastrous as Eduard’s. In the Captain we see perhaps the positive aspects of the analytical and

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95 In addition to the comments of the ‘Gehülfe’ regarding Ottilie’s need to know the ‘Zusammenhang’ before grasping a subject at the ‘Pension’, Ottilie intuitively senses the order of things in Charlotte’s and Eduard’s lifestyle: ‘Charlotte gab dem neuen Ankömmling nur wenig Winke, wie es mit dem Hausgeschäft zu halten sei. Ottilie hatte schnell die ganze Ordnung eingesehen, ja, was noch mehr ist, empfunden. Was sie für alle, für einen jeden insbesondere zu besorgen hatte, begriff sie leicht. Alles geschah pünktlich. Sie wußte anzurichten, ohne daß sie zu befehlen schien, und wo jemand schummte, verrichtete sie das Geschäft gleich selbst.’ (Wv 282)

96 See notes 61 and 85. Similarly, Luciane’s insensitive handling of the girl who ‘hatte das Unglück gehabt, an dem Tode eines ihrer jüngeren Geschwister schuld zu sein, und sich darüber nicht beruhigen noch wieder finden können’, exemplifies her desire to create order (Zusammenhang) yet her inability to do so (Wv 399).

97 However, the Count praises the Captain because, ‘[e]r ist sehr wohl und im Zusammenhang unterrichtet’ (Wv 313). Similarly, Charlotte is pleased by his letter accepting their invitation: ‘Soviel Deutlichkeit über sich selbst, soviel Klarheit über seinen eigenen Zustand, über den Zustand seiner Freunde gab eine heitere und fröhliche Aussicht.’ (Wv 258) This suggests an innate sense of order that is more sophisticated than Eduard’s partial and limited viewpoint.
quantifiable approach to nature, of which Goethe himself was well aware (see above, note 12). From our present viewpoint, we can see in the figure of the Captain the representative of applied science, an attitude which was to become so important in the nineteenth century in Germany and who, as I will suggest in Chapter 4, in some respects anticipates the surveyor in Stifter’s Kalkstein. Yet, as is well documented from his scientific writing, Goethe saw the reductionist and mechanistic approach of science as being ultimately insufficient to describe the diversity and complexity of nature. If the Captain stands for the positive aspect of analytical science, then Eduard represents its negative side.

98 It is interesting that of all the male characters in the text, the Captain is the only one who is not described as being attracted to Ottilie, despite the fact that Charlotte initially expresses the wish that they might fall in love (Wv 252), and indeed even in Part II, Chapter 10 she still thinks that ‘eine Verbindung des Hauptmanns mit Ottilien nicht unmöglich schien’ (Wv 427). His lack of interest in Ottilie is not explained by the fact that he is in love with Charlotte, because even Luciane’s fiancé is attracted to Ottilie: despite her plain clothing ‘so war sie doch, oder so schien sie wenigstens immer den Männern die Schönste. Ein sanftes Anziehen versammelte alle Männer um sie her, sie mochte sich in den großen Räumen am ersten oder am letzten Platze befinden’ (Wv 388). The ‘unbeschreibliche, fast magische Anziehungskraft’ (Wv 478) is not an exclusive force of attraction between Ottilie and Eduard. Ottilie is herself ‘angezogen’ by the Count, and, much to the annoyance of the Count’s wife, he reciprocates the feeling: ‘Jede Anziehung ist wechselseitig. Der Graf empfand eine Neigung für Ottilien, daß er sie gern als seine Tochter betrachtete.’ (Wv 413)

99 See note 56. On science and technology in Germany in the nineteenth century, see Knight, The Age of Science, Chapter 4, ‘The German Challenge’, pp. 52-69. On the development of science in Germany at this time see also Ben-David, The Scientist’s Role in Society, pp. 108-38.

100 ‘Es ist nicht genug, daß wir bei Beobachtung der Natur das analytische Verfahren anwenden, d.h. daß wir aus einem irgend gegebenen Gegenstande so viel Einzelheiten [sic] als möglich entwickeln und sie auf diese Weise kennen lernen, sondern wir haben auch ebendiese Analyse auf die vorhandenen Synthesen anzuwenden, um zu erforschen, ob man denn auch richtig, ob man der wahren Methode gemäß zu Werke gegangen [ist].’ This was one of the main criticisms Goethe made concerning Newton’s method, which he saw as inappropriate to explain the Urphänomen of light: ‘Wir haben deshalb das Verfahren Newtons umständlich auseinandergesetzt. Er begeht den Fehler, ein einziges und noch dazu verkünsteltes Phänomen zum Grunde zu legen, auf dasselbe eine Hypothese zu bauen, und aus dieser die mannigfaltigsten grenzenlosten Erscheinungen erklären zu wollen.’ (Both quotations from ‘Analyse und Synthese’ (c. 1829), HA XIII: Naturwissenschaftliche Schriften I, p. 50.) According to A. G. Zajonc, Goethe expected ‘the full sensual experience of nature’ from science, and opposed the reductionism of the Newtonian method: ‘Goethe may idealize or exalt phenomena, but he does not represent a color by anything other than itself. Rather than penetrating through to some “true,” hidden, mechanical reality supposed to be at work behind the scenes, or generating an abstract, formal system which corresponds to observation at the necessary points, Goethe pursues his own unique path. His is neither a hypothetical nor an abstractive theory. Instead he proposes to let the facts themselves, when fully perceived, be the theory.’ (‘Facts as Theory’, in Amrine, Zucker and Wheeler, Goethe and the Sciences (1989), pp. 228-29.) See also Stephenson, p. 18, and on the Farbenlehre, pp. 21-27. See above, note 4.
Eduard’s association with Scheidung is directly thematized in the discussion of chemistry, when he states that ‘die Verwandtschaften werden erst interessant, wenn sie Scheidungen bewirken’ (Wv 273). When Charlotte regrets that ‘das traurige Wort’ is present in ‘Naturlehre’, Eduard asserts that ‘es war sogar ein bezeichnender Ehrentitel der Chemiker, daß man sie Scheidekünstler nannte’ (Wv 273). Charlotte flatly disagrees that this is a quality to be admired: ‘Das Vereinigen ist eine größere Kunst, ein größeres Verdienst. Ein Einigungskünstler wäre in jedem Fache der ganzen Welt willkommen.’ (Wv 273-74) It should be remembered that it is Eduard who has brought about their isolated existence, which at the beginning of the novel he so desires to end. Eduard is also responsible for his physical Scheidung from Charlotte at the end of Part I and for insisting on a legal separation, something he has been suggesting is possible to Ottilie from Part I, Chapter 13 (Wv 331). The condition Eduard demands of Charlotte for his self-enforced exile from his estate, is the requirement: ‘mache keinen Versuch, Ottilien sonst irgendwo unterzugeben, in neue Verhältnisse zu bringen! Außer dem Bezirk deines Schlosses, deines Parks, fremden


102 It is interesting to note that Charlotte has acted against her better judgement in allowing herself to be separated from her family: ‘Du wolltest von allen Unruhen, die du bei Hof, im Militär, auf Reisen erlebt hattest, dich an meiner Seite erholen, zur Besinnung kommen, des Lebens genießen; aber auch nur mit mir allein. Meine einzige Tochter töt ich in Pension, wo sie sich freilich mannigfaltiger ausbildet, als bei einem ländlichen Aufenthalte geschienen könnte; und nicht sie allein, auch Ottilien, meine liebe Nichte, tat ich dorthin, die vielleicht zur häuslichen Gehilfin unter meiner Anleitung am besten herangewachsen wäre. Das alles geschah mit deiner Einstimmung, bloß damit wir uns selbst leben, bloß damit wir das früh so sehnsüchtig gewünschte, endlich spät erlangte Glück ungestört genießen möchten.’ (Wv 246) It is clear from this passage and the preceding lines concerning their courting, that Eduard is the prime mover in their relationship, and it is he who instigates their artificial existence, separated from Charlotte’s family (apart from references to his father, Eduard’s family is not mentioned). Stuart Atkins denies however that Charlotte and Eduard live an isolated or secluded existence: ‘In Germany before the Industrial Revolution, when all cities remained to some extent agricultural centers, the norm was
Menschen anvertraut, gehört sie mir, und ich werde mich ihrer bemächtigen.' (Wv 344) In effect the estate becomes a prison for both Ottilie and his wife, an enclosed and artificial landscape separating them from the real world outside and holding them in a state of Scheidung.¹⁰³

Despite his attraction to Ottilie and his belief in their innate similarity, Eduard is in many respects her polar opposite. His desire for Scheidung, his almost pathological desire to see the world through arbitrary signs and symbols, his characteristically childlike impatience and desire for instant gratification,¹⁰⁴ and his inability to appreciate nature¹⁰⁵ can all be seen as opposed by Ottilie who, as we have

¹⁰³ According to Gerndt, the debate between the French and English style of garden at the end of the eighteenth century was dominated by ‘eine Typisierung, in der französisch gleich feudal-, höfisch-, aristokratisch-, absolutistisch und englisch gleich demokratisch-, bürgerlich-, freiheitlich gesetzt werden’. The English garden was seen as the ‘Garten der Freiheit’ and ‘der Angriff auf den französischen Garten wegen seiner Versklavung und Verstümmelung der Natur gehört in dieser Zeit fast automatisch zu jeder Darstellung der Gartenkunst’ (Gerndt, Idealisierte Natur, p. 106). For this reason it is ironic that the English garden which Eduard creates, which ideally should epitomize freedom, becomes Charlotte’s and Ottilie’s prison: ‘Die Illusion der Freiheit, die der Landschaftsgarten wecken will, wird auf subtilste Weise mit der erzwungenen Beschränkung der Personen auf den Park kontrastiert und als Tauschung entlarvt.’ (Gerndt, p. 161.) See above, note 79.

¹⁰⁴ Eduard is characterized by his ‘Hartnäckigkeit’, as in his determination to marry Charlotte (Wv 249 and 253), to have the Captain to stay with them (Wv 250), and finally to marry Ottilie. He was ‘das einzige, verzogene Kind reicher Eltern’ and even as an adult he is used to having things his own way (Wv 249). Eduard is also characterized by his impatience and Übereilung. The work on the ‘Lusthaus’ is too slow for Eduard: ‘Die Arbeiter schienen ihm zu lange auszubleiben. Sie kamen; es schienen ihm ihrer zu wenig und die vorgesetzte Tagesarbeit für seine Wünsche zu gering. Er fragte nach mehreren Arbeitern; man versprach sie und stellte sie im Laufe des Tages. Aber auch diese sind ihm nicht genug, um seine Vorsätze schleunig ausgeführt zu sehen.’ (Wv 327) Charlotte in contrast is worried by the ‘übereilte[ ] Weise’ in which the work is progressing (Wv 328). Similarly, Eduard’s affair with Ottilie is dominated by his sense of urgency. Once he has left the estate, Charlotte, in a conversation with Ottilie, refers to the ‘stürmendes, ungeduldiges Wesen’ of men, a comment which is clearly intended to describe Eduard, as Ottilie’s subsequent comment reveals (Wv 347). Indeed, it is Eduard’s impatience which brings about the death of his child. Unable to await the return of the Major from his meeting with Charlotte, Eduard, ‘von unüberwindlicher Ungeduld getrieben’ (Wv 454), hurries to find Ottilie. However, she tells the ‘ungeuldig’ Eduard (Wv 455, line 36) to wait for Charlotte’s answer: ‘So lange haben wir entbehrt, so lange geduldet. [...] Wie vielerlei Fälle sind möglich!’ (Wv 456) Yet Eduard’s impatience is contagious and she hurries to return across the lake, ‘[m]it Gedanken ist sie schon drüben wie mit den Augen’ (Wv 456), and in her haste she drops the baby.

¹⁰⁵ In addition to Eduard’s failure to appreciate Charlotte’s attempts at designing the ‘neue Anlagen’ or Ottilie’s floral celebration of his birthday (see above), Eduard’s contributions to the design of the estate exemplify his ‘willkürlich’ approach to life. The poplars and plane-trees which Eduard proudly points out to the Captain, and which it subsequently transpires were planted on Ottilie’s
seen, represents Zusammenhang, ‘Naturlangsamkeit’, an intuitive appreciation of nature, a receptive as opposed to a projective consciousness, and a sense of her own gradual — one might almost say ‘organic’ — development. Furthermore, I would suggest that all these aspects of Eduard’s character represent currents in the science of his time which Goethe is known to have criticized: the analytical, reductionist tendency of mechanistic science, the problem of analogy in science and the concomitant problem of Sphärenvermengung (see note 69), and the overdependence on hypotheses as a sign of the scientist-observer’s failure to be guided by the phenomenon, which in Goethe’s science was the point of departure for all birthday, were planted by the young Eduard as an act of defiance towards his father (Wv 260). Although the idea for a ‘Lustgebäude’ already existed (Wv 288), the final decision as to where it should be situated is Otilie’s, and the way Eduard immediately marks a ‘stark und derb’ (Wv 295) rectangle on the Captain’s meticulously drawn map clearly communicates his ‘willkürlich’ character. Similarly, the idea of reunifying the three lakes to recreate the original ‘Bergsee’ is suggested by an unnamed guest at the laying of the ‘Grundstein’ (Wv 303). The point at which Eduard seems closest to nature is in Part I, Chapter 13, where he has received the ‘Abschrift des Dokuments’ from Otilie and, because of its similarity to his handwriting, believes she loves him. Unable to sleep, he wanders the gardens thinking of Otilie: ‘Allés war still um ihn her, kein Liiftchen regte sich; so still war’s, daß er das wählende Arbeiten emsiger Tiere unter der Erde vernehmen konnte’ (Wv 327). Yet, rather than a feeling of oneness with the natural world, the narrative seems to suggest that this is a further example of Eduard’s talent for imitation. As in the ‘romanenhafter Treue’ which he demonstrates when courting Charlotte (Wv 249), so here in his love for Otilie there is a romantisch quality, a romanisch parody of St. Preux and Werther, a self-conscious expression of his supposed ‘Talent des Liebens’ (Wv 355).

106 Thadden, p. 188. Otilie is seen by Thadden ‘als Antipode der Beschleunigung, des Modischen und der Übereilung’ (p. 134). See above, note 94.

107 Nygaard has commented on the parallels here between Goethe’s Zur Farbenlehre (1810) and Die Wahlverwandtschaften: ‘Both works are concerned with the problem of signs and representations, both are critical of a penchant in our culture toward reductive symbolization, and both trace the tendency of symbol to displace reality, the signifier the signified in certain areas of human experience.’ (p. 71) In the ‘Vorwort’ to the Farbenlehre, Goethe accepts ‘daß wir schon bei jedem aufmerksamem Blick in die Welt theoretisieren’, and that a pure and instinctive experience of phenomena is impossible, but that for this reason the observer (i.e. scientist) must guard against ‘Abstraktion’ and proceed ‘mit Bewußtsein, mit Selbstkenntnis, mit Freiheit […], mit Ironie’ (Zur Farbenlehre: Didaktischer Teil, HA XIII, 317). Goethe goes on to attack the ‘höchst unzulängliches Surrogat’ of ‘Tafeln’ in science: ‘Ein freies physisches Phänomen, das nach allen Seiten wirkt, ist nicht in Linien zu fassen und im Durchschnitt anzudeuten.’ The Newtonian approach to nature is reductionist, using ‘hieroglyphische Überlieferungsweisen’ which serve only to hinder ‘die wahre Erkenntnis’ (HA XIII, 321-22). For this reason Nygaard sees Die Wahlverwandtschaften as expressing Goethe’s criticism of Torbern Bergman’s attempt ‘to introduce what were in Goethe’s view the “errors” of the Newtonians into the new science of chemistry’ (p. 73; cf. Nye’s comments cited in note 9). See also above, note 100.
fundamental knowledge about nature. Ultimately, Eduard is Goethe's example of what a scientist should not be. He is a dilettante who impulsively seizes chemical concepts, which he has scarcely begun to understand, and who discusses them carelessly without respect for their field of origin and without recourse to the actual phenomena. His knowledge of chemistry is, as far as we know, based solely on the book he has just begun to read, just as his garden designs are taken from the book of 'englischen Parkbeschreibungen mit Kupfern' (Wv 287). True to the theme of Scheidung, he lives in a world of signs and symbols dislocated from their referents, an

108 According to Frederick Amrine, the hypothetico-deductive method, which has dominated science in the twentieth century, may be defined as follows: 'While it is impossible to induce universal laws from particulars, it is possible to deduce consequences that must necessarily follow from any given hypothesis. An extremely trivial example will clarify the process: If I see the sun rise in the east, I cannot immediately conclude that "the sun always rises in the east," but if I hypothesize that the sun rises in the east, I know with certainty that if the hypothesis is true, then the sun will rise in the east tomorrow. I can devise an experiment to test this: namely, stand at an east-facing window at dawn and observe. If the sun rises in the east, my hypothesis remains unfalsified. But it has not been verified. It merely awaits my next attempt at falsification. "Science" is the body of hypotheses yet to be falsified; we cannot speak of theories having been "scientifically proven" or the like.' (Frederick Amrine, 'Goethe's Science in the Twentieth Century', in Goethe in the Twentieth Century, ed. by Alexej Ugrinsky, Contributions to the Study of World Literature, 17 (Westport, Connecticut: Greenwood Press, 1987), p. 89.) For Goethe, a purely inductive science was impossible (see previous note); but a science which concentrated on hypotheses denied the ontological significance of the phenomena, which is why the observation of nature — 'die Gegenstände der Natur an sich selbst und in ihren Verhältnissen untereinander zu beobachten' — was the touchstone of Goethe's science ('Der Versuch als Vermittler von Objekt und Subjekt' (1793), HA xiii, 10). This awareness of the epistemological complexity of the subject-object relationship represents a sophisticated understanding of the philosophical problems in science. Compare Goethe's notion of the theory-ladenness of observations with the post-empirical approach of Kuhn and Hesse (see Chapter 1). Compare also Ottilie's approach to natural history; above, note 86.

109 Eduard is characterized by the quality of impatience (see above, notes 94 and 104). For Goethe, 'Übereilung' was a tendency encouraged by too great a reliance on hypotheses and was to be avoided in science: 'Theorien sind gewöhnlich Übereilungen eines ungeduldigen Verstandes, der die Phänomene gern los sein möchte und an ihrer Stelle deswegen Bilder, Begriffe, ja oft nur Worte einschiebt.' (HA xii, 440; see Nygaard, p. 71.) Similarly, in 'Der Versuch als Vermittler von Objekt und Subjekt', Goethe warns 'den handelnden, so auch den stillen, von allen Leidenschaften gesichert scheinenden Beobachter' against 'Übereilung' and against other qualities detrimental to the practice of science: 'Einführungskraft, die ihn schon da mit ihren Fitten in die Höhe hebt, wenn er noch immer den Erdboden zu berühren glaubt, Uneduld, Vorschnelligkeit, Selbstzufriedenheit, Steifheit, Gedankenform, vorgefaßte Meinung, Bequemlichkeit, Leichtsin, Veränderlichkeit' (HA xiii, 11 and 14-15). On the connection between 'Übereilung' and Eduard, see also Thadden, pp. 130-31. On Eduard's dilettantism, see above, note 73.
existence dangerously detached from the real world of life and death. Eduard’s ‘willkürlich’ dilettantism results in the aestheticization of nature, an illusory attempt to return his estate to some supposed state of ‘naturalness’. Finally, both Ottilie and the baby become victims of Eduard’s dilettantism and his wilful and capricious misuse of nature and people.

As well as dealing with the epistemological problem of the relationship between humankind and the natural world, the text also problematizes human ‘Natur’. In a lengthy narratorial statement, something rare in Die Wahlverwandtschaften, the reader is offered a view of human ‘Natur’ which is both materialistic and holistic:

> Was einem jeden Menschen gewöhnlich begegnet, wiederholt sich mehr, als man glaubt, weil seine Natur hiezuf die nächste Bestimmung gibt. Charakter, Individualität, Neigung, Richtung, Örtlichkeit, Umgebungen und Gewohnheiten bilden zusammen ein Ganzes, in welchem jeder Mensch wie in

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103 It is significant that although Eduard is moved to tears by his wife’s prettification of the graveyard (above, note 63), he fails to be noticeably moved by the birth or death of his own child. The Captain too is unmoved by the death of the child: ‘Ein solches Opfer schien ihm nötig zu ihrem allseitigen Glück.’ (Wv 461) However, it is Ottilie who is out of touch with reality when the child dies; she is reading a book: ‘Das Buch war eins von denen, die ein zartes Gemüt an sich ziehen und nicht wieder loslassen. Sie vergaB Zeit und Stunde und dachte nicht, daß sie zu Lande noch einen weiten Rückweg nach dem neuen Gebäude habe’ (Wv 454). Uncharacteristically, Ottilie does not notice the sinking sun — what Adler terms ‘die natürliche Uhr’ (‘Eine fast magische Anziehungskraft’, p. 193) — and once Eduard has gone she is left ‘verwirrt und bewegt’ (Wv 456; above, note 104). The narrative demonstrates how the failure to recognize reality has tragic consequences.

111 The theme of restoring objects to their ‘natural’ condition is also reflected in the architect’s work on the chapel, as well as in the attempt to recreate famous paintings with living people, the tableaux vivants (Wv 392-94, and 403-05). On the aestheticization and concomitant destruction of nature as a sign of modernity which Goethe sought to counteract, see Heinz Schlaffer, ‘Goethes Versuch, die Neuzeit zu hintergehen’, in Bausteine zu einem neuen Goethe, ed. by Paolo Chiarini (Frankfurt a. M.: Athenäum, 1987), pp. 19-20. See also above, note 94.

112 For Thadden, it is not only nature but also Ottilie (as the embodiment of nature) that suffers from being forced to conform to the aesthetic ideals of Eduard, Charlotte and the Captain (pp. 211-12). Gabrielle Bersier also sees Ottilie as suffering from the compulsion of living according, not to ‘Naturgesetze’, but to ‘künstliche, abgeleitete, selbst auferlegte Pflichten’, resulting in pathological symptoms: ‘In den Momenten der äußersten Erregung scheint sich [...] Ottilies Körper für den auf ihn ausgeübten Zwang durch krankhafte Eigenaktivität zu rächen und die wohlbekannten Symptome: Migräneanfälle, plötzliche Errung einer Seite des Gesichts, Synkopen, stellen sich ein.’ Such symptoms accord with ‘der damals sehr verbreiteten Krankheitsausschaffung der romantischen Naturphilosophie, die die Krankheit als eine Störung der organischen Einheit von Natur und Geist verstand’ (‘Ottilies verlorenes Paradies. Zur Funktion der Allegorie in den Wahlverwandtschaften: Wieland—Brentano—Goethe’, GY, 4 (1988), pp. 150-52). By following artificial laws, initially Charlotte’s, Ottilie sets up a dichotomy within herself which manifests itself physically.
The human subject is presented as a complex composite of external and internal givens which form an integrated whole that is both unique and yet ultimately immutable. Indeed, in its holism, this statement resembles Ottilie’s views on natural history (Wv 416; see above). It is significant that this statement immediately follows a passage which has been taken as a direct expression of the text’s putative assumption of a force of ‘Wahlverwandtschaft’ in nature:

Und so blieb er, wie er wollte, wie er mußte. Aber auch dem Behagen glich nichts, wenn er sich mit ihr zusammenfand. Und so war auch ihr dieselbe Empfindung geblieben; auch sie konnte sich dieser seligen Notwendigkeit nicht entziehen. Nach wie vor übten sie eine unbeschreibliche, fast magische Anziehungskraft gegeneinander aus. (Wv 478)

As we have seen, the word ‘Wahlverwandtschaft’ is inherently ambiguous and paradoxical. To describe the undeniable attraction that exists between Eduard and Ottilie (and between Charlotte and the Captain) as ‘Wahlverwandtschaft’ is to beg the question: What is meant by ‘Wahlverwandtschaft’? That this question creates more problems than answers is clear from a detailed reading of the text. To say that their attraction is the result of the Renaissance idea of ‘Sympathie’ is also inadequate.\footnote{Adler rightly emphasizes that ‘Sympathie’, like ‘Wahlverwandtschaft’, is a historical concept, one among many Vorstellungsarten: ‘Schrittweise opfern die einzelnen Personen gleichsam aus freiem Willen ihre Freiheit auf. Am Ende leben sie so, als ob ihr Tun durch vorgeplante „Verwandtschaften“ bestimmt wäre, als ob sie in einer Welt voller „Sympathien“ im Sinne Agrippas oder della Portas lebten. Dieses magische Denken gipfelt in Ottiliens Beschworung des „Dämon[s]“. Damit gelangt sie zur radikalen Konsequenz des „Sympathie“-Gedankens, der Eduards Weltverständnis charakterisiert. Die magische „Sympathie“ sowie die Dämonie bleiben jedoch lediglich Anschauungen der Personen selbst.’ (Eine fast magische Anziehungskraft’, p. 212; cf. pp. 169-74.) See also Elm, p. 46, who suggests that the mysterious ‘Anziehungskraft’ is ‘Sympathie’.
}
The whole thrust of the text, as an analysis of human relationships seen against the background of generalized human interactions with the natural world, is to emphasize the complexity of relations (especially human relations) and their innate resistance to description through reductionist sign systems. Representations, whether they use a neo-Platonic vocabulary or a mechanistic Newtonian one, act in a reductionist way when applied to reality. When used uncritically and outside of their specialist contexts, such representations can lead to a misleading concept of reality. In the final analysis, as Thadden has emphasized, the attraction between Eduard and Ottilie is ‘unbeschreiblich’, beyond the reach of direct representation. The text presents

114 It is interesting that Ottilie is the only one who is not present for the discussion of chemistry and thus the language of mechanistic reductionism and the confusion of metaphors which results, does not have an opportunity to affect her consciousness. Eduard’s ‘willkürlich’ approach to life, exemplified by his role in the chemical discussion, creates confusion and disorder, as does Luciane (see above, notes 96 and 105). Ottilie’s natural development into a cohesive character is destroyed by Eduard’s presence. Thus neither attains individual selfhood, but instead relies on the other to complete their self-image and form ‘Ein Mensch’ (Wv 414): ‘Das Leben war ihnen ein Rätsel, dessen Auflösung sie nur miteinander fanden.’ (Wv 478)

human 'Natur' as being subject to a complex nexus of external and internal forces, into which the idea of 'Wahlverwandtschaft', or the possibility that people can be 'Geistes- und Seelenverwandte' (Wv 273), is introduced and yet never defined conclusively, thus emphasizing the complexity of human nature and its resistance to reduction.\(^{116}\)

As I have tried to suggest, Ottilie is the character who demonstrates a clear link with nature and the concept of Zusammenhang, and because of this one might assume that she would be the character most able to cope with the relational dilemmas raised by the narrative. However, this is clearly not the case. Ottilie has often been seen as exemplifying a naturally cohesive character and personifying the 'Bezug auf sich selbst' described as the property of all 'Naturwesen' (Wv 271).\(^{117}\)

According to Eduard, water, oil and quicksilver display 'einen Zusammenhang ihrer Teile': 'Diese Einung verlassen sie nicht, außer durch Gewalt oder sonstige Bestimmung. Ist diese beseitigt, so treten sie gleich wieder zusammen.' (Wv 271) In terms of his relationship with Ottilie, Eduard himself provides the 'Gewalt', the external force that acts on Ottilie's coherent, though still immature, character, first

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\(^{116}\) See Nygaard's denial of the idea that the mysterious force of attraction is anything more than a psychological phenomenon (above, note 31). Wiethölter considers that 'Wahlverwandtschaft [...] ist allein ein sprachlicher Effekt', a product of language, myth and discourse ('Legenden', p. 61). Clearly, as I have tried to suggest, this inherently ambiguous term allows a number of interpretations — scientific, alchemical, neo-Platonic. Indeed this hermeneutic plurality is the source of its fascination.

\(^{117}\) Adler agrees with this attitude: 'Bei Ottilie ist es auch die Entwicklung ihres Charakters, die es ihr ermöglicht, sich gegen die "Wahlverwandtschaft" zu stellen. Als einzige erreicht sie einen vollkommenen "Bezug auf sich selbst" [...], indem sie sich selbst in der Reflexion gewahrt und ihr Leben zu leiten versucht. Ihre "Kohäsion" ist der "narzißhaften" Projektionen Eduards entgegengesetzt, der sich in der Natur spiegelt, ohne sich selbst zu erkennen. So läßt sich an Ottilie exemplarisch die höchste Form der "Kohäsion" erkennen: "Selbstbezug" durch Selbsterkenntnis.' ('Eine fast magische Anziehungskraft', p. 206.) Adler has drawn attention to the Captain's suggestion that 'Bezug auf sich selbst' is denoted by 'die Kugelgestalt' (Wv 271-72), and the fact that Ottilie is often described — as here by Eduard — in terms of 'ihr schönes, rundes, himmliches Gesichtchen' (Wv 354, my emphasis). See also Adler, ibid., pp. 204-05. But contrast this with Bersier's view of the dichotomy that Ottilie has been forced to accept by following Eduard's and Charlotte's approaches to life (see above, note 112).
offering the hope of love and independence and then destroying her resolve to re-unite
the couple around their child. However, Otilie’s sense of Zusammenhang includes
only a limited concept of human freedom. In her diary (Part II, Chapter 5), she collects
aphorisms which suggest this viewpoint:

Freiwillige Abhängigkeit ist der schönste Zustand, und wie wäre der möglich
ohne Liebe.
Wir sind nie entfernter von unserm Wünschen, als wenn wir uns einbilden, das
Gewünschte zu besitzen.
Niemand ist mehr Sklave, als der sich für frei hält, ohne es zu sein.
Es darf sich einer nur für frei erklären, so fühlt er sich den Augenblick als
bedingt. Wagt er es, sich für bedingt zu erklären, so fühlt er sich frei. (Wv 397)

Elements of melancholic resignation and acceptance of a determined existence
combine here in an attitude which is wholly in keeping with her later fatalism.
Following the death of the child and her apparent inability to escape from Eduard’s
attentions, Otilie becomes convinced that she is being punished for breaking the laws
which govern her existence as an orphan: ‘ich bin aus meiner Bahn geschritten’ (Wv
462), is her terrible self accusation. ‘Ein feindseliger Dämon, der Macht über mich

118 It is significant that whilst Eduard is absent during Part II, Otilie gradually attains a state of
balance and self-awareness. By Part II, Chapter 9 her closeness to the baby and her relationship to
nature, cause Otilie to feel that the child should grow up with Eduard and Charlotte: she is
‘entschieden’, ‘daß ihre Liebe, um sich zu vollenden, völlig uneigennützig werden müsse’ (Wv
425). In the following chapter, the English Lord’s description of his self-imposed exile makes
Otilie even more determined to see Eduard and Charlotte reunited. Eduard is however absent
from the narrative up to this point. In Part II, Chapter 12 Eduard reappears, although not on his
estate. The extracts from Otilie’s diary finish in Part II, Chapter 9, after her decision to renounce
Eduard. The Novelle of ‘Die wunderlichen Nachbarskinder’ in Part II, Chapter 10, forms a turning
point after which the reappearance of Eduard destroys Otilie’s resolve and reimposes the state of
confusion which so typifies Eduard’s presence. It is clear that Otilie’s decision in Part II, Chapter
9, represents an important assertion of will, although ultimately it is insufficient to withstand the
reappearance of Eduard. See note 114.

119 In this passage from Otilie’s diary, Monika Hielscher sees a reflection of Goethe’s own attitude
towards individual freedom: ‘Wie das Gute und das Böse sind für ihn Freiheit und Notwendigkeit
menschliche Termine für zwei Erscheinungsweisen der einen, in sich polar-strukturierten Gott-
Natur. Das Freiheitsgefühl des Menschen bildet den psychologischen Kontrapunkt zum
Bewußtsein seiner Bedingtheit; beide sind im Menschen unlösbar miteinander verkniipft.’ (Natur
und Freiheit, p. 44.) According to Hielscher, the word ‘Wahlverwandtschaft’, ‘wird [...] zum
umschließenden Ausdruck der polaren Beziehung zwischen Freiheit und Naturgegebenheit’ (p.
50). Compare Otilie’s fatalism with that of Charlotte; see above, notes 52 and 43.
gewonnen, scheint mich von außen zu hindern, hätte ich mich auch mit mir selbst wieder zur Einigkeit gefunden.’ (Wv 476-77) This retreat into a primitive, animistic concept of reality seems to be the last resort of an unsure intellect struggling to find explanations for the perceived gulf between current ideals of freedom and her experience of reality.\(^\text{120}\) Ottilie’s innate sense of Zusammenhang is inadequate against the obsessive attentions of Eduard and she is unable to develop a positive and active concept of the role of human will within a wider experience of the unity of nature.

Ottilie’s inability to cope with Eduard’s love may well result from her emotional immaturity, but the element of fatalism in her approach to life is possibly also integral to an holistic concept of reality. As we have seen, Goethe criticized the analytical approach to nature as reductionist and ontologically inadequate. Instead he emphasized the need for an awareness of the plurality of Vorstellungsarten and the ultimate objective of a unified view of nature. Nevertheless, any holistic science — such as that described by Ottilie in her diary — must face the problem that all perception is by necessity selective and limited, and our knowledge of nature must reflect this:

> To engage in any activity, and in particular in any inquiry, we must inevitably be selective. We must bring some things into the foreground and distance others into the background. We must assign a greater relative importance to

\(^{120}\) As Nemec has said, Ottilie is ‘mittellos’ (p. 57; see above, note 93). But in a real sense she is voiceless, her idea of herself being a construct of images which others have imposed upon her, especially Eduard. For Thadden, Ottilie is Eduard’s ‘Kunstprodukt’ (p. 174), but as I have shown, she is also subject to other images of herself. Her silence at the end of the text expresses her inability to break free from these alien images. According to Pörksen, ‘die Strenge der Entsagung ist in ihrem Fall die Bedingung der Freiheit’ (p. 314). Yet this ‘freedom’ which she achieves is hardly a positive one and is as much a denial of life as is her fasting. Her realization of the ‘Gefährlichkeit der Rede’ (ibid.) is a harsh lesson, one learnt from her experience of people unable to see beyond their own limited conceptions of life and with the power to impose this view on others (see Ottilie’s description in her diary of a silent relationship, Wv 369; above, note 46).

some things than we do to others, and still others we must completely ignore. We do not, and cannot, begin (or end) with ‘all the data.’ This is an incoherent desire and an impossible goal. ‘To grasp everything’ would be to do away with all perspective relations, it would mean to grasp nothing, to misapprehend the nature of knowledge. If we are ever to begin a practice or an inquiry we must, and must want to, leave unasked indefinitely many questions about the world.\footnote{Alexander Nehamas, \textit{Nietzsche: Life as Literature} (Cambridge, MA: Harvard University Press, 1985), p. 49. See also Chapter 1 of this thesis.}

Just as human perception is restricted to one viewpoint, so knowledge of the world can only ever be partial and limited: \textit{Scheidung} is inherent in cognition. Equally the assertion of individuality and of human will to effect change in our environment is based on an act of differentiation, of \textit{Scheidung}. The act of individuation, the creation of an integrated self, as described by the narrator in the above passage (\textit{Wv} 478), presumes a state of separation from one’s surroundings. Although this does not contradict the notion of an ultimate condition of unity, as for example in the implied analogy of the baby in the womb which is separate yet part of a symbiotic whole, it at least qualifies this state and introduces an element of paradox and of polarity. And with this suggestion of paradox we return to the oxymoronic title, which in a word encapsulates Goethe’s belief in the fundamental \textit{Polarität} of nature and existence.\footnote{Kleinschnieder sees Goethe’s idea of polarity as a fundamental concept in his approach to nature: ‘Der Begriff der Polarität ist so etwas wie eine spekulative, einfachste Bestimmung, die jedem Phänomen zukommt. Jedes Phänomen ist entweder eine Entzweiung, die einer Vereinigung fähig ist, oder eine Einheit, die der Entzweiung fähig ist. Weder die Einheit (die Identität), noch die Zweiheit (die Differenz), kann aber als ein bestehender Zustand angesehen werden: zwischen beiden waltet “ein lebendiges Schweben”. Soll nun gesagt werden, welches eigentlich die Struktur des Phänomens ist, die uns einmal so, das anderemal so erscheint, geraten wir in Schwierigkeiten. In irgendeiner Weise ist das Phänomen zugleich Eins und Zwei: es ist eine Ganzheit.’ (\textit{Goethes Naturstudien}, p. 131.) On Goethe and the idea of polarity, see also Adler, ‘Eine fast magische Anziehungskraft’, pp. 82-83, 120-21, and 186, D. Kuhn, ‘Goethe und die Chemie’, p. 112, Nisbet, \textit{Goethe and the Scientific Tradition}, pp. 44-46, Charles Sherrington, \textit{Goethe on Nature and on Science}, The Philip Maurice Denke Lecture, Oxford, 1942 (Cambridge: Cambridge University Press, 1942), pp. 11 and 17. See also above, notes 7, 16, 73, and 76.}

Ultimately both \textit{Zusammenhang} and \textit{Scheidung} are themselves \textit{Vorstellungsarten}, alternative ways of seeing the world. These apparently
diametrically opposed concepts are, in a crowning irony, presented by the text as
themselves necessarily part of a Verwandtschaft. Die Wahlverwandtschaften
suggests that the unity of nature is paradoxically founded on the principle of
Polarität. Human nature manifests this polarity in the continual tension that exists
between the desire for oneness, for union with the Other (Eduard-Ottilie, Captain-
Charlotte), and the need to express individuality, differentness and to exercise free
will. Although Goethe believed in the possibility of attaining a more profound
understanding of the world through knowledge of this underlying Polarität, the tragic
love of Ottilie and Eduard shows that he was aware that the effect of this principle
was by no means always positive. Die Wahlverwandtschaften demonstrates an
understanding of the complex interaction of subject and world that cautions against
the reductionist approach of mechanistic science yet does not avoid the problems
implicit in an holistic world-view. Through literature Goethe explores what science
could not — the mediated and inherently metaphorical basis of knowledge and its role
in human self-understanding and the felt complexity of human being in the world.

123 According to Ernst Cassirer, Goethe, in contrast to Schelling, did not reject outright the analytical
approach: 'Er weiß vielmehr und spricht es aus, daß — entsprechend der ewigen Systole und
Diastole der Natur — Analyse und Synthese die beiden notwendig zusammengehörigen
Grundfunktionen aller Erkenntnis sind, die sich wie Ein- und Ausatmen wechselseitig bedingen.
Aber er faßt die Elementarphänomene und Elementarprozesse, auf die er das Geschehen
zurückführt, nicht als Momente, die, wie die Differentialgleichungen der Physik, das Ganze der
Wirklichkeit bloß begrifflich vertreten sollen, sondern die dieses Ganze noch unmittelbar
bedeuten und sind. Wer sich am Ganzen erquicken will, der muß das Ganze im Kleinsten
erblicken; — aber er muß auch umgekehrt dieses Kleinste als Symbol verstehen, an dem sich ihm
die eine ewige Ordnung des Ganzen, als wahrhaft konkrete und allumfassende, offenbart.'
('Goethe und die mathematische Physik: Eine erkenntnistheoretische Betrachtung', in: E.
Cassirer, Idee und Gestalt: Goethe, Schiller, Hölderlin, Kleist (2nd edn, Berlin: [n. pub.], 1924;

124 According to Stephenson, Goethe believed that the principle of Polarität was only revealed in the
aesthetic realm. Quantitative science was wholly inadequate for the explication of such
fundamental principles (pp. 54-55). Goethe believed that as in art, the harmony of Nature lay in
'the asymmetrical co-ordination of opposites' (p. 60). Similarly: 'The “natural language”
(Natursprache) of polarity surfaces in rich ambiguities and complex oxymora, tautologies and
paradoxes' (Goethe's Conception of Knowledge and Science, p. 69). See above, note 67.
Chapter 3

Defining the Human:

Büchner's *Dantons Tod* and *Woyzeck*
Chapter 3

Defining the Human:

Büchner’s Dantons Tod and Woyzeck

In the previous chapter I have demonstrated how Goethe’s Die Wahlverwandtschaften reflects the epistemological and scientific uncertainty which characterized the early years of the nineteenth century, a period Wolf Lepenies has described as representing ‘die Krise der Naturgeschichte’. It was an era of transition, revealing a loss of confidence in accepted paradigms and a move towards ‘Verzeitlichung’ in the study of nature, a development that prepared the way for the Darwinian theory of evolution.\(^1\) The vast wealth of information on the natural world collected during the eighteenth and early nineteenth century seemed to threaten the Enlightenment assumption of a natural realm susceptible to rational organization.\(^2\)

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1 Wolf Lepenies writes: ‘Spätestens mit den Versuchen, die Dimensionen der Klassifikationsverfahren zu erweitern, um die Verarbeitung der wachsenden Materialfülle noch leisten zu können, wurde deutlich, daß die Naturgeschichte in eine Wachstumskrise geraten war: lange Zeit waren die Naturalisten auf die Erweiterung ihrer Kenntnisse konzentriert gewesen, bevor sie merkten, daß ihre Erkenntnismittel nicht mehr ausreichten, um über die Anhäufung von Tatsachen hinaus noch zu einer Systematisierung des Wissens zu gelangen.’ (Das Ende der Naturgeschichte, pp. 61-62.) Lepenies’s important text shows how the classificatory approach to the study of nature gave way to a ‘genetische Betrachtungsweise’ (p. 87). The concept of the world as fixed and immutable was replaced by the idea of change, represented by a ‘Verzeitlichung’ of disciplines (see pp. 9-20). Although I accept Lepenies’s suggestion that the theory of chemical affinity belongs in the period of classificatory science (p. 102), I disagree with the suggestion that Goethe’s Die Wahlverwandtschaften was an uncritical part of this tradition, as I hope my previous chapter has shown. On the theme of the temporalization of nature and its influence on the Romantic Naturforscher, see Dietrich von Engelhardt, ‘Historical Consciousness in the German Romantic Naturforschung’, in Cunningham and Jardine, Romanticism and the Sciences (1990), pp. 55-68. See Chapter 2 of this thesis, especially notes 18 and 19.

2 According to Otto Döhner, who has written the most detailed study of Büchner’s concept of nature: ‘Georg Büchner stand am Ende eines Zeitschnitts, der in der zweiten Hälfte des 18.
According to Karl M. Figlio, the first years of the nineteenth century witnessed 'the emergence of biology as an autonomous science'. Figlio has stated that the key dichotomies which dominated the study of the life-sciences at the beginning of the nineteenth century included 'inanimate/animate, animal/man, instinct/intelligence, internal/external, unorganized/organized' (p. 21). In spite of the influence of these binary oppositions on biology, Figlio has suggested that the life-sciences were unified by their common 'interest in organization', the 'proper science' of which was comparative anatomy (p. 37). Georg Büchner's contribution to the nascent life-sciences was in the area of comparative anatomy and, as I shall demonstrate, both his scientific and literary work reveal a common concern with these fundamental dichotomies in Natur and their implications for the understanding of humankind.
Georg Büchner came from a family with a strong tradition in the study of medicine and pathology; indeed the practice of healing crafts dates back to his great grandfather’s generation:

Als Bader, Chirurgen und Ärzte waren die im Odenwald beheimateten Büchners seit vielen Generationen heilberuflich tätig. Dr. Ernst Karl Büchner, einstmal Militärchirurg in den Armeen Napoleons, dann Stadtarzt, stellvertretender Krankenhausdirektor und Mitglied der obersten Gesundheitsbehörde des Großherzogtums Hessen in Darmstadt, war sicher stärker, als dies dazumal bei einem Praktiker üblich war, an der medizinischen Forschung interessiert. Der älteste Sohn Georg und seine Freunde haben schon als Primaner des humanistischen ‘Pädagogs’ im von Vater Büchner im Hospital eingerichteten ‘anatomischen Theater’ beim Sezieren zugeschaut, was wohl dazu beigetragen hat, daß sich eine ganze Reihe der Schulkameraden dem medizinisch-naturwissenschaftlichen Studium zugewandt hat.⁵

In the autumn of 1831, the eighteen year old Büchner left Darmstadt for Strasbourg in order to study medicine at the University, where some sixty years previously Goethe had also attended lectures at the medical faculty. After two years of study he was required under Hessen law to return and complete his studies in Giessen. A period of illness prevented him from continuing his studies until January 1834. However, the threat of arrest and imprisonment following his involvement in the writing of Der Hessische Landbote (printed at the end of July 1834) necessitated Büchner’s speedy return to Strasbourg in March 1835, where he continued with his studies. Just over a year later, he completed his doctoral dissertation, an anatomical study of the nervous system of the barbel, and presented his results to the Société du Museum d’Histoire Naturelle in Strasbourg.⁶ Zurich University had been founded in 1833 and, according


⁶ Büchner presented his dissertation in a series of three lectures given on 13 and 20 April, and 4 May 1836. These were a success and the Société accepted him as a ‘korrespondierende Mitglied’. More importantly, they agreed to publish his dissertation, which appeared in 1836,
to Otto Döhner, Büchner had decided early in his studies to apply there for a position as ‘Dozent’ once his thesis was complete (p. 54). In September 1836 he was awarded the degree of Doctor of Philosophy by Zurich University, and in October Büchner left Strasbourg to take up a position at Zurich. His ‘Probevorlesung’, given on 5 November before an audience which contained many leading figures in the life-sciences, including Lorenz Oken (1779-1851), was a success. He began lecturing immediately, his area of responsibility being described as ‘Zootomische Demonstrationen’ (Golz, p. 66). However, on 2 February 1837, Büchner fell ill and was diagnosed as suffering from typhus, from which he died on 19 February, only twenty-three years old.


Döhner cites a Dr. Lüning, who attended some of Büchner’s lectures, as stating that although only five students were enrolled, twenty students attended, including Oken’s son (‘Georg Büchners Natuerauffassung’, p. 60). Karl Eduard Eichwald (1795-1876), who from 1827 was Professor of Zoology, Comparative Anatomy and Obstetrics at the University of Wilna, visited Zurich in November 1836 in order to meet Oken. In his travel diary he made the following comment concerning Oken and his new ‘Dozent’, Georg Büchner: ‘So verlieren denn die großen Männer ungemein, wenn man sie in der Nähe sieht und hört. Wie er [Oken] seine Zoologie schreibt, begreife ich nicht; er benutzt nur Kupferwerke und andere Handbücher, ohne sich bei einer großen Sammlung Rats erholen zu können, und obgleich die Züricher Universität einige recht hübsche Tiere hat, so scheint er sie doch nicht zu benutzen […]. Er selbst liest nicht vergleichende Anatomie; diese trügt ein junger Privatdozent Dr. Büchner (der vor kurzem über das Nervensystem der Fische geschrieben hat) vor; ich lernte ihn bei Oken kennen; er lobte ihn sehr und verspricht sich viel von ihm.’ (K. E. Eichwald, ‘Tagebuch meiner Reise durch Deutschland und Italien im Jahre 1836’, manuscript in the ‘Kurländischen Provinzialmuseum’ in Mitau; published in (Sudhoffs) *Archiv für Geschichte der Medizin*, 15 (1923): 147-52; cited from Döhner, p. 59.)

These biographical details and the fact that Büchner’s research into the biological sciences lasted barely six years, fail to do justice to the significance of his work for the emerging life-sciences. His dissertation on the anatomy of barbels was positively reviewed by Johannes Peter Müller (1801-58), one of the key figures in the development of modern medical science. In his Mémoire, Büchner attempts to shed light on one of the key problems of the time in comparative anatomy, namely the origin and development of brains in animals and humans. In order to do so, Büchner made use of a current theory, which had been suggested independently by both Goethe and Oken — the vertebrate theory of the skull. In his inaugural lecture,
Given in October 1807, Oken described his idea of the central importance of the spinal column in the development of animal skeletons:

Eine Blase verknochert; und sie ist ein Wirbelbein. Eine Blase verlängert sich zu einer Röhre, wird gegliedert, verknochert; und sie ist eine Wirbelbeinsäule. Die Röhre gibt (nach Gesetzen) blinde Seitenkanäle von sich, sie verknochern; und es ist ein Rumpfskelet. Dieses Skelet wiederholt sich an beiden Polen, jeder Pol wiederholt sich an den andern; und sie sind Kopf und Becken. Das Skelet ist nur ein aufgewachsenes, verzweigtes, wiederholtes Wirbelbein; und ein Wirbelbein ist der präformierte Keim des Skelets. Der ganze Mensch ist nur ein Wirbelbein.¹¹

With his anatomical study of barbels, Büchner hoped to solve the problems of ‘Homologisierung’ as they applied to the morphology of the skull and brain (Doerr, pp. 287-89).¹² Büchner’s work in comparative anatomy focused on three connected hypotheses: that the skull was a development of the spinal column, that the brain was an extension of the spinal cord, and that nerves in the brain and the spine are fundamentally alike. The findings in his Mémoire seemed to confirm these suppositions and his ‘Probevorlesung’ is a reflection of the position he established in his doctoral research.¹³ According to Strohl, ‘Was Goethe für die Metamorphose der

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¹¹ L. Oken, Über die Bedeutung der Schädelknochen: Ein Programm beym Antritt der Professur an der Gesammt-Universität zu Jena (Jena: [n. pub.], 1807); cited from Strohl, p. 634.


¹³ In the ‘Probevorlesung’, which was later given the title ‘Ueber Schädelnerven’ by Karl Emil Franzos (Georg Büchner, Sämtliche Werke und handschriftlicher Nachlaß: Erste kritische
Büchner’s research into comparative anatomy was conducted against the background of a wider debate concerning the understanding of nature. By the 1830s, the influence of *Naturphilosophie* in Germany was on the wane and a more rigorously empirical approach to the study of nature was beginning to predominate.¹⁵ Men like Johannes Müller and Justus von Liebig (1803-73) were the rising stars of this new science.¹⁶ Büchner’s own younger brother, Ludwig, would later play an important role

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¹⁴ See also Golz, pp. 67-68. Reddick refers to ‘the radiantly positive vision — Goethean and *naturphilosophisch* in its essence — that he [Büchner] voices in the preamble to the Trial Lecture’ (*Georg Büchner*, p. 26). However, Döhner emphasizes that, although Büchner was influenced by the idealist approach to nature, he was symptomatic of a move to a more empirically grounded *Naturforschung*. For Büchner, ‘[d]ie bleibende Bedeutung der idealistischen Morphologie lag also darin, daß sie die vergleichende Anatomie vor der Erstarrung in bloßer Deskription und Klassifikation bewahrt und ihrer Heuristik zukunftweisende Anregungen gegeben hatte.’ (Döhner, p. 192; on Büchner and Goethe, see Döhner, pp. 134-35, 188-87, 194, and 225-26.)


¹⁶ Liebig obtained a doctorate at the age of nineteen from Erlangen University. Through the influence of Alexander von Humboldt he gained a professorship at Giessen in 1825, where he established a teaching laboratory, which, whilst not the first of its kind, was extremely influential: ‘his was the first nursery in which research chemists were bred in large numbers, and it became the ancestor of the modern chemistry department. It had begun on a basis of training pharmacists,
in popularizing this materialist concept of nature, especially through his book *Kraft und Stoff* (1855), which has been described as 'the virtual bible of nineteenth-century German materialists'. As I hope to demonstrate, the tension between the materialist and idealist approaches to nature, which is in itself a reflection of the fundamental Cartesian dichotomy of *res extensa* and *res cogitans*, provides a point of departure for analysing both the scientific and philosophical context in which Büchner lived and worked, and the literary and scientific works themselves. Concomitant with this is but Liebig interested them in research and those trained with him found that their skills might lead them instead into academic life or into chemical manufacturing' (Knight, *Age of Science*, p. 60). In 1832 he founded the *Annalen der Pharmacie*, subsequently renamed *Liebigs Annalen der Chemie*. See also Berentsen, 'Vom Urnebel zum Zukunftsstaat', p. 27. On J. Müller, see above, note 9.


On materialism, see especially Frederick Gregory, *Scientific Materialism in Nineteenth-Century Germany*, Studies in the History of Modern Science, 1 (Dordrecht: Reidel, 1977). In opposing the ideas of the *Naturphilosophen*, Ludwig Büchner in common with the other materialists (such as Jacob Moleschott and Karl Vogt) sought to undermine metaphysical and speculative explanations of natural phenomena, such as force: 'Force in Büchner's eyes was the entity above all others which had been exploited in order to establish the existence of supernatural powers. If he could
the question of the problematic implications of the new materialist science for the Enlightenment concept of the autonomous individual. It is through his plays, in particular *Dantons Tod* and *Woyzeck*, that Büchner confronts the dichotomies raised by the new understanding of nature being formulated in science and philosophy at this time. By seeking to revaluate ideas such as *Natur* and *Freiheit*, Büchner challenges his audience to reconsider their own relationship to widely held concepts about the material and ideal world and to seek a new and personal definition relevant to their own life-worlds.

Georg Büchner’s concept of *Natur* is by no means simple and unambiguous. Indeed the critical literature is divided as to whether Büchner should be regarded as a materialist or an idealist in his approach to *Natur*. Critics such as John Reddick, whose recent study of Büchner’s work is a forthright affirmation of Büchner’s holistic world-view, foreground Büchner’s critique of teleological and mechanistic explanations of life, as exemplified by the following passage from the ‘Probevorlesung’:

> Sie kennt das Individuum nur als etwas, das einen Zweck außer sich erreichen soll, und nur in seiner Bestrebung, sich der Außenwelt gegenüber theils als Individuum, theils als Art zu behaupten. Jeder Organismus ist für sie eine verwickelte Maschine, mit den künstlichen Mitteln versehen, sich bis auf einen gewissen Punkt zu erhalten. Das Enthüllen der schönsten und reinsten Formen im Menschen, die Vollkommenheit der edelsten Organe, in denen die Psyche fast den Stoff zu durchbrechen und sich hinter den leichtesten Schleieren zu bewegen scheint, ist für sie nur das Maximum einer solchen Maschine. Sie macht den Schädel zu einem künstlichen Gewölbe mit Strebepeieren, bestimmt, seinen Bewohner, das Gehirn, zu schützen, — Wangen und Lippen zu einem Kau- und Respirationsapparat, — das Auge zu

show from natural science that force could never be separated from a material substratum, he would have relocated this traditionally transcendent category within nature, thereby denying its allegedly supernatural quality.’ (Gregory, p. 106.) On Ludwig Büchner, see Gregory, pp. 100-21. I shall return to this in Chapter 4.
Commenting on this passage, Reddick states:

nothing demonstrates more surely than do these few lines how gravely and fundamentally Büchner was behind the times. He was wholly if nobly backward-looking in his reliance on idealist, poetical, mystical notions, in his enlistment of Lavater, an eighteenth-century irrationalist and mystical pantheist. [...] In his spirited defence of the ideals of the long-dead Lavater, the recently dead Goethe, the elderly Oken, Büchner was fighting a hopeless rearguard action. (Georg Büchner, p. 38.)

Reddick argues that Büchner ‘was drastically out of tune with the music of his time’, by which he means the trend towards a thoroughgoing materialist and empiricist science of nature, as represented by scientists like Liebig and Müller. He also

Reddick is quite insistent on this point: ‘Büchner accused rationalist philosophy of being hopelessly remote from the vibrant reality of life; but he was himself hopelessly remote from the prevailing spirit of his time. [...] Only a culture as grossly backward in machine-age terms as the German lands could enable a pre-mechanistic philosophy of science to survive so far beyond its time — and even so, it was already severely under attack when Büchner so briefly championed it.’ (Georg Büchner, p. 39.) An earlier essay by Reddick described Büchner as ‘riding the wrong scientific horse’, and stated that ‘his whole “philosophical” approach to science is deductive, not rationalistic or empirical, his experimental work being designed only to substantiate his strictly a priori suppositions [...]’ (‘Mosaic and Flux: Georg Büchner and the Marion Episode in Dantons Tod’, Oxford German Studies, 11 (1980), pp. 52-53). However, as Reddick himself suggests, science cannot be neatly divided into ‘deductivists and speculative idealists on the one hand, and inductivists and rigorous empiricists on the other’; rather a ‘continuous spectrum’ links the two, enabling science to develop creatively (Georg Büchner, pp. 23-24). As Popper's Logic of Scientific Discovery showed, the hypothetico-deductive method is the approach which dominates modern science, as Frederick Amrine describes: ‘According to the hypothetico-deductive method, the scientist frames a hypothesis to account for a particular perception or phenomenon [...] then invents an artificial context in which the factor that is held to be crucial is isolated, and a result logically deducible from the hypothesis is predicted. Depending upon the result of the experiment, the hypothesis is then either confirmed or disconfirmed. Supposedly, scientists are prepared to abandon any hypothesis cheerfully the moment it has been falsified. However, because one can never induce universal laws from particular instances — the method is in that sense a one-way street — no hypothesis can ever be conclusively affirmed.’ (‘The Metamorphosis of the Scientist’, p. 190; cf. Chapter 2, note 108.) If one accepts this analysis, then I believe that in Büchner’s use of speculative theory and empirical evidence, a good case can be made for the modernity of his approach to science. Indeed, Döhner has suggested that Büchner’s ‘Gesetze’ are not ‘exakt abgeleiteten Sätze von zwingender Notwendigkeit’, but rather ‘Hypothesen, die sich in einem bestimmten Zusammenhang als Voraussetzungen in der Forschung bewährt haben und neue
suggests that Büchner’s science was characterized by what Büchner himself
described as the ‘Anschauung des Mystikers’ (L II, 292), or what Reddick terms,
‘benign mysticism’ (Georg Büchner, p. 39). Furthermore, Reddick argues that
Büchner’s ‘pre-mechanistic philosophy of science’ is symptomatic of his vision of
life:

Büchner was a dedicated wholist in all respects. His science was not in some
separate and autonomous compartment of his life: it was all of a piece with the
rest of his being. His scientific idealism thus corresponds exactly to his social
idealism; both are equally expressions of his idealism concerning existence in
general. Furthermore, the mechanistic mode of science was itself — whether
wittingly or unwittingly — a reflection of the social mechanisms of the
machine age. It is therefore not altogether surprising when we discover that in
defending his science against the reductivism of the mechanists and
functionalists, Büchner was also defending his life values against the
reductivism of an increasingly mechanistic, functionalistic world. (Georg
Büchner, p. 40.)
For John Reddick, accusations which have traditionally been levelled at Büchner’s work, of fatalism, determinism and materialism, represent a fundamental misreading of Büchner’s literary and scientific project. However, Walter Müller-Seidel’s essay on Büchner’s concept of nature views Büchner in just these terms. For Müller-Seidel, Büchner’s view of history and human motivation is profoundly deterministic: ‘Die Geschichte wird auf die Naturgeschichte reduziert: auf die Triebe des Menschen — und nicht auf die Männer, die Geschichte machen. Der in der Geschichte handelnde Mensch wird in seinen Trieben durchschaut.’ (‘Natur und Naturwissenschaft im Werk Georg Büchners’, p. 215.) Büchner’s theatre is an attack on the Enlightenment concept of the rationally autonomous subject and Schiller’s idealism in particular:

Nicht mehr der handelnde Mensch wie bei Schiller steht im Mittelpunkt sondern derjenige, der als Handelnder durchschaut wird; und durchschaut wird der Handelnde, der eigentlich ein Erleidender ist, indem er im Handeln nur seiner Natur folgt — jener Natur, die in ihm lügt, hurt, stiehlt und mordet. Handeln ist Genießen, und Genuß ist Leid; Erleiden dessen nämlich, was in uns über uns verfügt. (Müller-Seidel, p. 216.)

Central to Reddick’s analysis, is Büchner’s putative idealization of the individual. According to Reddick, the ‘individual is sacred to Büchner’, as his comment in the ‘Probevorlesung’ indicates: ‘Alles, was ist, ist um seiner selbst willen da.’ (L II, 292) Reddick comments: ‘He is therefore implacably opposed to any attempt from whatever quarter — be it in science, philosophy, aesthetics, morals, politics — to subordinate individuals to systems, and functionalize them into mechanical components according to an abhorrent law of “maximum fitness for purpose”’ (Georg Büchner, p. 89). It follows from this that Reddick discounts fatalism as a possible interpretative approach: ‘Büchner is emphatically not a fatalist or a determinist’. Büchner’s letter to Minna Jaeglé, where he describes his study of the history of the French Revolution and states, ‘[i]ch fühlte mich wie zernichtet unter dem graßlichen Fatalismus der Geschichte’ (L II, 425; March 1834), is ‘one of the reddest herrings in German literary history’ (Reddick, p. 109). Rather than a play reflecting a determinist view of history, Dantons Tod is a celebration of the individual and human ‘conscience’, represented through Danton’s ‘metamorphosis’: ‘The death evoked in the title of the play is not brought about by “unknown powers” or sadistic gods or the “Minotaur of the Revolution” or the “hideous fatalism of history”; it is brought about by Danton’s own Damascene conversion, by the moral and ethical process within his own being that changes him from a raging mastiff to a creature with wings of a dove, and makes him willing to be guillotined himself rather than go on guillotining others.’ (Reddick, Georg Büchner, p. 144; cf. pp. 42, 110, and 133-40.)
Indeed, Müller-Seidel sees Büchner’s science as being a pronounced act of defiance towards the speculative science of the Naturphilosophen in Germany:


For Müller-Seidel, Büchner personifies the new materialist scientific world-view, dominated by ‘Beschreibung, Analyse und Erkenntnis’ (p. 218). Clearly, the views of John Reddick and Walter Müller-Seidel are fundamentally opposed and it is perhaps not surprising that Reddick dismisses Müller-Seidel’s materialist thesis. Yet,
Reddick's argument appears to be premised on the assumption that a materialist science must be necessarily a mechanistic one, and that as Büchner clearly attacks the supposedly teleological and mechanistic approach of English and French science — a rather dubious supposition on Büchner's part — then he cannot be a materialist, but instead must be an idealist. It is my contention that the position of the life-sciences at this time was far more complex than this analysis suggests. Even such eminent empiricists as Liebig and Müller held vitalist views and indeed, in the Biedermeier period, holistic and vitalistic explanations of life were not uncommon amongst scientists in the German speaking lands. Indeed the wealth of empirical detail that anguish in Georg Büchner's works are those of a passionate, wounded idealist, not a cool, enquiring empiricist.' (Georg Büchner, p. 25, note 48; cf. p. 29.) Dorothy James gives a more positive account of Müller-Seidel's essay, although ultimately disagrees with it (p. 5).

24 Döhner criticizes Büchner's supposition that English and French science is predominantly teleological at this time. That it was mainly empiricist in approach is undeniable, but this is not necessarily the same as teleological (p. 96). According to Döhner, Jean Baptiste Lamarck (1744-1829) and Georges Cuvier (1769-1832) represented the teleological school of thought to which Büchner so objected. Lamarck's proto-evolutionary idea of organic development being determined by 'besoin', or need (the second of Lamarck's four laws of evolution), is clearly criticized in the 'Probevorlesung', where Büchner states: 'die Thränendrüse ist nicht da, damit das Auge feucht werde, sondern das Auge wird feucht, weil eine Thränendrüse da ist' (L II, 292). Döhner thinks it probable that Büchner was acquainted with Lamarck through Cuvier's discussion of his ideas (see Cuvier, 'Éloge de M. de Lamarck' in: Mémoires de l'Académie royale des sciences de l'Institut de France, 13 (Paris, 1835), p. i-xxxi; from Döhner, p. 111). Büchner's critique of the mechanistic-teleological approach to the human body (L II, 291), is strongly reminiscent of Giorgio Baglivi's De Praxi medica (1696): 'Whoever examines the bodily organism with attention will certainly not fail to discern pincers in the jaws and teeth; a container in the stomach; watermains in the veins, the arteries and the other ducts; a piston in the heart; sieves or filters in the bowels; in the lungs, bellow; in the muscles, the force of the lever; in the corner of the eye, a pulley, and so on.' (G. Baglivi, in Opera omnia medico-practica et anatomica (Venice: [n. pub.], 1727), p. 78; cited by Sergio Moravia, 'From Homme Machine to Homme Sensible: Changing Eighteenth-Century Models of Man's Image', Journal of the History of Ideas, 39 (1978), p. 48.) Indeed, in his attack on iatromechanism (or the application of mechanistic paradigms to biological organisms), Büchner can be seen as being in the tradition of the French médecins-philosophes, as represented by Théophile Bordeu (1722-76), who emphasized the role of 'sensitivity' in organisms as opposed to the idea of the human body being 'nothing more than a complex system of mechanical and chemical movements that obey mathematical laws' (Baglivi, ibid.; from Moravia, pp. 46-55). For a detailed consideration of the similarities and differences between Britain and France in the life-sciences, see Figlio, 'The Metaphor of Organization'.

25 On the diverse, and indeed to the modern eye sometimes contradictory, views of scientists during the Biedermeier period, see Hans-Werner Schütt, 'Naturverständnis und Naturwissenschaft im Biedermeier', Droste-Jahrbuch, 2 (1988-89): 7-16. Schütt considers the attitudes of Alexander von Humboldt and Robert Mayer (1814-78), as well as Müller and Liebig. The roots of Humboldt's Naturforschung lie in the eighteenth century, although he brought the debate about an holistic concept of nature into the middle of the next century with his work Kosmos (see above, Chapter 2, note 76). In his science he sought 'die denkende Betrachtung der durch die Empirie
comprises Büchner’s Mémoire (see above, note 20) and his repeated attacks on the futility of a priori thinking, such as characterized both Cartesian rationalism and idealist Naturphilosophie, lead one to conclude that although Büchner was no follower of the French iatromechanists, he was also far from being a mystic.26

Ambiguous though it may be, the concept of Natur is central to Dantons Tod and Woyzeck, influencing the representation of both individuals and society. The central question which these plays pose, and which I shall seek to examine, is: Are we liberated or imprisoned by our representations and constructs of Natur? As Görlich and Lehr have shown, the concept of nature underwent a transformation during the eighteenth and nineteenth centuries. Although initially nature was seen as a liberating concept — both in political and aesthetic spheres — during the nineteenth century it

increasingly became the paradigmatic symbol of deterministic lawfulness. This dichotomy in people’s perception of Natur is examined in Dantons Tod and Woyzeck. In both Dantons Tod and Woyzeck sexuality emerges as a key paradigm for human nature. Although originally explained away as the result of his youth, the sexual allusions of the play are much more certain, indeed even the title is not Büchner’s own. The origins of the play are traced back to a remark in a letter to Wilhelm Büchner (Strasbourg, 2 September 1836): ‘Ich habe mich jetzt ganz auf das Studium der Naturwissenschaften und der Philosophie gelegt, und werde in Kurzem nach Zürich gehen [...]’. This has been taken to refer to both Leonce und Lena and Woyzeck, the former play being just complete by the time Büchner wrote to his younger brother. It is thought therefore that Büchner was working on Woyzeck during autumn and winter 1836, and probably up to his death in February 1837. There are three separate sets of scenes, written on folio and quarto paper in extremely unclear handwriting. These have been divided into four groups of scenes, following the example of Werner R. Lehmann. Ludwig Büchner did not include the Woyzeck fragment in his edition because of its ‘Unleserlichkeit’. Franzos was the first to publish it under the title Wozzeck, in his Sämtliche Werke of 1879 (above, note 13). It was not performed until autumn 1913 in the Munich Residenztheater (see Lothar Bornscheuer, ed., Erläuterungen und Dokumente: Georg Büchner: 'Woyzeck' (Stuttgart: Reclam, 1972; repr. 1979), pp. 68-69, and 78-79, Mayer, pp. 413-16, and Reddick, Georg Büchner, pp. 289-302).

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28 Dantons Tod was, according to Büchner’s own words, written ‘in höchstens fünf Wochen’ (letter to Gutzkow, 21 February 1835; L II, 435), during January and February 1835. As T. M. Mayer has said however, it is scarcely believable that the play could have been ‘konzipiert und geschrieben’ in five weeks, at a time when the threat of arrest hung over Büchner’s head (‘Georg Büchner: Eine kurze Chronik’, p. 389). It is probable therefore that Büchner was researching the play during the autumn and winter of 1834. It is the only one of Büchner’s literary works that he saw published in his lifetime (I exclude Der Hessische Landbote from this category), albeit in a much altered form. Büchner sent the manuscript to Karl Gutzkow, editor of Phönix, to offer to the publisher Sauerländer (see L II, 435). It was published in the middle of July 1835, but in a much edited version. It was not performed until 5 January 1902 in Berlin (see Josef Jansen, ed., Erläuterungen und Dokumente: Georg Büchner: 'Dantons Tod' (Stuttgart: Reclam, 1969), p. 59, and Mayer, pp. 389-93). The details surrounding the writing of Woyzeck are much more certain, indeed even the title is not Büchner’s own. The origins of the play are traced back to a remark in a letter to Wilhelm Büchner (Strasbourg, 2 September 1836): ‘Ich habe mich jetzt ganz auf das Studium der Naturwissenschaften und der Philosophie gelegt, und werde in Kurzem nach Zürich gehen [...]’. Dabei bin ich gerade daran, sich einige Menschen auf dem Papier todschlagen oder verheirathen zu lassen [...]’ (L II, 460). This has been taken to refer to both Leonce und Lena and Woyzeck, the former play being just complete by the time Büchner wrote to his younger brother. It is thought therefore that Büchner was working on Woyzeck during autumn and winter 1836, and probably up to his death in February 1837. There are three separate sets of scenes, written on folio and quarto paper in extremely unclear handwriting. These have been divided into four groups of scenes, following the example of Werner R. Lehmann. Ludwig Büchner did not include the Woyzeck fragment in his edition because of its ‘Unleserlichkeit’. Franzos was the first to publish it under the title Wozzeck, in his Sämtliche Werke of 1879 (above, note 13). It was not performed until autumn 1913 in the Munich Residenztheater (see Lothar Bornscheuer, ed., Erläuterungen und Dokumente: Georg Büchner: 'Woyzeck' (Stuttgart: Reclam, 1972; repr. 1979), pp. 68-69, and 78-79, Mayer, pp. 413-16, and Reddick, Georg Büchner, pp. 289-302).

29 According to David Horton, ‘some one hundred alterations were made for the published version, the majority of which concerned the sexual allusions of the play’ (‘Die gliederlösende, böse...
representation of sexuality is now accepted as thematically central to the plays, not least in the light of Büchner’s involvement in the biological sciences:

Büchner knows and cares about natural urges not only because he is young, but because he is a student of medicine, of anatomy and physiology, and furthermore the son of a doctor who himself, as one can tell from his writings, had an overriding intellectual curiosity about the human body. (James, Georg Büchner’s ‘Dantons Tod’, p. 18.)

The thematization of sexuality in Büchner’s plays is part of the foregrounding of Natur, whereby the Trieb- and Naturgebundenheit of human beings is posited as the basis for all private and social acts. This is not to say that Büchner validates this position, rather that, as I shall show, this is the philosophical, and indeed scientific,

Lieber**: Observations on the Erotic Theme in Büchner’s Dantons Tod, DVLG, 62 (1988), p. 291, note). Nevertheless, Büchner still felt it necessary to send a letter to his family defending his presentation of the less savoury aspects of history: ‘der dramatische Dichter ist in meinen Augen nichts, als ein Geschichtschreiber, steht aber über Letzterem dadurch, daß er uns die Geschichte zum zweiten Mal erschafft und uns gleich unmittelbar, statt eine trockne Erzählung zu geben, in das Leben einer Zeit hinein versetzt, uns statt Charakteristiken Charaktere, und statt Beschreibungen Gestalten gibt. Seine höchste Aufgabe ist, der Geschichte, wie sie sie wirklich begeben, so nahe als möglich zu kommen. Sein Buch darf weder sittlicher noch unsittlicher sein, als die Geschichte selbst; aber die Geschichte ist vom lieben Herrgott nicht zu einer Lektüre für junge Frauenzimmer geschaffen worden, und da ist es mir auch nicht übel zu nehmen, wenn mein Drama ebensowenig dazu geeignet ist.’ (L II, 443) Dorothy James describes this statement as a ‘self-righteous apologia’ and questions his rather simplistic concept of history (Georg Büchner’s ‘Dantons Tod’, p. 4). Peter Michelsen comments on Büchner’s treatment of history in Dantons Tod: ‘Büchner wählte aus, spitze die Formulierungen zu, ließ auch manchmal etwas bei einer anderen Gelegenheit oder von einer anderen Person sprechen, als er es in der Quelle vorfand: im ganzen aber ist er von einer ganz erstaunlichen Treue gegenüber den von ihm konsultierten Historikern.’ (‘Die Präsenz des Endes: Georg Büchners Dantons Tod’, DVLG, 52 (1978), p. 480.) Büchner’s reference to the ability of the ‘Dichter’ to provide the audience with an ‘unmittelbar’ experience of history suggests his later statement in the ‘Probevorlesung’, concerning the ‘Naturleben, das wir unmittelbar wahrnehmen’ (L II, 292-93). This tends to confirm the idea of Büchner’s belief in the importance of the unmediated experience of reality, although clearly the audience of a play by no means receives an unmediated encounter with the reality of history (see above, note 21).

According to James, ‘well-known physiologists in Büchner’s time and the decades preceding it, [...] wrote quite matter-of-factly about sex, even, be it said, about such “modern” topics as female orgasm and pre-menstrual tension’ (p. 18; James is referring principally to F. Magendie, Précis élémentaire de physiologie, 2 vols (Paris: Méquignon-Marvis, 1816-17), II, pp. 416 and 419). Even Büchner’s father, Ernst Büchner, conducted research into venereal disease, self-castration and masturbation. See E. B., ‘Beobachtung einer glücklich abgelaufenen Selbst-Entmannung’, Rheinisch-Westfälische Jahrbücher für Medicin und Chirurgie, 8.1 (1824): 57-71; and ‘Beobachtungen über den Tripper beim männlichen Geschlecht’, Rheinisch-Westfälische Jahrbücher für Medicin und Chirurgie, 10.3 (1825): 21-31.
point of departure for the discussion of Natur in his literary works. The character of Marion in Dantons Tod powerfully focuses these issues into one speech. Marion, a prostitute, is alone with Danton. In a skilful reversal of i. 1, where Danton sits ‘auf einem Schemel zu den Füssen von Julie’ (I. 1. 9; stage directions) and declares his love for his wife in melancholy language, Marion tells Danton she wants to sit ‘zu deinen Füßen’ (i. 5. 21) in order to relate her life-story to him and, effectively, her philosophy of life. Marion describes her life as having been governed by necessity, not by free choice. In particular, she sees her life as having been determined not by social circumstance, but by her physical being, or Natur. She tells Danton how her mother attempted to bring her up in a bourgeois environment:

Meine Mutter war eine kluge Frau, sie sagte mir immer die Keuschheit sey eine schöne Tugend, wenn Leute in’s Haus kamen und von manchen Dingen zu sprechen anfingen, hieß sie mich aus dem Zimmer gehen; frug ich was die Leute gewollt hätten so sagte sie mir ich solle mich schämen; gab sie mir ein Buch zu lesen so mußt ich fast immer einige Seiten überschlagen. (i. 5. 21)

Yet, despite her mother’s endeavours to censor her daughter’s experience of the world, Marion undergoes what can only be described as a metamorphosis:

Da kam der Frühling, es gieng überall etwas um mich vor, woran ich keinen Theil hatte. Ich gerieth in eine eigne Atmosphäre, sie erstickte mich fast, ich betrachtete meine Glieder, es war mir manchmal, als wäre ich doppelt und verschmolze dann wieder in Eins. (I. 5. 21)

31 It has generally been assumed that Marion is young, although the stage directions are silent on this point. Danton refers to Rosalie, one of Marion’s friends, as ‘Kleine’ (I. 5. 23) and to Rosalie and Adelaide collectively as ‘ihr hübschen Kinder!’ (I. 5. 24). James emphasizes Marion as a naive, ‘nymphomanic’ prostitute, who has not been a prostitute long enough to realize the unpleasant nature of her trade: ‘Marion is a simple one-dimensional character, dominated by her body and her sexual urges. She is not “real” in the sense of acting and reacting in a recognizable context: she exists in her own detached world and delivers an unchallenged monologue.’ (p. 21.) James wisely suggests that one should be cautious about over-emphasizing the importance of her words to the play as a whole or indeed in reading them as an authorial statement.

32 It is worth noting that her ‘Mutter ist vor Gram gestorben’ (I. 5. 22), which means that, if one includes her first lover, Marion’s actions are indirectly responsible for two deaths.
In language which seems to anticipate Gregor Samsa's physical transformation, Marion describes how she experienced a feeling of alienation from her body, which was engaged in a physical process 'woran ich keinen Theil hatte', and which appeared initially 'doppelt' before returning to a state of unity. Marion is changed both physically and mentally by the experience. She tells how a previously platonic friendship with a young man became a sexual relationship: 'Endlich sahen wir nicht ein, warum wir nicht eben so gut zwischen zwei Bettüchern bei einander liegen, als auf zwei Stühlen neben einander sitzen durften.' (I. 5. 21) Because she found the sexual relationship more pleasurable, she could see no reason why she should not follow this course. Marion describes how her amoral rationale led her to take more lovers: 'ich wurde wie ein Meer, was Allés verschlang und sich tiefer und tiefer wählte. Es war für mich nur ein Gegensatz da, alle Männer verschmolzen in einen Leib. Meine Natur war einmal so, wer kann da drüber hinaus?' (I. 5. 21-22) Her first lover did not however adopt such an amoral view of the affair, and unable to accept her involvement with others, he committed suicide. Marion saw his body being carried down the street and yet was incapable of changing her life-style:

This is a remarkably powerful speech. Taken at face value, it is a radical expression of individualism and moral relativism. Human beings are what their Natur, their physical being, determines that they will be. Nothing that society or religion can do will alter this material condition of existence. Like the natural world itself, humanity obeys laws which are integral to the very matter of which people are made. ‘Ich wurde wie ein Meer, was Alles verschlang und sich tiefer und tiefer wühlte’: like the sea, the force of such elemental laws is irresistible and, Marion implies, society should reflect this by allowing individuals absolute freedom to realise their physical Natur.

And yet this is not the whole story. According to some critics, the hedonist utopia which Marion proposes is actually a dystopia. Sexuality, although perceived

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33 John Reddick writes: ‘This is arguably the most startling, most disturbing scene (or part-scene) that Büchner ever wrote. Marion’s speech is narrative, not drama; it retards the surface plot and shifts the spotlight completely away from the central figure to a character who never otherwise appears and is never otherwise referred to. And yet it is the second-longest original (as opposed to historically sourced) speech that Büchner ever wrote; it creates a theatrical “micro-climate” of extraordinary intensity; and it deals with some of Büchner’s deepest obsessions, longings and fears. [...] Nothing like this had ever been written in German literature before; indeed nothing like it will be conceived for many decades to come [...]’ (Georg Büchner, Complete Plays, ‘Lenz’ and Other Writings, ed. and trans. by J. Reddick (Harmondsworth: Penguin, 1993), p. 226). Reddick’s interpretation of the character of Marion (whom he sees as anticipating Marie in Woyzeck; ‘Mosaic and Flux’, pp. 65-67; Georg Büchner, pp. 354-59) is representative of a critical approach which sees Marion as the embodiment of sensual Being. She is both ‘carnality incarnate’ and ‘a sublimation of sexuality, a pure realm of sensuous being’ (Georg Büchner, p. 202): ‘her sexuality is whole and incorruptible, her beauty infinite, her being ungraspably mystical’ (ibid., p. 192). According to Reddick, Büchner saw the ideal harmony of nature as having been corrupted in human society, which was in need of a ‘fundamental renewal’ (p. 203). Until this occurs the only possibility for the individual to attain this unio mystica is through heterosexual love: ‘only through women and the mystical communion that they afford can men overcome their cold isolation and exposure and partake of the allness of being. But even this is far from easy. And at their deepest level, all Büchner’s poetic works centre on their heroes’ success or failure in achieving such miraculous communion.’ (p. 203)

34 Clearly the word Natur can denote the character or temperament of the individual, ‘Naturell’, as well as the material order of which all things are part, ‘Kosmos’. These constituents of Natur are held in creative tension, the inherent ambiguity of the word continually posing the question as to which aspect is dominant. Does matter define and determine all being, or does consciousness, through some principle of emergence, escape the limitations of the material world? As great literature, Büchner’s texts do not resolve, but rather intensify the ambiguity. I shall return to this dichotomy in Chapter 5.

35 David Horton rejects the idea that Dantons Tod portrays a ‘utopian conception of sexuality’, taking issue in particular with two essays, which he takes as representative of this viewpoint, namely Reinhold Grimm, ‘Coeur und Carreau: Über die Liebe bei Georg Büchner’, in Arnold, Georg Büchner 1789 (1979), pp. 299-326, and Martin Swales, ‘Ontology, Politics, Sexuality: A Note on Georg Büchner’s Drama Dantons Tod’, New German Studies, 3 (1975): 109-25 (Horton,
by Marion as a liberatory force allowing her to express her Natur, is not presented in an unambiguously positive light. Throughout Dantons Tod, the theme of sexual disease is highlighted, and reference is made to the fact that for ordinary people in Revolutionary Paris, sex, far from being a route to personal fulfilment, was often the only means of income. The appearance of Lacroix with the two prostitutes Adelaide and Rosalie, following Marion’s speech, serves to reveal an alternative perspective on her idealized sexuality. With black humour, the two men tease the prostitutes, alluding to their many clients and the probability that they are suffering from venereal disease. Danton compares Adelaide to ‘einer so gangbaren Straße’ (I. 5. 23), and Rosalie ‘ist eine Magnetnadel, was der Pol Kopf abstößt, zieht der Pol Fuß an, die Mitte ist ein Äquator, wo jeder eine Sublimattaufe bekommt, der die Linie passirt’ (I. 5. 23-24). Lacroix offers an updated version of Adonis’s mythic love for Aphrodite: ‘So höre doch, ein moderner Adonis wird nicht von einem Eber, sondern von Säuen zerrissen, er bekommt seine Wunde nicht am Schenkel sondern in den Leisten und...

pp. 291-92). As ‘the principle of private hedonism incarnate’, Marion is not intended as an ideal figure, according to Horton: ‘the idea that Büchner, as a committed and realistic social revolutionary, should seriously promote egocentric amoralism as a basis for improved social coexistence is extremely questionable’ (p. 296). The concentration on prostitution and disease suggests that ‘sensualistic materialism proves anything but emancipatory’ (p. 298). Although he rejects the idea that Büchner can be termed a nihilist, Horton sees Dantons Tod as dominated by a ‘negative ontology’: ‘Man is viewed as tragically limited. His metaphysical speculations, shorn of the certainties of religious conviction, bring him face to face with the void. On a political level too, his ambitious projects — the Revolution which was to transform man’s relations with his fellow man — fail and are dragged into unfeeling chaos. [...] Nor is there any real suggestion that the erotic is to be understood as a nirvana in which the individual will transcend selfhood in a blissful totality of spirit and senses. Repellent images and manifestations of sexuality predominate, turning any hope of fulfilment into further suffering, and pouring scorn on the idea that man might be liberated by the emancipation of repressed libido.’ (p. 306)

36 An example of the contrast between the Dantonist’s use of sex as a distraction and the necessity of prostitution for the very survival of the ‘Volk’, is ‘Eine Gasse’, I. 2. 12-14. According to Horton, ‘[t]he “Gasse” frequently serves as a metonym for the sordid reality of an everyday world conceived in grossly anti-idealistic terms’ (p. 300, note). See also I. 4, and Büchner’s letter to his family of 28 July 1835, where he writes of the ‘Unanständigkeiten’ one can see in ‘die Gasse’ (L II, 444).

37 ‘Sublimattaufe’ is a reference to the use of mercuric chloride obtained through sublimation, and used to treat venereal disease, in particular syphilis (see Horton, p. 302, Jansen, p. 14, Reddick, Georg Büchner, pp. 181-83). See also I. 2. 12.
aus seinem Blut sprießen nicht Rosen hervor sondern schießen Quecksilberblüthen an.’ (I. 5. 23) Here the Greek legend celebrating the ideal of love, is converted into a parabel of decadence: the Apollonian subverted by the Dionysian. As Dorothy James has pointed out (pp. 17-18), this is the bleak future that awaits Marion, as the pleasures of the body lead surely to the inherent frailties of the flesh: in this instance, its susceptibility to sexually transmitted disease.

Throughout the play, Danton and his followers espouse a form of moral relativism, like Marion’s, which is founded on a belief in an inherent and determining Natur, as Hérault-Séchelles explains in the first scene:


Here and at other points in the play, the Dantonists assert their belief in an Epicurean philosophy of life. As Danton states to Robespierre, echoing Hérault: ‘Jeder handelt seiner Natur gemäß d.h. er thut, was ihm wohl thut.’ (I. 6. 27) Indeed the confrontation between the two leaders of the French Revolution as represented in Büchner’s play can be seen as the Classical conflict between the Epicureans and

38 It is worth noting that the Greek myth of Adonis’s immortal love for Aphrodite (according to which Adonis, although dead, was allowed by the gods to spend six months of the year with Aphrodite) was used by the Phoenicians to explain the death of nature in the autumn and its renewal in the spring. Thus by implication, Adonis represented the ideal vitality of Nature. The ‘anti-myth’ told by Lacroix is thoroughly materialistic in its effect, representing an attack both on the old mythological order of Nature (animism) and on the ideal of love as a transcendent force in the world. As such it bears comparison with the ‘anti-Märchen’ of the ‘Großmutter’ in Woyzeck (H1.14, 427).
Yet as is clear from Camille Desmoulins' comments, this is an Epicureanism which has descended into mere hedonism and sensual gratification:

Wir wollen nackte Götter, Bachantinnen, olympische Spiele und von melodischen Lippen: ach, die gliederlösende, böse Liebe! (t. 1. 11)

Camille wants a society which worships at the altar of ‘[d]er göttliche Epicur und die Venus mit dem schönen Hintern’ (t. 1. 11). Against this, Robespierre argues for the supposedly universal value of ‘Tugend’:

Die Waffe der Republik ist der Schrecken, die Kraft der Republik ist die Tugend. Die Tugend, weil ohne sie der Schrecken verderblich, der Schrecken, weil ohne ihn die Tugend ohnmächtig ist. Der Schrecken ist ein Ausfluß der Tugend, er ist nichts anders als die schnelle, strenge und unbeugsame Gerechtigkeit. (t. 3. 18)

The Stoics believed that virtue should be valued for its own sake, as a moral absolute, whereas Epicurus taught that virtue was only of value if it led to individual happiness: 'The philosophy of Epicurus, like all those of his age [...], was primarily designed to secure tranquillity. [...] “Pleasure”, he said, “is the beginning and end of the blessed life.” [...] “Virtue”, unless it means “prudence in the pursuit of pleasure”, is an empty name. [...] He is thus led, in practice, to regarding absence of pain, rather than presence of pleasure, as the wise man’s goal. The stomach may be at the root of things, but the pains of stomach-ache outweigh the pleasures of gluttony [...]. Philosophy, as he understood it, was a practical system designed to secure a happy life; it required only common sense, not logic or mathematics or any of the elaborate training prescribed by Plato. [...] Epicurus was a materialist, but not a determinist. He followed Democritus in believing that the world consists of atoms and the void; but he did not believe, as Democritus did, that the atoms are at all times completely controlled by natural laws.’ (Bertrand Russell, History of Western Philosophy and its Connection with Political and Social Circumstances from the Earliest Times to the Present Day, 8th edn (London: Allen & Unwin, 1962), pp. 252-54.) Büchner summarized Epicurean philosophy ‘als das Bestreben durch Vernunft Glückseligkeit zu bewirken’ (L II, 403). It is significant that Büchner emphasizes the importance of the emancipatory aspect of Epicurean philosophy for science: ‘Die Moral ist dem Epikur der wichtigste und einzige Gegenstand der Philosophie, und nur um des letzten Zweckes, der Glückseligkeit willen, erhielt die Naturwissenschaft und Logik eine Stelle in der Philosophie. Die erste um den Menschen von aller Furcht vor übersinnlichen Wesen und ängstlicher Erwartung eines Zustandes nach dießem Leben zu befreien, die zweite um ihn vor Irrthum in Rücksicht auf äußere Gegenstände zu bewahren.’ (L II, 403) On 'Tugend' see L II, 404, lines 34-39.
Here, rationally justified moral absolutism confronts the individualistic relativism of the Dantonists. In their private meeting, Danton denies the existence of absolutes, such as ‘Tugend’ and ‘Laster’ in words reminiscent of Marion’s: ‘Es giebt nur Epicuräer und zwar grobe und feine, Christus war der feinste; das ist der einzige Unterschied, den ich zwischen den Menschen herausbringen kann.’ (I. 6. 21) Robespierre, in Danton’s opinion, is merely following his own Natur like everyone else, but is concealing the fact behind the rhetoric of a transcendental value system, disguising himself as ‘der Policeysoldat des Himmels’ (I. 6. 27).

The central conflict in Dantons Tod between the moral absolutism of Robespierre and the moral relativism of Danton, raises questions as to what role material being does and should play in the cognitive life of human beings. The partly Cartesian dilemma of whether feelings or intellectual rationalizations should form the basis for decisions about human conduct, is clearly thematized in the play. This is not to say that the two spheres are presented as being mutually exclusive. Rather it is the use of information from one area as the cognitive justification for statements limited to the other, which is shown to be problematic. Indeed, as I shall show, ultimately both the Dantonists and the Jacobins seek to justify their speculative ideas about self and society through recourse to the realm of material being, Natur. St. Just’s speech to the ‘Nationalconvent’ is an excellent example of the way metaphors from the scientifically understood physical world are used to validate statements about ideology and society. Indeed the confusion of discourses, the use of metaphors of

40 Thomas Payne later echoes this sentiment: ‘Erst beweist ihr Gott aus der Moral und dann die Moral aus Gott. Was wollt ihr denn mit eurer Moral? Ich weiß nicht ob es an und für sich was Böses oder was Gutes giebt, und habe deßwegen doch nicht nöthig meine Handlungsweise zu ändern. Ich handle meiner Natur gemäß, was ihr angemessen, ist für mich gut und ich tue es nicht und vertheidige mich dagegen, wenn es mir in den Weg kommt. Sie können, wie man so sagt, tugendhaft bleiben und sich gegen das sogenannte Laster wehren, ohne deßwegen ihre Gegner verachten zu müssen, was ein gar trauriges Gefühl ist.’ (iii.1.49)
materiality to describe the realm of human affairs, is reminiscent of the discussion of chemistry in Goethe’s *Die Wahlverwandtschaften*. St. Just begins his speech with a description of the operation of law in the natural realm, in order to convince his audience ‘daß wir nicht grausamer sind als die Natur und als die Zeit’:


Dorothy James, commenting on the generally dismissive treatment of St. Just in the secondary literature, has noted concerning this first paragraph:

This is not the voice of a one-track-minded political fanatic; it is a lot more like the voice of the young scientist, Büchner, giving a serious and carefully stated description of what actually goes on and can be observed to go on in the natural world. (*Georg Büchner’s ‘Dantons Tod’,* p. 60.)


42 James emphasizes the possible scientific origins of the examples used by St. Just, showing their topicality in the early nineteenth century. She refers to advances in the understanding of ‘the chemical composition of the air’ and the possibility that it might not be immutable, and the growing awareness that the internal temperature of the earth could vary over time, and that the
St. Just is indeed making a statement about the lawfulness of the natural world with which few scientists would disagree and yet its moral implications for the audience in the mid-nineteenth century — and nowadays — are bleak and disturbing. The impression that human beings are irrelevant and incidental in the scheme of natural processes and laws, is a persistent theme in this passage and throughout both Dantons Tod and Woyzeck. Yet, the idea of humanity’s inconsequential position within the natural world is employed by St. Just as a model for the implementation of ‘moralische Natur’: ‘Soll eine Idee nicht eben so gut wie ein Gesetz der Physik vernichten dürfen, was sich ihr widersetzt?’ (II. 7. 45) Using a direct analogy between physical upheaval and social revolution, St. Just posits the effect of a universal principle in the world: ‘Der Weltgeist bedient sich in der geistigen Sphäre unserer Arme eben so, wie er in der physischen Vulkane oder Wasserfluthen gebraucht.’ (II. 7. 45) Whether a person dies as a result of a plague or of a revolution is of no importance; the laws governing each are equally inevitable and necessary. St. Just’s perception of the inherent lawfulness of the natural and sociohistorical worlds is clearly equivalent to the Dantonists’ idea of the Naturgebundenheit of the individual. Both perceptions are fundamentally materialist and are clearly related to the concept of the inherent lawfulness of nature which Büchner posits in his scientific work.

height of the oceans had varied through history, thus submerging what was currently dry land. The latter point had been suggested by Georges Cuvier and Alexandre Brongiart in their work Essai sur la géographie minéralogique des environs de Paris, avec une carte géognostique, et des coupes de terrain (Paris, 1811). According to James, ‘Büchner in the first paragraph of St Just’s speech is very seriously describing a world with which he and his generation are struggling, often very painfully, to come to terms.’ (p. 61)

43 The Revolution is described in language which suggests its inevitability, as if it is a manifestation of natural laws. Mercier mimics the revolutionary rhetoric: ‘die Lava der Revolution flieBt’ (III. 3. 52).

44 Thus the Mémoire ends with the sentence: ‘La nature est grande et riche, non parce qu’à chaque instant elle crée arbitrairement des organes nouveaux pour de nouvelles fonctions; mais parce qu’elle produit, d’après le plan le plus simple, les formes les plus élevées et les plus pures.’ (L ii, 125) In the ‘Probevorlesung’, Büchner states that the ‘philosophische’ view of nature sees the biological subject not as the embodiment of a teleological destiny, but as ‘die Manifestation eines
Nevertheless, St. Just’s use of physical *Natur* to justify ideological statements regarding social progress must remain the central dilemma of the speech, raising questions as to the appropriateness of scientific metaphors to validate political, or indeed ontological, knowledge.\(^{45}\)

The deterministic world-view which is explicit in St. Just’s words, is voiced earlier in the play by Danton, who is haunted by the September Massacres and his feeling of guilt at his complicity. Julie seeks to assuage his guilty conscience by suggesting that there was no alternative course of action open to him. Historical circumstances demanded that he act as he did in order to save ‘das Vaterland’:

\[
\text{DANTON} \quad \text{Es muß, das war dieB Muß. Wer will der Hand fluchen, auf die der Fluch des Muß gefallen? Wer hat das Muß gesprochen, wer? Was ist das, was in uns hurt, liügt, stiehlt und mordet?}
\]

\[
\text{Puppen sind wir von unbekannten Gewalten am Draht gezogen; nichts, nichts wir selbst!} \quad (\text{Il. 5. 41})\]

In words which seemingly mock the Enlightenment idealism of Lessing and Schiller, expressed in the dictum ‘Kein Mensch muß müssen’,\(^{47}\) Danton seeks to exonerate

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\(^{45}\) See Toulmin’s critique of ‘Scientific Myths’ discussed in Chapter 1 of this thesis.

\(^{46}\) See also Büchner’s letter of 10 March 1834: ‘Das muß ist eins von den Verdammungsworten, womit der Mensch getauft worden. Der Ausspruch: es muß ja Aergerniß kommen, aber wehe dem, durch den es kommt, — ist schauderhaft. Was ist das, was in uns läügt, mordet, stiehlt? Ich mag dem Gedanken nicht weiter nachgehen.’ (L II, 426) On this see above, note 21.

\(^{47}\) This phrase, coined by Gotthold Lessing in *Nathan der Weise* (I. 3), was used by Schiller in his essay *Über das Erhabene* (1793-96): ‘”Kein Mensch muß müssen” sagt der Jude Nathan zum
himself. According to St. Just, revolutions follow ‘ein Gesetz der Physik’, and similarly Danton argues that people are puppets manipulated by ‘unbekannten Gewalten’. Clearly such attitudes are inherently deterministic and seem to challenge the fundamental assumptions of the Enlightenment, with its belief in the freedom of the rational individual (a belief it will be remembered that originated partly in an idealized concept of nature; see Chapter 2), which was itself such a powerful driving force behind the instigators of the Revolution. In view of this, it is perhaps

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48 Martin Swales describes the dilemma created by Danton’s suggestion that human beings are no more than ‘Puppen’: ‘This is comfort, the comfort of not being individually responsible, of losing the sense of precisely delineated, individual selfhood in the totality of a materially determined world. Yet it is also a loss, a hideous, almost unbearable reduction of human experience to the level of mechanistic determinism. For man operates with notions of selfhood, of free will, of the dignity and binding status of his deeds. Man longs to believe in himself as creator — as creator even when he destroys.’ (‘Ontology, Politics, Sexuality’, p. 118.)

49 Roland Galle discusses the dichotomy between the enthusiasm at the beginning of the French Revolution and the disillusionment following the Terror: ‘Alle Formen der Auseinandersetzung mit der Französischen Revolution sind zugleich Auseinandersetzungen mit dem Erbe der Aufklärung.’ (‘Natur der Freiheit und Freiheit der Natur als tragischer Widerspruch in Dantons Tod’, Der Deutschunterricht, 31 (1979), p. 108.) Galle shows how, for observers and historians of the Revolution, the rule of the Jacobins (1792-94) became a dilemma, challenging the Enlightenment project at its very roots, and transferring hopes for social change into the indefinite future (pp. 109-11). According to Lepenies, the ‘Historisierung der Natur’, which characterizes the early nineteenth-century study of nature, resulted in a radical change in men and women’s
unsurprising that *Dantons Tod* has been seen as expressing the disillusionment of a young revolutionary writer, prompted by his own unsuccessful involvement in political action. Indeed, some writers, such as Müller-Seidel and Michelsen, have seen the play as being fatalistic in its view of human society, although it is true to say that this has been largely superseded as a critical view.50

For the modern audience it seems that at least two interpretations are possible: either one accepts that the play is a reflection of Büchner’s pessimistic outlook encouraged both by his scientific study of nature and by his experience of revolutionary action, or one views the play, with its insistent portrayal of the frailty of the flesh as a result of disease, loneliness,51 and ultimately death,52 as a didactic

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50 See Michelsen, pp. 486-89, and Müller-Seidel, pp. 216-17. Also A. H. J. Knight, *Georg Büchner* (Oxford: Blackwell, 1951), pp. 69 and 90. Maurice B. Benn also detects in Büchner ‘a pessimism deeper and darker than any to be found in the previous history of German thought, with the possible exception of Schopenhauer’ (*The Drama of Revolt: A Critical Study of Georg Büchner* (Cambridge: Cambridge University Press, 1976; repr. 1979), p. 61). According to Benn: ‘His grimly realistic view of history marks a new stage in that process of dethroning man from his supposedly central position in the grand scheme of the universe which had begun with the Copernican revolution and was soon to be completed by Darwinism. But Büchner already feels that the great scientific development which was resulting in this shattering revision of human pretensions would ultimately involve a more sober appreciation of the limits of science itself, as the product and instrument of weak humanity. He is far from believing that human knowledge could ever be adequate to the task of reshaping the destiny of the world.’ (p. 14) In this respect, Benn sees little in common between Büchner and Marx. Thomas Michael Mayer puts forward an opposing view in his book-length essay, ‘Büchner und Weidig — Frühkommunismus und revolutionäre Demokratie: Zur Textverteilung des *Hessischen Landboten*’ (in Arnold, *Georg Büchner LIII* (1979), pp. 16-29; especially Part I: ‘Georg Büchner: Spätjakobiner oder Frühkommunist?’). In Mayer’s view, we should see ‘Büchner nicht als Frühsocialisten, sondern als revolutionären Frühkommunisten oder als revolutionär-utopistischen Kommunisten’ (pp. 22-23). Büchner was part of the revival of French materialist and Sensualist ideas which took place during the 1830s and as such Mayer sees him as being influenced by concepts of fatalité and fatalisme in France, namely that social and economic determinants are present in history. Clearly, the acceptance of a Gesetzmäßigkeit in history does not automatically make one a nihilist. Indeed, I believe that, as a scientist, Büchner would have been as interested in understanding the operation of these laws as he was the laws of nature. See above, note 44.

51 Danton raises the important theme of loneliness when he says at the beginning: ‘Wir wissen wenig voneinander. Wir sind Dickhäuter, wir strecken die Hände nacheinander aus aber es ist
warning against overemphasizing the materiality of life and hence an implicit affirmation of the ideal in humanity. Once again, in these two options, the dichotomy of materialism versus idealism is apparent, and yet simultaneously one is reminded of the ultimate inability of such stark contrasts to do justice to the subtlety of the literary enterprise. One of the minor roles in Dantons Tod provides a powerful glimpse into the text’s paradoxical undercurrents of despair and hope. In the character of Lucile, hope and despair are embodied in an unbearable tension which results in her apparent madness. Indeed, for Camille, madness is the only option in an insane world:

Der Himmel verhelf’ ihr zu einer behaglichen fixen Idee. Die allgemeinen fixen Ideen, welche man die gesunde Vernunft tauft, sind unerträglich langweilig. Der glücklichste Mensch war der, welcher sich einbilden konnte, daß er Gott Vater, Sohn und heiliger Geist sey. (iv. 5. 70)

Lucile cannot understand why Camille is to be executed; indeed, she cannot understand the concept of death: ‘Sterben! Was ist das für ein Wort? Sag mir’s

52 According to Peter Michelsen, Dantons Tod is not so much a play about history as about ‘die Zubereitung des Menschen zum Tode’ (p. 487). The guillotine is the symbol of this fascination with death. Michelsen notes that the word appears eighteen times as a noun and a further eighteen times in either verb form or in compounds: ‘Um sie kreisen die Gedanken der Personen, immer wieder nehmen sie sie, in witzigen und verzweifelten Wendungen, in den Mund, bilden aus ihr geistreich-makabre Komposita (Guillotinenbetschwester; Guillotinenromantik; Guillotinenthermometer), bis sie selbst schließlich, die Guillotine selbst, in den Schlußszenen [...] als ein drohend-dumpfes Instrument des maschinellen Todes sichtbar vor den Blicken der Zuschauer auf der Bühne steht und sich als einzig überdauernde, einzig gültige Wirklichkeit ausweist.’ (p. 487) On the relation between Eros and Thanatos, see Reddick, Georg Bächner, pp. 192-201. Similarly, the final extant version of Woyzeck begins in a field where executions take place, a poignant reminder of the presumed fate of Woyzeck himself.
Camille. Sterben! Ich will nachdenken.’ (iv. 4. 69) Amidst the vitality of the natural world she cannot grasp the finality of death: ‘Es darf ja Alles leben, Alles, die kleine Mücke da, der Vogel. Warum denn er nicht? Der Strom des Lebens müßte stocken, wenn nur der eine Tropfen verschüttet würde. Die Erde müßte eine Wunde bekommen von dem Streich.’ (iv. 8. 74) In her speech, the detail drawn from the natural world together with the repetition of ‘Alles’, emphasizes her sense of being part of the material realm of nature — she does not need to resort to Payne’s circuitous rationalizations on the non-existence of God in order to define death. Yet, although people are objectively part of the material ‘Alles’ of nature, they are also, through an act of reflexive consciousness, part of an ideal ‘Alles’: humankind posits itself as part of the Chain of Being, or sees itself as a reflection of the macrocosm, or as a branch of the Darwinian Tree of Life. Within these theoretical systems, products of the uniquely creative human metaconsciousness, the inescapable finality of death still remains an insoluble paradox amidst the vitality of nature. To the creative and self-aware human consciousness, death is the unavoidable reality of matter and an affront to the rational systems and constructs of the ideal realm of mind.\footnote{Christoph Lorey’s excellent comparison of Büchner and Brecht denies that ‘die Sinnlosigkeit’ comprises ‘die Aussage des Stückes’ (‘Glaube und Zweifel, Lüge und Wahrheit, Genialität und Einfalt: Georg Büchners \textit{Dantons Tod} und Bertolt Brechts \textit{Leben des Galilei}, DVLG, 68 (1994), p. 262). However, as in Brecht’s plays: ‘Sinnlos ist allein der Tod, und hieran läßt Büchner keinen Zweifel. Die Todesmetaphorik, die sich als Leitmotiv durch jede Szene zieht, läuft auf nichts anderes als das Bewußtsein hinaus, daß der Tod auf jede Weise seinen Sinn verloren hat; unabhängig davon, ob man ihn romantisch ausgestaltet wie Julie, ihn im Fall von Notwehr gerechtfertigt sieht wie Danton oder ihn wie Lucile als Befreiung vom irdischen Leiden im Nichts verstehen möchte [...] Zwar wird das nicht allen Figuren im Drama bewußt — St. Just jedenfalls scheint vom Gegenteil überzeugt. Den Lesern aber kann die Sinnlosigkeit des Todes nicht verborgen bleiben.’ (Lorey, p. 263.)} \textit{Dantons Tod} highlights the social and political dangers inherent in unifying materiality and ideality, whether that be Danton’s use of human \textit{Natur} to justify his Epicurean philosophy, or Robespierre’s imposition of subjective absolutes on the life-world. For
Lucile — the archetypal figure of individual suffering, crushed between competing ideological systems — the dichotomy between the ideal and the real, embodied in the language which she herself identifies as problematic, appears irresolvable in the world of the sane and the living. By revealing these dichotomies between received concepts of Natur and Freiheit, between materiality and ideality, a dialectical debate is established in Dantons Tod that challenges the audience to look beyond the common currency of words and to seek new definitions which are not just echoes of past paradigms.

Woyzeck, alienated and victimized by society, is a character who resembles Lucile, not least because of the fact that they show signs of mental instability. Both have a heightened sense of the paradoxical nature of existence and the failure of language to express this experience. Lucile’s inability to comprehend the reports of Camille’s death sentence, bears comparison with Woyzeck’s reaction to the Captain’s malicious gossip concerning Marie:


54 See Reddick’s discussion of Lucile (Georg Büchner, pp. 194-203). Reddick contrasts Lucile’s ‘innocent, almost angelic’ sensuality (p. 202) with the ‘swirling, deadly vortex’ of Marion’s sexuality (p. 192). Reddick sees Lucile as being like Julie, exemplifying the potential of love to transcend the physical fact of death: she is ‘a radiant symbol: the personification of devotion in its absolute form’ (p. 194). However, I would suggest that the figure of Lucile represents a profound ontological despair whose symbolic power defies redemption through ideal notions such as love.

55 References to Woyzeck will be given in the main text and shall indicate from which of the four manuscripts the passage is taken, followed by page numbers according to Lehmann’s edition (see above, note 7). I shall use the name ‘Marie’ to denote Woyzeck’s partner, although earlier versions suggest the names Margreth, Louise or Louisel. Similarly, Franz replaces Louis as Woyzeck’s first name in the later manuscripts.
Woyzeck’s phrase, ‘Ich will drüber nachdenke’, suggests Lucile’s ‘Sterben! Ich will nachdenken’ (iv. 4. 69; cf. beginning of iv. 8). Similarly, her frustration with the world, which she expresses by sitting down in the street and screaming, is echoed in Woyzeck’s comment about knocking a nail into the sky from which to hang oneself. Clearly, Woyzeck’s ‘madness’ is examined in greater detail than Lucile’s, but through both characters, questions are raised about the contribution of scientific metaphors and paradigms to our concept of $\textit{Natur}$, and the effect of this concept on the wider social and cultural sphere as well as the lives of men and women.

Woyzeck’s madness is characterized by his perception of what he describes to the Doctor as ‘doppelte$[$]\textit{Natur}$$. This includes experiences of a visionary or mystical order: ‘Wenn die Sonn in Mittag steht und es ist als ging die Welt in Feuer auf hat schon eine fürchterliche Stimme zu mir geredt!’ (H4.8, 175). The first scene provides evidence of this aspect of Woyzeck’s character and depicts a disturbing image of his mental state. Woyzeck and his fellow soldier, Andres, are in the countryside, just outside town. Woyzeck indicates where the head of an executed man had been found. He also claims to hear the ‘Freimaurer’ and tells Andres to be quiet, but his comrade appears to be ignoring Woyzeck, as if used to his eccentric manner. Then Woyzeck’s comments begin to make an impression on Andres: ‘Ich fürcht mich.’ Woyzeck continues to hear and see things which his friend cannot: ‘Ein Feuer fährt um den Himmel und ein Getös herunter wie Posaunen.’ (H4.1, 168) It is an

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56 Marion in $\textit{Dantons Tod}$ also describes herself during her metamorphosis as ‘doppelt’ (t. 5. 21; see above).

57 The H1 version begins with the ‘Marktschreier’ and his animal show. In the second version, the ‘Freies Feld’ scene with Woyzeck and Andres is added. Clearly, the positioning of scenes is provisional. Both Franzos’ edition and Fritz Bergemann’s edition ($\textit{Sämtliche Werke und Briefe}$ (Leipzig: [n. pub.], 1922)) placed the H4.5 scene of Woyzeck shaving the Captain, at the beginning of the play, a move which is regarded now as unhelpful (see Reddick, $\textit{Georg Büchner}$, pp. 306-07).
extraordinary representation of that ‘other’ nature which Woyzeck alone can see and hear. This other side of nature takes on a sinister aspect when it seems to tell Woyzeck to kill the unfaithful Marie. Woyzeck has seen Marie dancing with the Drum-Major, telling him ‘[i]mmer, zu, immer zu’ (H4.11, 178). Now Woyzeck is alone in open country — ‘Freies Feld’ (see above, note 51):


Similarly, having killed Marie, Woyzeck returns to the scene to try to dispose of the weapon, throwing it into a ‘Teich’: ‘Es taucht in das dunkle Wasser, wie ein Stein! Der Mond ist wie ein blutig Eisen! Will denn die ganze Welt es ausplaudern?’ (H1.20, 153) Woyzeck is afraid that just as the daemonic voices have told him to kill Marie, so they will now betray him.

The moon in both Dantons Tod and Woyzeck is a powerful symbol. With death a certainty, Camille tries to sleep but awakes from a nightmare: ‘Da schwand die Decke und der Mond sank herein, ganz nahe, ganz dicht, mein Arm erfaßt’ ihn. Die Himmelsdecke mit ihren Lichtern hatte sich gesenkt, ich stieß daran, ich betastete die Sterne, ich taumelte wie ein Ertrinkender unter der Eisdecke.’ Camille regards it as an experience of madness: ‘es braucht grade nicht viel um einem das bißchen Verstand verlieren zu machen. Der Wahnsinn faßte mich bey den Haaren’ (rv. 3. 67). Lucile, in her madness, sings a song to Camille in his prison cell: ‘Es stehn zwei Sternlein an dem Hinunel, Scheinen heller als der Mond, [...]' (rv. 4. 69). In Woyzeck, the ‘anti-Märchen’ of the ‘Großmutter’ tells of an orphan’s despair: ‘Und weil auf der Erd Niemand mehr war, wollt’s in Himmel geln, und der Mond guckt es so freundlich an und wie’s endlich zum Mond kam, war’s ein Stück faul Holz [...]’ (H1.14, 151). The child’s celestial disillusionment continues with the sun and the stars. For Ken Mills, sun, moon and stars carry ‘religious import’ (‘Moon, Madness and Murder: The Motivation of Woyzeck’s Killing of Marie’, GLL, 41 (1988), p. 434). Mills continues: ‘the moon and stars normally imply coolness and comfort. The moon is the symbol of God, from Büchner’s juvenile poetry onwards.’ For Mills, Woyzeck sees his act of murder as one
For the Doctor, Woyzeck’s visions are the signs of ‘eine aberratio’: ‘Woyzeck
Er hat die schönste aberratio mentalis partialis, die zweite Species, sehr schön
ausgeprägt’ (H4.8, 175). One of the examples Woyzeck cites of his sense of
‘doppelte[] Natur’, is his attempt to understand the signs present within nature: ‘Die
Schwämme Herr Doctor. Da, da steckts. Haben Sie schon gesehn in was für Figuren
die Schwämme auf dem Boden wachsen? Wer das lesen könnt.’ (H4.8, 175) This
passage is strongly reminiscent of the approach to nature of the Renaissance and of
alchemists and iatrochemists such as Paracelsus (1493-1541). At that time it was
believed that people were a reflection, or microcosm, of the outer world, or
macrococsm: ‘The universe was folded in upon itself: the earth echoing the sky, faces
seeing themselves reflected in the stars, and plants holding within their stems the
secrets that were of use to man.’ (Foucault, The Order of Things, p. 17.) The natural
world in the sixteenth century was a *signatura rerum* 60, a ‘vast open book; it bristles
with written signs; every page is seen to be filled with strange figures that intertwine
and in some places repeat themselves’ (Foucault, p. 27). According to Paracelsus:

It is not God’s will that what he creates for man’s benefit and what he has
given us should remain hidden [...]. And even though he has hidden certain
things, he has allowed nothing to remain without exterior and visible signs in
the form of special marks — just as a man who has buried a hoard of treasure
marks the spot that he may find it again.61

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60 Foucault, Das Ende der Naturgeschichte, p. 32.
61 Foucault, p. 26, citing Paracelsus, Die 9 Bücher der Natura Rerum (see Theophrast von
Hohenheim, genannt Paracelsus, Sämtliche Werke, t. Abteilung, Medizinische,
naturwissenschaftliche und philosophische Schriften, ed. by Karl Sudhoff, 14 vols (Munich:
Oldenbourg, 1922-33), ix, p. 393). On the Paracelsian world-view, see Pagel, Paracelsus.
In this era, medicine depended largely on the idea of an analogy between the ailment and the supposed cure. In the early seventeenth century, Paracelsian physicians used a 'weapon-salve' to heal wounds, 'in which the weapon was smeared with an ointment or salve while the wounds were simply bound up with clean bandages'. However, the Doctor in Woyzeck does not believe in Paracelsian sympathy; he is a mechanistic scientist, and to his Enlightened, rational mind, Woyzeck’s visions and attempts to understand the world around him merely offer an interesting opportunity to expand his nosological understanding. In this gulf between the modern Doctor and the animistic Weltanschauung of Woyzeck are echoes of the failure of both rationalism and mysticism to grasp fully the reality of nature in their theories, something referred to by Büchner in his 'Probevorlesung' (see L II, 292-93, and above, note 20). Obviously, Paracelsian iatrochemistry is not the main focus of interest in Büchner’s Woyzeck. Nevertheless, Woyzeck’s attempt to divine the language of nature

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62 Knight, *The Nature of Science*, p. 47. Knight adds that patients were seen to recover more quickly than those whose wounds were treated with ointments, which, as he points out, suggests that their ointments did more harm than good. The idea of the weapon-salve is an example of the idea of *action at a distance*, a Renaissance concept related to the idea of sympathies and antipathies between people and the natural world. Foucault gives two fascinating examples of this: 'There exists a sympathy between aconite and our eyes. This unexpected affinity would remain in obscurity if there were not some signature on the plant, some mark, some word, as it were, telling us that it is good for diseases of the eye. This sign is easily legible in its seeds: they are tiny dark globes set in white skinlike coverings whose appearance is much like that of eyelids covering an eye. It is the same with the affinity of the walnut and the human head: what cures “wounds of the pericranium” is the thick green rind covering the bones — the shell — of the fruit; but internal head ailments may be prevented by use of the nut itself “which is exactly like the brain in appearance”. The sign of affinity, and what renders it visible, is quite simply analogy; the cipher of sympathy resides in the proportion.' (p. 27; citing O. Crollius, *Trait de signatures* (French trans. Lyon, 1624), pp. 33-34.)

establishes an important dialectic in the audience's understanding of Natur, one which juxtaposes the Latin categories of the Doctor with Woyzeck's Natursprache. However it is not the world-view of Renaissance natural magic which informs the explicitly scientific theme of Woyzeck, but rather the research into organochemical compounds conducted by Justus von Liebig at Giessen University, where Büchner himself was briefly a student.

Alfons Glück, in his thought-provoking study of the 'Menschenversuch' in Woyzeck, has sought to understand the role of science, within the context of the play's concentration on the 'Tragödie eines Paupers', by asking how the unfinished text would have been understood had it been differently titled:

Stellen wir uns eine (nicht weit hergeholte) Gegenmöglichkeit vor, ein Drama mit dem Titel Justus Liebig. Wenn darin die Chemie das Thema wäre, ihre bahnbrechenden Entdeckungen in den Zwanziger- und DreiBigerjahren des 19. Jahrhunderts — wie in Brechts Leben des Galilei die neue Astronomie, ihre gesellschaftlichen Voraussetzungen und Folgen —, dann läge hier kein Problem vor. Da es aber nicht so ist, da es sich um die Tragödie des Paupers Franz Woyzeck handelt, ist es ein Problem, was darin die Chemie bzw. die Physiologie zu suchen hat. (Glück, 'Der Menschenversuch', p. 143.)

Glück's thesis is that, through the satirical treatment of the Doctor, Büchner was not condemning science (as might have been the case if the play was named after an

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64 The Doctor's vocabulary is peppered with Latin names and phrases: 'musculus constrictor vesicae', 'aberratio mentalis partialis', and Woyzeck himself is described as 'ein interessanter casus' (H4.8, 174-75; cf. the references to 'centrum gravitationis' and 'Ricinus' in H3.1, 166). Clearly, this use of Latin gives the appearance of wisdom, but in fact it is merely a sign of the Doctor's lack of real understanding. According to Alfons Glück: 'Der Doktor hat einen mechanistischen Begriff von Wissenschaft: Er reduziert organische und vor allem psychische Erscheinungen auf das Erklärungsmodell Maschine. Aber selbst diese Methode beherrscht er nicht. In seinen Händen verkümmert sie zu einem bloßen Klassifizieren. [...] Die lateinische Nomenklatur sorgt für den wissenschaftlichen Anstrich. Sie ist nichts weiter als ein Etikett und kein Be-griff, kein Instrument der Forschung (geschweige denn der Therapie). Es handelt sich um die bloße Subsumption einer (ungenauf beobachteten) Erscheinung unter längst Bekanntes, unter eine Rubrik. Das Gesehene wird "abgehakt", als blindes, beziehungsloses Faktum in die berüchtigte Schublade einsortiert.' ('Der Menschenversuch: Die Rolle der Wissenschaft in Georg Büchners Woyzeck', GBJ, 5 (1985), p. 169.)
important scientist), but challenging the ruling classes' perversion of the life-affirming aims of science into a means of extending the state's hegemony over the working classes:

Die Satire ist ein Erkenntnisinstrument, ein Instrument der Analyse und Kritik, das dazu dient, eine entmenschte Wissenschaft zu entlarven, die verkehrt ist aus einem Instrument der Aufklärung und Befreiung, das sie sein sollte und könnte, in ein Instrument der Knechtschaft, und deren Rationalität die Rationalisierung der Ausbeutung und die Perfektionierung der Unterdrückung ist. ('Der Menschenversuch', p. 180.)

Glück is not alone in seeing Liebig as a possible model for the figure of the Doctor in Woyzeck. Sabine Kubik, amongst others, has pointed to the fact that whilst at Giessen University, Liebig, together with his assistant Wöhler, conducted a series of experiments aimed at understanding the physiological effects of foodstuffs on the human metabolism: 'Soldaten wurden über lange Zeitspannen hinweg mit einem einzigen Nahrungsmittel versorgt, und die Auswirkungen dieser einseitigen Ernährung auf den Stoffwechsel ließen sich dann aufgrund der Harnanalyse ermitteln.' These experiments were continuing whilst Büchner was a student at Giessen in 1833-34. Their purpose was to identify the different chemical compounds present in human subjects whose diet consisted of meat and those whose

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67 According to Glück, it is unknown if Büchner attended Liebig's lectures at Giessen, but it is 'wahrscheinlich' that he did: 'die sensationellen Methoden und Ergebnisse Liebigs konnten keinem Gießener Medizinstudenten unbekannt bleiben; und auch das Auftreten des jungen Professors war ganz dazu angetan, daß niemand ihn übersah' ('Der Menschenversuch', p. 156). However Dohner comments that although Liebig taught at the same university, Büchner does not refer to him once ('Büchner's Naturauffassung', p. 39).
diet was wholly vegetarian. Peas were one of the dietary components named in Liebig’s account of the experiments. According to Liebig: ‘der Harn der grasfressenden Tiere enthält keine Harnsäure, wohl aber Ammoniak, Harnstoff und Hippursäure’. The similarity between this and the statement of the Doctor in Woyzeck cannot be ignored: ‘Hat Er schon seine Erbsen gegessen, Woyzeck? — Es gibt eine Revolution in der Wissenschaft, ich spreng je in die Luft. Harnstoff 0,10, salzsüures Ammonium, Hyperoxydul.’ It seems entirely feasible that Liebig provided at least part of the impetus for the figure of the Doctor. As Thomas

68 For details of Liebig’s experiment, see Eckhart Buddecke’s comments in Bornscheuer, pp. 11-15. In H2.6, the Doctor indicates that peas were just part of a series of dietary experiments, of which the next would be a meat diet: ‘seh’ Er mich an, was soll Er thun? Erbschen essen, dann Hammelfleisch essen’ (H2.6, 162). For a consideration of Liebig’s contribution to the popular understanding of science, see Walter D. Wetzels, ‘Versuch einer Beschreibung populärwissenschaftlicher Prosa in den Naturwissenschaften’, Jahrbuch für Internationale Germanistik, 3 (1971), pp. 84-90.


70 Büchner’s use of the word ‘Hyperoxydul’ has caused some confusion, not least because the word is a contradiction in terms: ‘Oxydul waren nach damaliger (und heutiger) Definition sauerstoffärmerere Oxyde, während das Präfix ‘Hyper’ sauerstoffreichere Verbindungen kennzeichnet.’ (Bornscheuer, p. 12.) Buddecke has suggested that Büchner could have meant ‘Hippuroxydul’: ‘Die Hippursäure wurde als Oxydationsprodukt des Stoffwechsels angesehen, das aus Pflanzeneiweiß unter Hinzutritt von Sauerstoff und den Elementen des Wassers beim Pflanzenfresser, nicht jedoch beim Fleischfresser entstehen sollte. Die Entdeckung eines sauerstoffärmeren Derivates der Hippursäure — eines “Hippuroxyduls” — wäre aus der Sicht der damaligen Kenntnisse vom Stoffwechsel des menschlichen Organismus in der Tat “revolutionierend” für die Wissenschaft gewesen.’ (Bornscheuer, p. 13.) Interesting enough is that hypothesis is, it appears that the word in the manuscript is unambiguous (see Bornscheuer, p. 13). As Glück usefully points out, ‘Büchner wollte dem Zuschauer keine chemischen Rätsel aufgeben. Die Lösung des Problems, was die Wissenschaft im Woyzeck ist und bedeutet, kann nicht aus einem Lehrbuch der Physiologie bezogen werden.’ (‘Der Menschenversuch’, p. 155.)

71 Dorothy James identifies four possible candidates who might be seen as models for the Doctor in Woyzeck. In addition to Liebig, she suggests: J. B. Wilbrand, whose lectures Büchner attended at Giessen (see below, note 73); J. C. A. Clarus, a Stadtdarzt and professor at Leipzig, who provided the two ‘Gutachten’ on the historical Woyzeck’s physical and mental state; and Georg’s own father, Dr. Ernst Büchner, who in addition to his duties at the Darmstadt Bürgerspital, was also a local Gerichtsdarzt (‘The “Interesting Case” of Büchner’s Woyzeck’, in Patterns of Change: German Drama and the European Tradition. Essays in Honour of Ronald Peacock, ed. by D. James and Silvia Ranawake, Studies in European Thought, 1 (New York: Lang, 1990), pp. 108-09). James supports her idea that Büchner’s father was the model for the Doctor in Woyzeck, by reference to a case investigated by Ernst Büchner concerning a woman who had swallowed a quantity of needles in an attempt to commit suicide. His account of this disturbing case was published in the same journal which two years later published Clarus’s account of the murder Woyzeck (E. Büchner, ‘Versuchter Selbstmord durch Verschlucken von Stecknadeln’, Zeitschrift für die Staatsarzneikunde, 6 (1825): 305-48). According to James, Ernst Büchner sent his account of the ‘Nadelgeschichte’ to his son in December 1836, whilst Georg was working on Woyzeck (p.
Michael Mayer has suggested, the importance of Liebig's science was that it was implicated in the attempt to explain human physiology (body), and ultimately psychology (mind), within a somatic paradigm, a development fiercely opposed by the proponents of idealistic science. Even at Giessen, Liebig had his opponents amongst the academic staff, one of whom was Johann Bernhard Wilbrand (1799-1846), whose lectures Büchner attended, and who seems also to have supplied some character traits for the Doctor in Woyzeck. As James and others have suggested, another possible model for the Doctor, was Johann Christian August Clarus (1774-1854), the medical advisor to the court which in 1824 condemned the historical Woyzeck to death for the murder of Johanna Christiane Woost.

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109) James concludes that Georg Büchner 'wrote Woyzeck out of his deep-seated ingrained familiarity with the kinds of questions discussed in the medical literature by his own father and by many other experts in the field, great and small' (p. 111). See also above, note 30.

72 Mayer notes that, during his study of 'Gerichtliche Medizin' at Giessen, in the summer semester of 1834, Büchner was exposed to the extremes of idealism, with its belief in the primacy of individual free will, as represented by J. C. A. Heinroth and A. Henke (the editor of the Zeitschrift für die Staatsarzneikunde; see previous note), as well as the 'physiologisch-somatische' Vorgehensweise, of which Liebig and Wöhler's experiments are an example ('Georg Büchner: Eine kurze Chronik', p. 414). Mayer rightly considers Büchner to be within the tradition of French materialism and thus by no means inclined to support the idealism of Heinroth and Henke.

73 In H3.1, the Doctor has Woyzeck move his ears, something which many critics have seen as a direct allusion to Wilbrand. The materialist writer Karl Vogt, a fellow student at Giessen at this time, has described how, in one of Wilbrand's lectures on anatomy, the 'Glanzpunkt', which illustrated the operation of 'der Ohrmuskeln', was provided by the Professor's unfortunate son, 'der die Ohren brillant bewegen konnte' (see Karl Vogt, Aus meinem Leben: Erinnerungen und Rückblicke (Stuttgart: [n. pub.], 1896), p. 55; cited from Henry J. Schmidt, Satire, Caricature and Perspectivism in the Works of Georg Büchner, Stanford Studies in Germanics and Slavics, 8 (The Hague: Mouton, 1970), p. 45). Wilbrand was a staunch proponent of Naturphilosophie. He had once been a student of Schelling and had supported Goethe in his attack on Newton's Optics (1704). He had also denied William Harvey's theory of the circulation of the blood (Anatomical Treatise on the Movement of the Heart and Blood in Animals, 1628). In his Handbuch der Naturgeschichte des Thierreichs (Giessen: [n. pub.], 1829), Wilbrand writes: 'Es ist von selbst klar, daß der Mensch, als das gemeinsame Haupt, an der Spitze des gesammten Thierreichs steht, [...] weil sich in ihm das geistige Leben zur Vernunft und zur geistigen Freiheit aufgeschlossen hat, während sich in den Thieren überall nur ein Streben zum Menschen aufwärts zu erkennen gibt.' (p. 21; cited from Bornscheuer, p. 11.) Such sentiments concerning the transcendent freedom of the human spirit, are typical of the idealist approach to nature and are reflected in the Doctor's admonishing words to Woyzeck: 'Die Natur! Woyzeck, der Mensch ist frei, in dem Menschen verklart sich die Individualität zur Freiheit.' (H4.8, 174) See also Döhner, 'Büchners Naturaufassung', pp. 41-44, and James, 'The "Interesting Case"', pp. 108-09.

74 As I shall show, there is a debate as to whether Büchner's play can be viewed as a dramatization of this murder or indeed any actual case-history. Mayer highlights the executions in France in 1836, of people accused of attempting to assassinate the King, as well as contemporary executions.
For some critics, Büchner clearly takes issue with Hofrat Clarus’s two ‘Gutachten’ on the murderer Johann Christian Woyzeck’s physical and mental health. According to Clarus, the physical symptoms reported by his ‘Inquisit’ were merely signs of ‘eine Anlage zu solchen Uebeln, keineswegs aber eine schon wirklich ausgebildete Krankheit’ (L I, 517; cf. 523). Clarus concluded that Woyzeck was suffering merely from ‘Temperamentsfehler’, and ‘daß Woyzecks Einbildungen blos als Sinnestäuschungen, Irrthümer und Vorurtheile, keineswegs aber Symptome eines kranken, den freien Vernunftgebrauch störenden Seelenzustandes betrachtet werden müssen’ (L I, 524-25). This, he concluded in a memorable analogy, was a condition comparable to those who believed in the Aristotelian astronomical system: ‘Die Meinung, daß die Sonne um die Erde laufe, beruht auf einer Sinnestäuschung, die

for murder (‘Georg Büchner: Eine kurze Chronik’, pp. 413-14). Bornscheuer provides details of the similarities between Büchner’s play and the cases of three famous murderers of the time: Daniel Scholling, Johann Dieß, and J. C. Woyzeck (pp. 49-67). According to Bornscheuer: ‘Dem Fall Woyzeck hat Büchner […] zahlreiche Einzelmotive entlehnt, insbesondere einige potentielle Motivationsmerkmale im engeren Sinn: Verfolgungswahn, Stimmenhalluzinationen und den inneren Mord-Imperativ, Eifersucht, Verdienstschwierigkeiten, Demütigungsgefühle.’ (p. 49) Clearly, the details of the historical cases are less important for an understanding of Woyzeck than the ethical and philosophical issues which dominated debate of these cases. See also Maurice Benn, p. 223, who emphasizes the importance of the Schmolling case.

75 The emphases here and in subsequent quotations from Clarus are in the original. The titles of Clarus’s two ‘Gutachten’ as they appeared in the Zeitschrift für die Staatsarzneikunde, are: ‘Die Zurechnungsfähigkeit des Morders Johann Christian Woyzeck, nach Grundsätzen der Staatsarzneikunde aktenmässig erwiesen’ (dated 28 February 1823), and ‘Früheres Gutachten des Herrn Hofrath Dr. Clarus über den Gemüthszustand des Morders Joh. Christ. Woyzeck, erstattet am 16. Sept. 1821’. Both appeared with brief comments from the editor, Henke, who praises Clarus, describing his second, and longer report, as ‘ein treffliches Gutachten’ (L I, 487). Clarus reported that Woyzeck’s symptoms included ‘ohne äussere Veranlassung eintretende allgemeine Zittern des ganzen Körpers, das Stechen, die Hitze und die Wüstigkeit im Kopfe, die Empfindung, als ob es vom Herzen ins Genicke und von da in den Kopf fahre und im Hinterkopfe sitzen bleibe, das Prasseln oder Schnurren im Genicke, das Brausen oder Zischen vor den Ohren und die, auf erfolgtes reichliches Nasenbluten, zuweilen bemerkte Erleichterung’. These meticulously recorded details confirmed Clarus’s suspicion that Woyzeck was suffering from what was once called ‘Vollblütigkeit und Neigung zu Wallungen und Congestionen des Blutes’, or what Clarus preferred to call ‘venöse Constitution und erhöhten Venenturgor’ (L I, 517). These symptoms, which might once have been treated by blood-letting, were not considered serious by Clarus. Comparisons have been drawn between Clarus’s observations of Woyzeck’s ‘Zittern’ and his measurements of his pulse, and the way the fictional Doctor takes Woyzeck’s pulse at moments of stress, as in H2.7, 164 and H4.8, 175. See also Bornscheuer, pp. 32-33 and Glück, ‘Der Menschenversuch’, p. 164.
Jahrtausende lang die besten Köpfe zu falschen Urteilen und Schlüssen verleitet hat und von Millionen vernünftiger Menschen noch jetzt keinen Augenblick bezweifelt wird.’ (L I, 525-26) According to Clarus, who uses the example of Galilean science to enforce the authority of his scientific judgement, Woyzeck’s illness was nothing more than an inability to perceive reality correctly. Like Büchner’s Woyzeck, puzzling over the meaning of the ‘Figuren der Schwämme’ (H4.8, 175), the historical Woyzeck was merely failing to interpret signifiers according to the dominant paradigm governing reality, what Camille describes as ‘[d]ie allgemeinen fixen Ideen, welche man die gesunde Vernunft tauft’ (iv. 5. 70). Clarus defines madness as being when ‘die irrage Vorstellung sich des Verstandes ausschließend bemeistert, in alle Operationen desselben eingreift, den freien Gesichtspunkt für alle übrigen Verhältnisse verrückt und die richtige Beurtheilung derselben trübt’ (L I, 525).  

According to Clarus, this did not apply to Woyzeck. He emphasized that Woyzeck could not be shown to have been suffering from ‘Geistesstorung’, neither could he find any sign of the ‘Wirkung

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76 Paige Matthey Bynum discusses the idea of ‘moral insanity’, following the publication in 1835 of James Cowles Prichard’s Treatise on Insanity and Other Disorders Affecting the Mind. Prichard continued the work of Philippe Pinel (1745-1826) and Benjamin Rush (1745-1813), the ‘father of American psychiatry’, developing a theory of mental illness, and (what would now be termed) psychopathic behaviour, based on a ‘disturbance of the emotions’: ‘The morally insane man might be rational, might realize that those around him would condemn his behavior, but he himself would not.’ (“Observe how healthily — how calmly I can tell you the whole story”: Moral Insanity and Edgar Allan Poe’s “The Tell-Tale Heart”, in Amrine, Literature and Science (1989), pp. 141-43.) According to Bynum: ‘Prior to the work of men like Rush and Prichard, if a person pleaded insanity in a court of law, he was presumed to be either an idiot or a raving maniac. A review of press releases concerning these trials, and of verbatim trial reports, shows that judges, counsel, witnesses, and observers tended to use three major criteria to establish insanity: the accused had to be unable to recognize right from wrong; he had to be illogical and virtually witless at all times; and he had to reveal a violent disposition before committing his offense.’ (p. 143) According to John Haslam’s Observations on Madness and Melancholy (1810), a criminal could only be judged as not being responsible for his actions if he was ‘totally deprived of his understanding’ and was no more in control of his behaviour ‘than an infant, than a brute, or a wild beast’ (repr. in Madness and Morals: Ideas on Insanity in the Nineteenth Century, ed. by V. Skultans (Boston: Routledge, 1975), p. 31; cited from Bynum, p. 143). An accused who appeared ‘normal’ at the time of the trial was judged to be sane, and someone who ‘fled from the scene of a murder, or tried to hide the evidence, was legally sane because he was presumed to know right from wrong’ (Bynum, p. 143).
eines instinktartigen, individuellen, in den eigenthümlichen körperlichen Leiden oder phantastischen Einbildungen des Inquisiten begründeten Antriebes' (L I, 532).

Instead, Clarus drew attention to Woyzeck's 'durch das Gefühl verachteten und verspotteten Elends geschärften, Eifersucht' and concluded: 'Es ist daher nach allen Umständen bei der That selbst anzunehmen, daß das Uebergewicht der Leidenschaft über die Vernunft die einzige Triebfeder derselben gewesen sey.' (L I, 533) The murder of Johanna Woost was, in his view, a simple crime of passion.

Clarus's denial of the importance of an 'instinktartige[...] Antrieb[]' in Woyzeck's case is significant. At the time Clarus was writing, there was a heated debate concerning the understanding of consciousness and the relationship of mind to brain. Given Büchner's field of study in the life-sciences, namely the development of the brain from spinal nerves, it is certain that he would have been aware of this debate. Sabine Kubik has divided the argument into two opposing schools of thought: 'Somatiker' and 'Psychiker'. It was over the issue of freedom that a clear conflict arose between these two ideologies. The Psychiker, whose leading figure was Johann Christian August Heinroth (1773-1845), believed in the 'von Gott verleihene Freiheit des Geistes und des Willens', and according to this idea 'psychische Krankheit erscheint [...] als willentliche, sündhafte Abkehr von dieser Bestimmung zur Freiheit und liegt damit in der persönlichen Schuld des Betroffenen' (Kubik, p. 140). Kubik describes the position of the insane in the eyes of the law:

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77 See also Mayer, 'Georg Büchner: Eine kurze Chronik', p. 415.
78 Kubik adds: 'Der Mensch ist aufgrund seiner gottgegebenen Freiheit zum sittlichen Handeln, zur Disziplinierung seiner Leidenschaften in freier Willensbestimmung nicht nur befähigt, sondern auch sittlich verpflichtet.' (pp. 140-41) According to Klaus Dörner, both Heinroth and K. A. Ideler (1795-1860) represented 'idealistisch-philosophische und theologische Psychiatrie' (Bürger und Irre: Zur Sozialgeschichte und Wissenschaftsoziologie der Psychiatrie (Frankfurt a. M.: [n. pub.], 1969), p. 337; cited by Kubik, p. 121). Their idea of mental illness was based on notions of sin and guilt which resulted in a therapeutic approach dependent on the 'Entsündigung des Patienten', where the therapist was both doctor and priest (Dörner, p. 302; cited by Kubik, p.
Wahnsinn war in der Vorstellung des 18. Jahrhunderts zumeist verbunden mit einem Delirium — das sich in augenfälligem Toben, gewaltsamer Raserei ausdrückte — oder mit offenkundigen Verstandesstörungen bis hin zur Demenz. Manifestierten sich solche konkrete Schuldausschließungsgründe, die auf fehlende Willensfreiheit bei der Tat hindeuten, so wurde der Täter nicht mit der Todesstrafe belegt, sondern seine — zumeist lebenslängliche — Internierung angeordnet. (Kubik, p. 141.)

Philippe Pinel’s *Traité médico-philosophique sur l’aliénation mentale ou la manie* (Paris, 1801) challenged these attitudes towards madness with his idea of ‘manie sans délire’, a state where the ‘Verstand’ is not affected but the person is subject to uncontrollable fits of rage. This idea ‘wird im beginnenden 19. Jahrhundert zur meist diskutierten und umstrittensten Form des Wahnsinns’, and phrases such as ‘amentia occulta’, ‘partieller Wahnsinn’, and ‘gebundener Vorsatz’ are all derived from Pinel’s concept (Kubik, p. 141). 79 In contrast to the Psychiker, the Somatiker regarded mental disorders as having physical causes which were located in specific centres of the brain. Their ideas owe much to Julien Offray de La Mettrie’s work *L’Homme machine* (1748) and the subsequent work of P. J. G. Cabanis (1757-1808) and the French ‘Idéologues’, as well as to the physiologist François Magendie (1783-1855). 80

122). This approach to psychiatry was dominant in the German speaking lands from about 1805 to 1845 (ibid.). From 1830, the influence of mainly French somatic theories of mind became increasingly significant. See above, note 72.

79 On the role of Pinel and his student Jean Etienne Dominique Esquirol (1772-1840) in developing French somatic psychiatry, see Kubik, pp. 91-95, and 141, and Bynum, pp. 141-44.

80 According to James, Cabanis asserted that ‘the brain digests impressions and organically secretes thought, that the action of the brain, in other words, must be regarded in a similar way to the action of the stomach which digests food and secretes bile through the liver’ (see P. J. G. Cabanis, *Rapports du physique et du moral de l’homme, précédés d’une table analytique par M. le Comte Destutt de Tracy* (Paris: [n. pub.], 1802; repr. 1824), Preface, pp. x, f.; in James, Georg Büchner’s *Dantons Tod*, p. 19). Ludwig Büchner adopted this idea in a modified form for his chapter on thought in *Kraft und Stoff* (F. Gregory, p. 107, James, p. 20). Glück sees the Doctor in *Woyzeck* as an expression of Büchner’s dissatisfaction with such mechanistic models of the mind, something Glück traces back to Descartes: ‘Descartes führte eine absolute Trennung zwischen der res extensa (der ausgedehnten Substanz) und der res cogitans (denkenden, empfindenden Substanz) durch. […] Der Leib — daß wir ihn reduktionistisch “Körper” (res extensa) nennen, gehört hierher — wird von Descartes als Gliedermaschine (machina membrorum) aufgefaßt. […] La Mettrie machte dann kurzen Prozeß mit der res cogitans. Sein Werk *L’Homme machine* behandelt die Seele als Hirngespinst. […] Der zugrundeliegende Begriff von Erkenntnis ist der ausgedehnten Substanz angemessen. Das Erkenntnisideal entstammt der Geometrie und der
However, it was the work of Franz Joseph Gall (1758-1828) which had the most significant impact on somatic psychiatry. It was his ideas, together with those of J. C. Spurzheim (1776-1832), which gave rise to the influential nineteenth-century science of phrenology. This was founded on the theory that human and animal brains were not one but many ‘organs’, the more primitive organs being located towards the centre of the brain and the most typically human ones, on or near the surface. These organs gave rise to bumps on the skull, of which Gall identified twenty-seven, which corresponded directly to innate qualities and skills possessed by the subject. Gall’s work is relevant to the present study not only because of the

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81 Gall’s main work on this was *Anatomie et Physiologie du système nerveux en général, et du cerveau en particulier, Avec des observations sur la possibilité de reconnaître plusieurs dispositions intellectuelles et morales de l’homme et des animaux, par la configuration de leurs têtes*, 3 vols (Paris: [n. pub.], 1810-19). R. J. Cooter comments that phrenology has attained a reputation in the history of science, especially in the more Whiggish accounts, as ‘pure legerdemain’ (‘Phrenology: The Provocation of Progress’, *History of Science*, 14 (1976), p. 211). According to Angus McLaren: ‘Historians of ideas have had as little time for it as for any other idea not on the winning side’ (‘Phrenology: Medium and Message’, *Journal of Modern History*, 46 (1974), p. 95). Nevertheless, as Cooter has demonstrated, phrenology was a very influential body of ideas in the nineteenth century and even the early twenty century: ‘as a branch of somatic and biological science it popularized and irrevocably sealed the notion of mental faculties as the material manifestations of mind; and it brought into popular currency a conception of man as a highly evolved creature with physical, mental and moral faculties. The malleability of these faculties and their potential for improvement (especially moral improvement) firmly welded phrenology to the Victorian ethic of progress and self-improvement. The implications and applications of the doctrine were in fact universal. As phrenologists claimed, theirs was the only complete Science of Man.’ (Cooter, pp. 213-14.) On phrenology, see also Knight, *Age of Science*, pp. 70-80; Kubik, pp. 142-43; and Wolpert, p. 114.

82 Thomas Love Peacock’s *Headlong Hall* (1816) includes a lecture given by a phrenologist, Mr. Cranium: ‘Every particular faculty of the mind has its corresponding organ in the brain. In proportion as any particular faculty or propensity acquires paramount activity in any individual, these organs develop themselves, and their development becomes externally obvious by corresponding lumps and bumps, exuberances and protuberances, on the osseous compages of the occiput and sinciput. In all animals but man, the same organ is equally developed in every individual of the species: for instance, that of migration in the swallow, that of destruction in the tiger, that of architecture in the beaver, and that of parental affection in the bear. The human
valuable insight it offers into the context in which Büchner's science and literature were conceived, but also — and more particularly — because of the implication that human beings are 'triebbestimmt'. Gall's theory was revolutionary in its suggestion of the disunity of the self, which it stated was merely a collection of physically determined 'Grundkräfte'. Gall disagreed with the French philosopher Claude-Adrien Helvétius (1715-71), who proposed that sensation was the origin of all intellectual activity and that therefore the influence of the environment was paramount in the formation of character. According to Gall, environmental stimuli merely mould an already existing 'given' of qualities and 'Grundfakultäten' (Oehler-Klein, p. 23).


84 Bertrand Russell states: 'Following Locke's doctrine that the mind is a tabula rasa, Helvétius considered the differences between individuals entirely due to differences of education: in every individual, his talents and his virtues are the effect of his instruction. Genius, he maintains, is often due to chance: if Shakespeare had not been caught poaching, he would have been a wool merchant.' (p. 693)

85 For this reason, Oehler-Klein sees Büchner's representation of the excesses of the French Revolution as indebted to the ideas of Helvétius, who assumed 'eine[] grausame[] Urnatur' in people, rather than basic instincts which were, according to Gall, subject to the higher faculties such as religious belief. According to Oehler-Klein, Dantons Tod, in depicting the failure of
Not only were human actions determined by physical 'Triebe' (something also suggested by Magendie) but they shared these with the rest of the animal world. The 'Mordsinn', for instance, was located by Gall in the region above and behind the ears, as a result of his study of the skulls of tigers (Oehler-Klein, pp. 22-25). The unavoidable implication is that humankind is inseparable from the animal kingdom.

In this aspect of his work, Gall differed fundamentally from many of his contemporaries as well as from many of his predecessors, like La Mettrie, for whom there existed a fundamental, qualitative difference between humans and animals. For many people, Gall's idea of a composite human brain sharing many features with animals was unacceptable. Clearly, such ideas had serious implications for Heinroth's idealist assumptions about the freedom of the individual:

social restraints on behaviour, exemplifies 'die von Helvétius vorgenommene Naturbestimmung des Menschen, die — weit mehr als die Auffassung Gall's es zulässt — den Handlungsspielraum des Menschen an die von ihm selbst geschafenen, aber verselbständigen Lebensbedingungen knüpft' (p. 28).

86 See James, Georg Büchner's 'Dantons Tod', p. 19. James draws a comparison to Magendie's idea that 'Triebe' are the product of the nervous system, which he outlines in his physiology text-book Précis élémentaire de physiologie (see above, note 30; I, p. 185). It is highly probable that Büchner was acquainted with this text through his study of the nervous system in vertebrates.

87 According to Oehler-Klein, the comment of Dumas in Dantons Tod, that 'die Revolutionsmänner haben einen Sinn, der anderen Menschen fehlt, und dießer Sinn trägt sie nie', is a clear reference to Gall's theory, an assumption underlined by the Bürger's response: 'Das ist der Sinn des Tieggers.' (IV. 2. 64; cf. Barrère's comment: 'Du hast einen revolutionären Instinct', III. 6. 58.) However, the effect of the play is to undermine any attempt to exonerate the leaders of the Terror through Gall's ideas by emphasizing their personal motivation for killing their rivals: Dumas, for instance, uses the 'Revolutiontribunal' to have his wife executed, to which the Bürger responds: 'Du bist ein Ungeheuer!' (IV. 2. 65). Gall emphasized the motiveless desire to kill, which characterized the 'Mordsinn': the tiger killed regardless of hunger, merely to satisfy its killing instinct (see Oehler-Klein, p. 24). As Oehler-Klein observes: 'Nicht das Tier, das mehr oder weniger blind seinen Instinkten folgt, kann zum „Ungeheuer“ werden, sondern der Mensch, der zur Befriedigung egoistischer Interessen seinen Verstand gezielt zum Töten einsetzt und damit in dem Tier und Mensch gemeinsamen Ordnungsgefüge Natur eine herausragende — nicht zu wertende — Stellung einnimmt.' (p. 30) She therefore suggests that the tendency in Dantons Tod is to emphasize the difference between the animals and humans, and not, as Gall suggested, their essential similarity. Nevertheless, as Benn rightly points out (pp. 67-68), Büchner's use of the barbel to gain insight into the origin of brains in humans, has a subversive effect on humanity's supposedly privileged position in nature, suggesting a monistic approach similar to Gall's and ultimately Darwin's. See also Kubik, pp. 157-58 and above, note 58.

88 Büchner's desire to demonstrate in his scientific research the origin of the brain in the nerves of the spinal column is directly comparable to Gall and Spurzheim's findings about the origins of the brain (see Untersuchungen über die Anatomie des Nervensystems überhaupt, und des Gehirns insbesondere. Ein dem französischen Institute überreichetes Mémoire, Nebst dem Berichte der H.
Es ist klar, daß einer moralischen Bewertung von Handlungen, die auf unkontrollierbare Tätigkeiten angelegter Organe zurückgeführt werden können, der psychologisch-physiologische Boden entzogen wird. [...] Die in der Betonung der Abhängigkeit des Menschen von seiner natürlichen Organisation fortschrittliche Trieblehre Gall’s attackierte den philosophisch-idealistischen Freiheitsbegriff und eine darauf gegründete Psychiatrie. Indem er geistige Fakultäten und tierische Instinkte bzw. Triebe jeweils an ein und dieselbe organische Basis band, nahm Gall nicht nur eine Gleichsetzung in ihrer Wirkungsweise und damit in ihrer Wertigkeit vor, sondern er deklarierte die in der Krankheit extrem und ungehemmt erscheinenden Triebhandlungen zu natürlichen Bestandteilen des menschlichen Verhaltens; insofern konnte er auch die Übergänge zwischen psychischer Krankheit und Gesundheit als fließend ansehen. (Oehler-Klein, p. 42.)

It is significant as an indicator of Clarus’s position in this debate, that in his second ‘Gutachten’, Clarus takes the trouble to discredit ‘die ganze Lehre von amentia occulta [...] [...] von außerordentlichem Antriebe zu einer Handlung oder durch gebundenen Vorsatz [...] [...] von Hemmung der moralischen, freien Kraft durch
Ausartung thierischer Triebe', and points out the inherent dangers for the exercise of justice ‘wenn man fortfahren sollte, wie man bereits angefangen hat, einen Mordtrieb, eine Feuerlust, eine Rauflust, einen Stehtrieb und am Ende für jedes Verbrechen einen besonderen Trieb oder einen instinktartigen Zwang, eine Nothwendigkeit des Handelns, anzunehmen’. (L I, 528)

As with the question regarding Büchner’s tendency towards materialist or idealist sympathies in science, the issue as to which school of thought he owed allegiance regarding the origin of the brain and ultimately the responsibility of the individual, cannot be answered unambiguously. Many critics have seen Woyzeck as an attempt to examine and indeed question the validity of Clarus’s declaration of Woyzeck’s responsibility for his actions. According to Glück, Woyzeck should be read ‘als Revision des historischen Prozesses und speziell als vernichtende Kritik des Clarus-Gutachtens’ (‘Der Menschenversuch’, p. 164, note 50). This attitude is not without its difficulties, as both Kubik and Oehler-Klein have suggested. In my opinion, Woyzeck cannot be regarded as a mere reflection of the case of the historical

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90 Glück explicitly denies that the historical Woyzeck was ‘zurechnungsfähig’: ‘Durch seine Fehldiagnose, in der er [Clarus] krasse Symptome einer Psychose durch das Postulat “Willensfreiheit” wegphilosophierte, schickte er den Psychiatiker aufs Schafott.’ (‘Der Menschenversuch’, p. 164, note 50.) For Glück, Clarus was an agent of a repressive state which was keen to exploit his science of mind: ‘Diese Psychiatrie steht im Dienst der Herrschaft, ist ein Instrument der Repression. Clarus nannte seine Wissenschaft “Staatsmedizin”: mit Recht.’ (‘Woyzeck—Clarus—Büchner’, p. 426.) See also Gray, who states: ‘There can be no doubt that the Clarus documents were not mere “sources” from which Büchner culled information for his drama, but were rather the true impetus behind the entire conception of the work.’ (‘The Dialectic of Enlightenment’, p. 81.)

91 Kubik has criticized attempts to interpret Woyzeck as a ‘Gegengutachten’, asserting that Büchner in fact presents a completely original case history. In particular she accuses Georg Reuchlein of placing too much emphasis on Clarus’s evidence (G. Reuchlein, Das Problem der Zurechnungsfähigkeit bei E. T. A. Hoffmann und Georg Büchner: Zum Verhältnis von Literatur, Psychiatrie und Justiz im frühen 19. Jahrhundert (Frankfurt a. M.: Lang, 1985); see Kubik, pp. 167-68). Kubik rightly emphasizes Büchner’s attempt to widen the debate about mental illness to include societal influences (pp. 169-70). Similarly, the clinical and theoretical context in which the patient is diagnosed, is shown to be significant. This suggests an holistic understanding of science which seeks to integrate somatic and idealist, mechanistic and environmental influences. See also Oehler-Klein, p. 44; James also disagrees with Glück’s criticism of Clarus: ‘The “Interesting Case”’, pp. 106-08.
Woyzeck. There are significant factual divergences which make such a reading problematic. Firstly, Büchner's Woyzeck is diagnosed by the Doctor as suffering from an 'aberratio mentalis partialis', a phrase which suggests Clarus's 'amentia occulta', but which it will be remembered Clarus denied was evident in his 'Inquisit'. Secondly, Clarus emphasized Woyzeck's act as a crime of passion, seeking thus to deny the conclusion that could have been reached by somatic psychiatrists on the basis of the fact that Woyzeck's hallucinations co-existed with otherwise rational behaviour, as this passage by Gall demonstrates:

Quelquefois l'aliénation mentale est accompagnée de visions et d'inspirations, et ce symptôme particulier annonce que la maladie a acquis le plus haut degré d'exaltation. Les infortunés qui en sont atteints, se conduisent de la manière la plus conséquente dans la poursuite du projet qu'ils ont formé; ils agissent, comme l'a aussi remarqué M. Pinel, avec une détermination inébranlable et de la manière la plus irrésistible.\(^9\)

For Gall, a patient presenting such a series of symptoms was suffering from a partial impairment of the mental faculties: ‘Son égarement était d’ailleurs partiel [...]’ (Sur les fonctions, p. 454). Büchner's Woyzeck seems to accord closely with this

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92 Oehler-Klein points out that there were two concepts of 'partielle Geisteskrankheit'. Pinel saw 'partielle Geisteskrankheit' as being demonstrated by 'Wahnsinnige [...], welche nie die mindeste Verletzung des Verstandes zeigten, und die dennoch von einem Instinkt der Raserey beherrscht wurden, als wenn gleichsam nur die Willensvermögen verletzet wären.' (P. Pinel, Philosophische-Medicinische Abhandlung über Geistesverwirrungen oder Manie, mit Kupfertafeln, welche die Form einiger Schedel, und die Abbildungen einiger Wahnsinnigen darstellen, trans. by Mich. Wagner (Vienna: [n. pub.], 1801), pp. 160-61; Oehler-Klein, p. 41, note 55.) Adolph Henke's definition does not focus on the role of 'Raserey' but on the contemporary notion of 'die fixe Idee': 'Der partielle Wahnsinn ist nur auf einzelne fixe Ideen beschränkt, und kann mit übrigen ungestörter Verstandeskraft, und selbst mit Schärfe des Urtheils, verbunden seyn.' (A. Henke, Lehrbuch der gerichtlichen Medicin, 7th edn (Stuttgart: [n. pub.], 1832), p. 145.) Thus Oehler-Klein emphasizes that the Doctor's reference to the 'aberratio mentalis partialis [...] fixe Idee' is ambiguous and should not be seen as a comment stemming only from the somatic branch of psychiatry. She also denies Bornscheuer's idea that the original phrase used by the Doctor, 'alienatio mentis' (H2.6, 162), refers to the title of Pinel's Traite medico-philosophique (Bornscheuer, pp. 16-17). Rather, she sees its origins in other, unspecified, Latin works on the topic (Oehler-Klein, p. 44, note 67). For a discussion of the concept of 'fixe Ideen' and their relation to the historical and fictional Woyzeck, see James, 'The "Interesting Case"', pp. 105-06.

93 F. J. Gall, Sur les fonctions du cerveau et sur celles de chacune de ses parties, 3 vols (Paris: [n. pub.], 1825), l. p. 452; cited by Oehler-Klein, p. 45. See also above, note 76.
description, his behaviour being characterized by both aberration and rational clarity (as is evidenced by his purchase of the knife in H4.15 and by his attempt to conceal the weapon in H1.19). Thirdly, Büchner makes Woyzeck the patient of the Doctor *before* he commits the murder. 94 Rather than seeking to attack Clarus and the *Psychiker* directly — an approach which would have placed Büchner firmly within the opposing somatic school of thought — *Woyzeck* undermines such divisive, and ultimately simplistic, binary oppositions as idealist/materialist and instead to focus our attention on the complex nexus of environmental, physiological and psychological influences which operate in the life-world. 95

Liebig, Wilbrand, Clarus, and even Büchner's father are all possible sources for the grotesque figure of the Doctor in *Woyzeck*. As in *Dantons Tod*, Büchner

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94 James points out that the historical Woyzeck 'had no reported contact with a doctor before the murder' ('The "Interesting Case"', p. 105). Glück suggests that Büchner intended to show how Woyzeck was in the power of the Doctor before his crime (as his experimental subject), during the trial (by being dependent on the Doctor's expert testimony), and after his execution, when his body would have been used as an anatomical specimen ('Der Menschenvorsuch', pp. 151-52). This interesting possibility (of which however no evidence exists) is perhaps lent some credence by the postscript to Clarus's 'Gutachten', where he describes Woyzeck's execution, and seeks to justify his description of the murderer as 'kalt und gefühllos' (L I, 536) and 'zurechnungsfähig': 'Bei der auf dem anatomischen Theater von dem Prosector D. Bock unternommenen Section fanden sich alle Organe in der Kopf-, Brust- und Unterleibshöhle in vollkommen gesundem Zustande und nur das Herz mit einer ganz ungewohnlichen Menge von Fett umgeben. Beim Fallen des Haupts bemerkte man einen sehr schwachen Sprung des Blutes aus den Halsschlagadern, vielleicht eine Folge der durch die Fallage verminderten Propulsionskraft des Herzens.' (L I, 537) However it is the detailed study of the living person, followed by the objective observation of the man's death by decapitation, and the subsequent dissection of the corpse, which appear to the modern reader as 'kalt und gefühllos', the very epitome of scientific objectivity. Such behaviour would indeed be wholly in keeping with the character of the Doctor as Büchner describes it.

95 Clearly, themes such as the dietary experimentation suggest a somatic basis for the text's concept of the human. Nevertheless, the satirizing of the Doctor, who is oblivious to all but physical indicators of Woyzeck's condition (pulse, urine composition, etc.), indicates a critical stance towards this purely somatic approach to human subjects. The lack of any attempt on the part of the Doctor to relate to Woyzeck as an individual is notable. It is unlikely that Büchner the social revolutionary would have supported Clarus's prefatory eulogy to his society and his incomprehension at the accused's wilful disregard for the 'Wohltaten einer gemeinschaftlichen Religion, einer segensvollen und milden Regierung, und so mancher lokalen Vorzüge und Annehmlichkeiten des hiesigen Aufenthalts' (L I, 488). Despite this I suggest that *Woyzeck* does not merely dispute the evidence of one scientist, or attack one scientific paradigm. Rather, Büchner reminds both idealist and materialist scientists that ordinary people should benefit from science and not be its victims. Compare this approach to science with Brecht's; I shall explore this theme in Chapter 6 of this thesis.
thematizes the problematic relationship of Natur and human autonomy, using the
Doctor as a focal point for the confluence of sometimes contradictory approaches to
science. The Doctor, like Clarus, believes in the freedom of the individual, as
Büchner reveals in a splendidly satirical passage:

DOCTOR Was erleb' ich Woyzeck? Ein Mann von Wort.
WOYZECK Was denn Herr Doctor?
DOCTOR Ich hab's gesehen Woyzeck; Er hat auf die Straß gepißt, an die Wand
gepißt wie ein Hund. Und doch zwei Groschen täglich. Woyzeck das ist
schlecht. Die Welt wird schlecht, sehr schlecht.
WOYZECK Aber Herr Doctor, wenn einem die Natur kommt.
DOCTOR Die Natur kommt, die Natur kommt! Die Natur! Hab' ich nicht
nachgewiesen, daß der musculus constrictor vesicae dem Willen
unterworfen ist? Die Natur! Woyzeck, der Mensch ist frei, in dem
Menschen verklärt sich die Individualität zur Freiheit. Den Harn nicht
halten können! (H4.8, 174)\(^6\)

This passage is both comic, in its satire of the Doctor's concern at the loss of his
experimental material,\(^7\) and serious, in what it reveals about the Doctor's character
and equally about Woyzeck. In response to the Doctor's denial of the primacy of
nature and assertion of free will, Woyzeck seeks to justify his comment: 'Sehn Sie
Herr Doctor, manchmal hat einer so n'en Character, so n'e Structur. — Aber mit der
Natur ist's was anders, sehn Sie mit der Natur er kracht mit den Fingern das ist so
was, wie soll ich doch sagen, zum Beispiel ...' (H4.8, 175) Woyzeck is unable at first

\(^6\) See above, note 73, on Wilbrand's concept of freedom. On the idea of 'Willensfreiheit' in
Büchner's work and in Clarus's 'Gutachten', see Glück, "'Herrschende Ideen'", pp. 96-102. In
the Doctor's valorization of free will, Gray sees a correlation with Clarus: 'Behind the supposed
"objectivity" of Clarus's investigation, one discovers a privileging of reason over emotion,
education over ignorance, and "free will" over determination: all categories intimately bound up
with the values of the social class Clarus represents. [...] Clarus works from an idealized and
dogmatic conception of the human being, grounded in the optimistic principles of enlightenment
thinking' (p. 82).

\(^7\) The Doctor reminds Woyzeck that they have a contract: 'Aber an die Wand pissen! Ich hab's
schriftlich, den Akkord in der Hand.' (H4.8, 174) It is ironic that the Doctor says this when he has
just told Woyzeck that 'der Mensch ist frei'. It seems that the Doctor's freedom is not an absolute
concept, but one relative to contractual obligations, and, indeed, to class. See Glück,
"'Herrschende Ideen'", p. 95, and Edward McInnes, Büchner: 'Woyzeck' (Glasgow: University of
to explain his idea of the ‘Character’ and ‘Structur’ of a person and their relation to ‘Natur’. Then he produces the phrase ‘doppelte[] Natur’ to denote this otherness of Natur and describes his visions of fire and disembodied voices (see above).

There is a striking similarity between this scene and the H1.2 scene with the ‘Marktschreier’. Here a horse is being displayed as an example of ‘viehische Vernunftigkeit’: the horse is ‘Mitglied von alle gelehrte Societät, ist Professor an unse Universität, wo die Studente bey ihm reiten und schlage lerne’ (H1.2, 145). The man asks the horse to think ‘jezt mit der doppelte raison’ and to say whether any ‘Esel’ are amongst ‘der gelehrte Société’ present, to which the horse shakes its head: ‘Sehn Sie jezt die doppelte Räson? Das ist Viehsionomik.’ Indeed, according to the man, it is not just an animal but ‘das ist eine Person’, at which point the stage directions state: ‘Das Pferd führt sich ungebührlich auf’ (H1.2, 145). The ‘Marktschreier’ skilfully turns this into a Rousseauesque statement about the need to return to a natural mode of life:


It is clear that this speech has a pronounced effect on Woyzeck, although he does not refer to it again directly. In H4.8 there are echoes of this extraordinary scene with the horse, and it is perhaps no coincidence that the ‘Marktschreier’ includes the rhetorical question, ‘[f]ragen Sie den Arzt’ in his harangue. Initially the whole

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98 The importance of this scene within the original scheme of the play is indicated by the fact that, together with the brief scene outside the ‘Bude’, it forms the first scene in the H1 manuscript. See above, note 57.
conversation, concerning the perceived dichotomy between *Freiheit* and *Natur*, is provoked by Woyzeck urinating in the street, rather than allowing the Doctor to keep a sample for analysis, thus infringing his contract. ‘Mensch sey natürlich’ is the comment of the ‘Marktschreier’ when the horse relieves itself on stage. For Woyzeck too, this is ample justification for breaking his contract with the Doctor: ‘Aber Herr Doctor, wenn einem die Natur kommt.’ (H4.8, 174) When Woyzeck is unable to explain his idea of nature to the Doctor, he attempts to describe his hallucinations, which are for him examples of ‘doppelte[] Natur’. This phrase echoes the ‘doppelte Räson’ displayed by ‘das astronomische Pferd’ (H1.1, 145). Clearly the confident patter of the ‘Marktschreier’, brashly showing off his supposedly extraordinary animal, has a profound influence on Woyzeck and his understanding of the problematic relationship of *Freiheit* and *Natur*. The ‘Marktschreier’ supplies a ready-made vocabulary, which helps Woyzeck explain the paradoxical experience of reality to which he is exposed, a reality which is, from a somatic viewpoint, a result of the physically harmful diet to which he is subjected.\(^9\) This imitative motif in Woyzeck’s character can be seen as one of the contributory factors in his murder of Marie (see above, note 58).\(^10\) Beyond this aspect however, the scene with ‘das astronomische

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\(^10\) Similarly, Glück emphasizes the disorientating influence of bourgeois ideology on Woyzeck’s mind, as he attempts to conform to the dominant cultural norms: ‘Unter den massiven Faktoren, die wie in einem konzentrischen Angriff auf das Subjekt Woyzeck einwirken — Not, Arbeitsüberlastung, Militärdisziplin, Demütigung, medizinische Experimente, die an ihm durchgeführt werden, Strafverfolgung, die ihm bevorsteht — , ist ein schwer faßbarer, subtiler Faktor: geistige Unterdrückung, Knechtung auf der Ebene des Bewußtseins, die Desorientierung durch die herrschende Ideologie und Indoktrination. Diese Fesseln sind nicht so sichtbar wie die an Händen und Füßen, aber nicht weniger einschneidend.’ (“’Herrschende Ideen’”, p. 54.) Gray also emphasizes Woyzeck’s imitation of the Captain’s and the Doctor’s bourgeois, Enlightenment values: ‘Woyzeck’s act of murder, far from indicating the failure of reason to control passion, becomes itself an expression of enlightened will to mastery’. According to Gray, to describe
Pferd' raises another crucial complex of ideas, namely the representation of humans and animals.

The thematization of Natur in Woyzeck implies, amongst other things, the blurring of the boundary between what is defined as animal or human. The 'Marktschreier' describes his horse as: 'Ei Mensch, ei thierisch Mensch und doch ei Vieh, ei bête' (H1.2, 145). Similarly, in the previous scene, outside the 'Bude', the 'Ausrüfer' attracts people's attention with a monkey in human clothes: 'Sehn Sie die Creatur, wie sie Gott gemacht, nix, gar nix. Sehen Sie jetzt die Kunst, geht aufrecht hat Rock und Hosen, hat ein Säbel! Ho! Mach Compliment! So bist Baron. Gieb Kuß!' (H1.1, 145). The main show inside the 'Bude' includes 'das astronomische Pferd und die kleine Canaille vogel', which he promises have fantastic powers of prediction: 'verkündige de Leute Alles, wie alt wie viel Kinder, was für Krankheit'. He explains the origin of these powers as: 'Alles Erziehung, habe nur eine viehische Vernunft, oder vielmehr eine ganz vernünftige Viehigkeit, ist kein viehdummes Individuum wie viel Person' (H2.3, 158). These comments undermine the idea that human beings are in some way — either physically or metaphysically — different from animals. Clothing, skills, social standing ('Liebling von alle Potentate Europas und Mitglied von alle gelehrte Societat') are all the result of 'Kunst', and of 'Erziehung', without which humans, like animals, are 'nix, gar nix' (H1.1, 145). As the 'Marktschreier' says: 'Du bist geschaffe Staub, Sand, Dreck. Willst du mehr seyn, als Staub, Sand, Dreck?' (H1.2, 145-46) Through progress, even animals can be

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Woyzeck's murder of Marie as a crime of passion is to adopt the prejudiced position of Clarus who seeks to impose an absolute morality on an inappropriate subject (pp. 88-91).

101 These scenes are absent from H4, although space is left for this scene to be included as scene three. In the 'Lese- und Bühnenfassung', Lehmann combines scenes H1.1 with H2.3 and H2.5. In H2.3, the 'Marktschreier' becomes an 'Ausrüfer'. See above, note 98.

102 This passage is reminiscent of Camille's sentiments, as the Dantonists await their fate in the 'Conciergerie': 'wir sollten einmal die Masken abnehmen, wir sähen dann wie in einem Zimmer
civilized: ‘Sehn Sie die Fortschritte der Civilisation. Alles schreitet fort, ein Pferd, ein Aff, ein Canaillevogel! Der Aff ist schon ein Soldat, s’ist noch nit viel, unterst Stuf von menschliche Geschlecht!’ (H2.3, 159)

Although the monkey dressed as a soldier is displayed as an example of the way progress can ‘improve’ animals, clearly the subtext poses the question as to what is the defining characteristic of the human. Is it nothing more than a veneer of clothes and education? This questioning process is intensified by the characterization of the

mit Spiegeln überall nur den einen uralten, zahllosen, unverwüstlichen Schaafskopf, nichts mehr, nichts weniger. Die Unterschiede sind so groß nicht, wir Alle sind Schurken und Engel, Dummköpfe und Genies und zwar das Alles in Einem, die vier Dinge finden Platz genug in dem nemlichen Körper, sie sind nicht so breit, als man sich einbildet. Schlafen, Verdaun, Kinder machen das treiben Alle, die übrigen Dinge sind nur Variationen aus verschiedenen Tonarten über das nemliche Thema.’ (IV. 5. 70-71) It is perhaps significant that Camille uses the word ‘Schaafskopf’ (which apart from the skull of a sheep, also means ‘Dummkopf’), suggesting a monistic view of human and animal Natur. See above, note 10, on Oken’s development of the ‘Wirbeltheorie des Schädels’ from observations of a sheep’s skull. Compare also to HI.10, 149, where the drunken ‘Barbier’ tells the ‘Unterofficier’: ‘Was ist der Mensch? Knochen! Staub, Sand, Dreck. Was ist die Natur? Staub, Sand, Dreck.’

103 In Dantons Tod, the Enlightenment ideal of progress is treated ironically. In II. 2, ‘Eine Promenade’, the ‘Erster Herr’ comments to his friend: ‘Ich versichre Sie, eine außerordentliche Entdeckung! Alle technische Künste bekommen dadurch eine andere Physiognomie. Die Menschheit eilt mit Riesenschritten ihrer hohen Bestimmung entgegen.’ (II. 2. 36) We do not learn of what he is talking, as the conversation starts in médias res, but the fact that it takes place during the Terror and his friend’s subsequent comment, that he is afraid to step into the puddle, because ‘die Erde ist eine dünne Kruste, ich meine immer ich könnte durchfallen, wo so ein Loch ist’, suggest that the progress of which they talk is illusory. The reference to ‘Physiognomie’ includes both the suggestion of an ancient art (Aristotle wrote much on the subject, comparing animal and human features), and what became in the nineteenth century an area of scientific interest. Johann Kaspar Lavater’s Physiognomische Fragmente (1775-78) was one of the best known works into the study of expressions, and was referred to by Sir Charles Bell in his Essay on the Anatomy of the Expressions (1806), which can be seen as the first scientific study of the idea (R. Gregory, Oxford Companion, pp. 620-21). Darwin developed the theory in The Expression of the Emotions in Man and Animals (1872). The idea that human and animal expressions might be linked, is suggested by the comment of the ‘Marktschreier’ concerning his horse: ‘Das ist Viehsionomik’ (H1.2, 145). The phonetic similarity between this and ‘die Physiognomik’ indicates that this is a pun, with the ‘Marktschreier’ alluding to an aspect of popular scientific knowledge. However, a more sinister dimension to the notion of progress is expressed in St. Just’s speech: ‘Die Schritte der Menschheit sind langsam, man kann sie nur nach Jahrhunderten zählen, hinter jedem erheben sich die Gräber von Generationen. Das Gelangen zu den einfachsten Erfindungen und Grundsätzen hat Millionen das Leben gekostet, die auf dem Wege starben. Ist es denn nicht einfach, daß zu einer Zeit, wo der Gang der Geschichte rascher ist, auch mehr Menschen außer Atem kommen?’ (II. 7. 46) To the modern ear these words cannot fail to have a hollow ring, reminiscent as they are of the scientific utopianism of both communist and fascist regimes in the twentieth centuries. The human cost of scientific progress is directly thematized in Woyzeck, where the Doctor’s revolutionary experiments (‘Es gibt eine Revolution in der Wissenschaft’, H4.8, 174) play a clear role in Woyzeck’s fate.
Drum-Major. Here a real soldier is described by Woyzeck’s partner (who has also witnessed the performing monkey) in terms which emphasize his animality: ‘Er steht auf seinen Füßen wie ein Löw.’ (H4.2, 169) His regimental uniform symbolizes his position in the human social order: ‘Wenn ich am Sonntag erst den großen Federbusch hab’ und die weiße Handschuh, Donnerwetter, Marie, der Prinz sagt immer: Mensch, Er ist ein Kerl.’ (H4.6, 173) The monkey dressed as a soldier and the Drum-Major, whom Marie sees in terms of his essentially animal qualities, oppose each other dialectically, challenging the audience’s concept of humanity. The text provokes the question: Is there no essential difference between animals and people? Are we, as Danton states, merely the product of our physical Natur, which, as Büchner would have been aware from his work in comparative anatomy, empirical evidence suggested was fundamentally like that of animals. It is easy to imagine

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104 Margreth, Marie’s neighbour, describes the Drum-Major as ‘wie ein Baum’ (H4.2, 168). Marie however describes him as ‘wie ein Rind’, and he refers to Marie as ‘Wild Thier’ (H4.6, 173). In H4.12, Woyzeck describes Marie as a ‘Zickwolfin’, a neologism whose meaning is uncertain, although Bornscheuer suggests it is formed from the word for ‘Ziege’, meaning goat or, pejoratively, bitch, and, more obviously ‘Wölfin’ (p. 21). As Reddick suggests, this implies that Marie is ‘doubly animal-like’ (Georg Büchner, p. 312).

105 It is significant that in the ‘Wirtshaus’ scene, the Drum-Major states: ‘Ich bin ein Mann! schlägt sich auf die Brust ein Mann sag’ ich’ (H4.14, 179). The Drum-Major is drunk, and he proves that he is a man by beating up Woyzeck, who after three months eating peas can hardly be a match for the leonine Drum-Major. Drinking ‘Schnaps’, fighting, and sex seem to sum up the Drum-Major’s concept of what it is to be ‘ein Mann’. Such a reductionist image of humanity, rendered down to its most basic, instinctual elements, makes the divide between humans and animals less obvious. The idealist notions of human freedom, of Vernunft, and morality seem redundant. See above, note 87.

106 James emphasizes the influence of monistic evolutionary thinking on scientific and philosophical ideas in the 1820s and 1830s. She cites Johann Christian August Grohmann (1769-1847) as exemplifying ‘evolutionary’ thinking, and rejecting, as did Büchner, teleological explanations (James, ‘The “Interesting Case”’, p. 118). In his essay ‘Physiologie des menschlichen Geistes nach allgemeinen Naturgesetzen’ (1820), he developed his idea of evolution and drew conclusions which challenged contemporary notions of morality: ‘Wenn [...] der Mensch das physiologisch bedingte Geschöpf der Natur ist, so fragen wir von Neuem: Wie kann und darf der Moralist, der Richter und der Kriminalist nach einem und demselben Gesetzbuch einer willkürlich angenommenen gleichen Freiheit des menschlichen Willens über Verbrecher oder Verbrechen richten?’ (Zeitschrift für psychische Ärzte, 3 (1820), pp. 503-04, his emphasis; cited from James, p. 119.) J. Heinroth attacked such ideas, which he saw as linking humans with the animal kingdom: ‘Das Gehirn des Affen ist nicht zur Wohnstatte der Vernunft organisiert. [...] Wir haben keinen Grund zu zweifeln, daß der erste Mensch rein und gut aus der Hand seines Schöpfers hervorging.’ (Lehrbuch der Anthropologie (Leipzig: Vogel, 1822), p. 202; James, p. 119.) Clarus,
how an affirmative answer to this question could result in a fatalistic view of human life. \(^{107}\) Marion’s commitment to fulfilling her *Natur* may well allow her to cast off the restrictions of an alien morality, but instead of an image of a liberated individual, the text presents a character trapped within the bounds of their own physicality: *naturgebunden*. *Woyzeck* similarly confronts the audience with the proto-Darwinian dilemma, that humanity may have more in common with a monkey in a uniform than with God, and that the drunken ‘Handwerksbursch’ may represent a truer image of the human than that created by the ideals of the Enlightenment.\(^{108}\)

The representation of the relationship between human and animal may well have seemed more shocking to an early nineteenth-century audience than it does today, but the Doctor’s exploitation of *Woyzeck* as an experimental subject remains disturbingly relevant. In scene H3.1, ‘Der Hof des Professors’, the Professor/Doctor attempts to conduct an experiment on a cat.\(^{109}\) His description of the experiment wonderfully juxtaposes the ‘pathetische Sprache’ of *Naturphilosophie* with an apparently pointless empirical exercise:

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\(^{107}\) David Horton’s study of *Dantons Tod* concludes that: ‘Man is viewed as tragically limited’, and finds a ‘predominantly negative ontology’ in the play (p. 306). See above, note 35.

\(^{108}\) The sermon delivered by the drunken ‘Handwerksbursch’ from the inn table is a parody of teleological reasoning and religious rhetoric: ‘Warum ist der Mensch? — Aber wahrlich ich sage euch, von was hätte der Landmann, der Weißbinder, der Schuster, der Arzt leben sollen, wenn Gott den Menschen nicht geschaffen hätte?’ (H4.11, 178) The preliminary sketch for this scene was presumably H1.10, where a drunken ‘Barbier’ delivers a pseudo-scientific lecture on ‘der Mensch’ and claims: ‘Ich bin die Wissenschaft’ (H1.10, 149; see above, notes 58 and 102). See James, ‘The “Interesting Case”’, p. 118, and Reddick, *Georg Büchner*, p. 295.

\(^{109}\) The positioning of this scene is disputed. It is one of two scenes which appear in the H3 manuscript (see Reddick, *Georg Büchner*, pp. 298-99). Initially a ‘Professor’ is mentioned and then *Woyzeck* addresses him as ‘Herr Doctor’ (H3.1, 166, line 17).
Wenn wir nur eins von den Dingen nehmen, worin sich die organische Selbstaffirmation des Göttlichen, auf einem so hohen Standpunkte manifestiert und ihr Verhältniß zum Raum, zur Erde, zum Planetarischen untersuchen, meine Herrn, wenn ich dieße Katze zum Fenster hinauswerfe, wie wird dieße Wesenheit sich zum centrum gravitationis und dem eigenen Instinct verhalten? (H3.1, 166)¹¹⁰

The expansive rhetoric of the Professor/Doctor is undermined by the crudity of his methods and his callous treatment of a fellow human being, reflecting Büchner’s repeated criticism of abstract language and its distance from the reality of the life-world.¹¹¹ The Professor/Doctor scorns Woyzeck’s gentle handling of the cat: ‘Kerl, er greift die Bestie so zärtlich an, als wär’s seine Großmutter.’ (H3.1, 166) The Professor/Doctor’s sole interest is in observation and the collection of information, with the aim of advancing the cause of scientific progress (see above, note 103). As the cat escapes and saves its life (‘das Thier hat keinen wissenschaftlichen Instinct’), so his interest turns to a parasite in the fur of the animal: ‘die neue Species Hasenlaus,

¹¹⁰ Bornscheuer sees this as an allusion to an 1819 text by Wilbrand (pp. 33-34). Nevertheless, as the following passage from Oken demonstrates, the source for this passage need not be limited to one text of Naturphilosophie, its voice being typical of the movement as a whole: ‘Die Naturphilosophie hat zu zeigen, wie das Materiale und zwar, nach welchen Gesetzen dasselbe entstehe; sie hat mithin zu zeigen, wie etwas aus Nichts werde. Sie hat die ersten Entwicklungsmomente der Welt vom Nichts an darzustellen, wie die Elemente und die Weltkörper entstanden, wie sie sich zu höheren und manchfaltigen Gestalten ausgebildet, sich in Mineralien geschieden, endlich organisch geworden und im Menschen zur Vernunft gekommen sind. Die Naturphilosophie ist mithin Zeugungsgeschichte der Welt oder Schöpfungsgeschichte überhaupt, unter welchem Namen sie bey den ältesten Philosophen gelehrt wurde, nehmlich als Cosmogenie; sie ist Genesis schlechthin, wie sie Moses nennt.’ (Lehrbuch der Naturphilosophie, 2nd edn (Jena: [n. pub.], 1831), p. 1; cited from Döhner, p. 209.)

¹¹¹ Reddick rightly emphasizes Büchner’s critique of abstract rationality. Commenting on Scene 2 of Leonce and Lena (L 1, 108-09), where, as he is being dressed, King Peter bustles around almost naked, spouting philosophical gibberish, Reddick notes: ‘He has closed himself off from that essential immediacy of intuitive existence so precious to Büchner, and has committed his being instead to an artificial, mechanistic system produced by the “secondary” processes of the mind.’ (Georg Büchner, pp. 44-45.) King Peter has withdrawn from the reality of physical experience into what for Descartes was the only realm of true experience, the mind. A comparison may be drawn between the clothing of King Peter in this scene and the ceremonial robing of the Pope (formerly Cardinal Barberini) in Brecht’s Leben des Galilei (Scene 12). In both an exclusion of physical sensation, represented by the act of dressing, is synonymous with a blindness to reality. On Büchner and philosophy, see Markus Kuhnigk, ‘Das Ende der Liebe zur Weisheit: Zur Philosophiekritik und Philosophieschelte bei Georg Büchner im Zusammenhang mit der zeitgenössischen Hegelrezeption’, in Georg Büchner: 1813-1837 (1987), pp. 276-81.
Eine schöne Species, wesentlich verschieden, enfoncé, der Herr Doctor er zieht eine Loupe heraus Ricinus, meine Herren'. From this creature, he directs his students’ attention to Woyzeck, the human specimen: 'sehn Sie, der Mensch, seit einem Vierteljahr isst er nichts als Erbsen, beachten Sie die Wirkung, fühlen Sie einmal was ein ungleicher Puls, da und die Augen' (H3.1, 166). Despite Woyzeck’s protestations that he is feeling faint, the Doctor insists that he demonstrate to the students his ability to move his ears: 'Bestie, soll ich dir die Ohren bewegen, willst du's machen wie die Katze! So meine Herrn, das sind so Uebergänge zum Esel, häufig auch in Folge weiblicher Erziehung und die Muttersprache.' (H3.1, 167; see above, note 73.) Here, as in the animals with human qualities displayed by the 'Marktschreier', the boundaries between the human and animal are blurred, this time in the name of science and implicitly of progress. The Professor/Doctor, clearly the grotesque personification of the life-sciences, moves effortlessly from experiments concerning the relationship of independent organisms to universal laws of nature, to the taxonomy of parasites and to observations on the effect of diet on physiology, and finally to comments on the development of individual characteristics reminiscent of phrenology (see above). The Professor/Doctor, who himself mentions the 'wichtige[] Frage über das Verhältniß des Subjects zum Object' (H3.1, 166), is an extreme example of that tendency in science towards a denial of the interrelation of subject and object, and of scientist and experimental context. As Stephen Toulmin has argued, the trend in science towards the scientist as 'Spectator' is at least partly the culmination of the Cartesian division of reality into mind and matter, the percipient and the Gegenstand.  

112 Toulmin, 'The Future of Cosmology', pp. 242-43. See Chapter 1 of this thesis.
tendency in science. For him, all objects are alike in the sense that they are all somatic structures of varying mechanical complexity; there exists no essential difference between Ricinus and Homo sapiens (see above, note 64). All objects in the realm of res extensa are potential specimens in the service of the universal scientific project, and susceptible to observation and dissection. The realm of extended matter is conveniently separate from the rational, perceiving mind of the Cartesian observer-scientist, a view that encourages the notion of the scientist’s dedication to the objective accumulation of mind-independent facts and the idea of the value neutrality of science.

In this sense the figure of the Doctor in Büchner’s Woyzeck can be said to anticipate a reductionist and exploitative trend in science, as it has developed since the mid-nineteenth century. As Glück has shown, it is the ‘Menschenversuch’

113 Similarly, Gray analyses the ‘distanced gaze’ of Enlightenment objectivity as it is revealed in Clarus’s ‘Gutachten’ and in the figure of the Doctor in Woyzeck (pp. 82-83). Following Horkheimer and Adorno’s critique of the Enlightenment, he views this putative objectivity as a ‘falsche Klarheit’ (p. 79, citing Dialektik der Aufklärung (Frankfurt a. M.: Fischer, 1969), p. 4). According to Gray, Büchner’s Woyzeck is itself a reflexive critique of this objectification of nature: ‘The bitter paradox of enlightenment’s empowerment over nature is expressed in Woyzeck’s becoming-master-over, and destruction of, the only significant “object” in his life.’ (p. 94) In adopting the Enlightenment values of the Doctor and the Captain, Woyzeck is alienated from nature and thus from Marie. Woyzeck is ‘an allegory of the tragedy of enlightenment’ (pp. 93-94).


115 Russell, as ever wonderfully perceptive, comments on the ideological implications of science in the modern age: ‘Unlike religion, it is ethically neutral: it assures men that they can perform wonders, but it does not tell them what wonders to perform. In this way it is incomplete. In practice, the purposes to which scientific skill will be devoted depend largely on chance. The men
which is the symbol of this reductionist development in the study of nature, where an individual becomes no more than a factor in an hypothesis.\footnote{116} That Liebig served as at least one of the models for the Doctor seems beyond doubt, as I have demonstrated, and that Büchner should have selected aspects of Liebig’s approach to science as the focus of his satire is surely significant.\footnote{117} According to Gottfried Benn, Liebig was ‘experimentell und merkantil, der erste in der uns heute so geläufigen Reihe der Konquistadoren zwischen Induktion und Industrie’.\footnote{118} Although his early work at Giessen was mainly on organic chemistry, Liebig played an important role in the application of science to problems of nutrition and agriculture, not always, it might be said, with complete success. Nevertheless, it is this idea of the application of science to purposes which were regarded as socially useful or industrially advantageous which was to become of increasing importance during the latter half of the nineteenth century, especially in the new, unified Germany.\footnote{119} Through Büchner’s creation of the

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\footnote{116} According to Glück: ‘Am meisten empört sich der Zuschauer über den Menschenversuch — mehr als über Not, Arbeitshetze, Drill usf., die vom Schein des Normalen eingehüllt sind [...]. Der Menschenversuch ist die spektakuläre Erscheinung der Ausbeutung, Knechtung, Entfremdung, unter der Woyzeck insgesamt lebt (vegetiert).’ (‘Der Menschenversuch’, pp. 176-77.) Büchner was the first to depict a human being exposed to a scientific experiment in a tragedy (Glück, p. 176).


\footnote{119} A central tenet of Glück’s thesis in his article on the ‘Menschenversuch’ is the assumption that the Doctor’s experiments on Woyzeck are an example of ‘angewandte Wissenschaft im Dienst der Herrschaft’ (p. 158). The dietary experiments are conducted on behalf of the military authorities in order to discover to what extent the more expensive constituents of the soldiers’ diet, such as meat, can be replaced by a cheaper foodstuffs, namely pulses: ‘Der Menschenversuch des Doktors ist also rational im höchsten Grad, wenn auch in einem unerwarteten Sinn: nicht als ‘reine
Doctor, a composite character representing aspects of both idealist and materialist science, and through the thematization of Natur, suggesting a somatic basis to life that defines the human, complex questions are raised about our understanding of the natural world and our ideal notions of human beings as autonomous, creative individuals.

It is through the literary medium of theatre that Büchner examines these ontological questions regarding the conflict between the individual’s experience of the life-world and the scientific description of reality. Büchner’s use of the dramatic form has been typically described as ‘modernist’ and has been seen as anticipating the theatre of Bertolt Brecht. Christoph Lorey has noted, amongst other similarities to Brechtian theatre, the role of the audience: both playwrights require that the viewer create ‘Beziehungen zwischen Orten und Zeiten, zwischen Personen und Handlungen sowie nicht zuletzt zwischen geschichtlicher Wirkung und poetologischer Fiktion [...] und alle dialektischen Spiegelungen für sich zu einem neuen, sinnvollen Ganzen

Wissenschaft’, sondern ökonomisch: rationell. Der Zweck ist Rationalisierung — verhängt von denen, die wirtschaften und herrschen, über die “unterste Stuf von menschliche Geschlecht”, die niedergehalten und bewirtschaftet wird. Das Futter für das Kanonenfutter soll verbilligt werden. Die Ausbeutungsrate zu steigern, das ist die würdige Aufgabe dieser Wissenschaft. Daher das kalte satirische Licht, in dem Büchner den Repräsentanten einer solchen Wissenschaft auftreten läßt.’ (p. 161; emphasis in original.) This thought-provoking perspective, which sees Woyzeck as a proto-Marxian drama, is useful in its highlighting of the role of science as a tool of state and of industry, themes which become increasingly significant in the nineteenth and twentieth centuries (see Chapter 6 of this thesis). Nevertheless, it is fair to say that as far as Woyzeck is concerned, this is an approach which relies too much on hindsight, and although a scientist in Margaret Thatcher’s Britain might well have been concerned with cost-saving, one working at this period is more likely to have been engaged in ‘Grundlagenforschung’. Kubik likewise dismisses Glück’s thesis as ‘bloße Spekulation’ and suggests that he has misunderstood the nature of science at this time (pp. 184-85).

120 Reddick contrasts Büchner’s literary and scientific output: ‘the man who seems to us in the late twentieth century to be a supreme modernist in his writing, and considerably ahead of his time in his politics, was decidedly unmodern as a scientist-philosopher’ (Complete Plays, p. 287).

However, despite Büchner's revolutionary activities and the attempts of critics working within the tradition of Marxist cultural theory, *Dantons Tod* resists interpretation along narrow ideological lines. Social criticism is indeed present, but by no means pre-eminent. As with his scientific work, Büchner is careful not to allow himself to become a committed proponent of one viewpoint. I do not mean to imply, however, that Büchner does not hold strong views, or that he does not attack doctrines he considers pernicious; quite the contrary. As I have shown, Büchner is forthright in his criticism of what he terms the mechanistic and 'teleologisch'

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122 Lorey sees similarities in the way Brecht's *Leben des Galilei* and Büchner's *Dantons Tod* undermine the historic 'Held' through the open structure of the plays and the dialectical arrangement of rapidly changing scenes, all of which challenge the audience to reinterpret a familiar historical situation (pp. 251-55). In addition he notes a 'spielerische[] Leichtigkeit' which undermines the profundity of statements, reminding the audience that it is theatre and not reality (p. 254; but see Büchner's view of history, above, note 29). He identifies elements of 'Verfremdung' in both plays, such as the inability of characters to truly communicate: 'Selten wird ein Thema ausdiskutiert', as well as structurally: 'Die rasche Szenenfolge und der ständige Ortswechsel hindern alle noch so aufmerksamen Betrachter, sich in einen Handlungsbereich einzuleben, und erschweren es, sich mit einem der Charaktere zu identifizieren.' (p. 255)

123 *Dantons Tod* in particular poses challenging questions about 'die Mechanismen' at work in history, questions which in Büchner's play seem to suggest unpalatable conclusions for any doctrine which rests on the notion of an ideal inevitability in history. As Hans-Georg Werner suggests, Marxist theorists need to be cautious in evaluating the play, 'denn *Dantons Tod* kann sie aus mehreren Gründen ideell beunruhigen' ('*Dantons Tod: Im Zwang der Geschichte*', in Studien zu Georg Büchner, ed. by H-G. Werner (Berlin/GDR: Aufbau, 1988), p. 7). As Werner rightly says, it is a mistake 'Büchners dichterische Darstellung der Französischen Revolution nach demselben Bewertungsraster wie ein geschichtswissenschaftliches Werk zu beurteilen' (p. 8).


124 Reddick comments that *Woyzeck* 'was clearly not intended to be a "social drama"'. Büchner's *Woyzeck* is by no means as impoverished as was the historical Woyzeck: 'In the period immediately prior to the murder, the real Woyzeck was jobless, homeless, and in such absolute penury that he could not afford even the meanest doss-house, and was living rough.' (*Georg Büchner*, p. 303; for an alternative view, see McInnes, pp. 20-21.) Reddick goes on to say, that, although in H1 social criticism is not a theme, in H4 poverty and class inequality have become important issues. An example of this is the splendid scene where Woyzeck is shaving the Captain, who criticizes Woyzeck for having a child outside wedlock. Woyzeck's response, founded on New Testament Christianity and harsh experience of the inequalities in society, completely undermines the Captain's argument: 'Wir arme Leut. Sehn Sie, Herr Hauptmann, Geld, Geld. Wer kein Geld hat. Da setz eimal einer seinsgleichen auf die Moral in die Welt. Man hat auch sein Fleisch und Blut. Unseins ist doch einmal unseelig in der und der andern Welt, ich glaub' wenn wir in Himmel kämen so müBten wir donnern helfen.' (H4.5, 172) Similarly, as Woyzeck watches his son sleeping, he comments: 'Die hellen Tropfen steh'n ihm auf der Stirn; Alles Arbeit unter der Sonn, sogar Schweiß im Schlaf. Wir arme Leut!' (H4.4, 171)
approach to the study of nature, as well as ‘[d]ie Philosophie a priori’ (L I, 291-93; see above). Yet there is also an uncertainty in his scientific work which is a reflection of the paradigm shift being experienced in the sciences at this time. The ambiguity and ‘Zweifel’ that dominates the literary work and the discussion of Natur, is therefore unsurprising. The uncertainty which Büchner seeks to conceal in his scientific work — in the Mémoire and the ‘Probevorlesung’ — is explicit in Dantons Tod and Woyzeck. Although it may well be true, as Lorey has stated, that the audience is required by both Brecht and Büchner to impose meanings onto the open structure of Büchner’s plays, I suggest that it is primarily the perspectivist form of Dantons Tod and Woyzeck that resists closure and which so successfully subverts simplistic notions of Natur and Freiheit.

The perspectivist strategy behind the organization of scenes in Dantons Tod is immediately apparent. The scenes of decadence in the apartments of the Dantonists in Act I, are juxtaposed with scenes entitled ‘Eine Gasse’, depicting the struggle for survival of ordinary people in Revolutionary Paris. Similarly, the private and public worlds of Danton and Robespierre are contrasted, and in the last three Acts, scenes of

125 Lorey has identified ‘Zweifel’ as one of the areas Büchner shares with Brecht. Rather surprisingly however, Lorey distinguishes between the ‘Zweifel’ expressed by Brecht’s ‘Naturwissenschaftler’, Galilei, and that found in Dantons Tod (pp. 257-59). I would suggest that it is precisely Büchner’s thorough understanding of the empirical and analytical spirit of the emerging life-sciences which contributes to the iconoclastic and questioning stance in his literary works, and which makes him so ready to challenge scientific ideas already in the popular consciousness. See also Chapter 6 of this thesis.

the prison alternate with scenes of the public trial of the Dantonists. As has been shown, the thematization of hedonistic sexuality and the concomitant susceptibility to venereal disease, is also part of a dialectical process. Indeed, it is used to undermine the rhetoric of terror used by Robespierre as a justification for the execution of the Dantonists: the moral absolutes of Tugend and Laster are shown to be worthless by the comments of Barrère, Billaud and Collot in III. 6, who are as much compromised by Laster as are the Dantonists. Time and again this interrelation of scenes and themes undermines the audience’s attempts to locate a fixed authorial viewpoint, creating instead a sense of the polysemic and complex nature of understanding. At times, the attempt to dissect Büchner’s plays seems as futile as Danton’s idea, reminiscent of Cabanis’s somatic theory of mind (see above, note 80), that in order truly to know someone, ‘[w]ir müßten uns die Schädeldecken aufbrechen und die Gedanken einander aus den Hirnfasern zerren.’ (i. 1. 9) Indeed one could say that Büchner’s plays, like the human mind, are greater than the sum of their parts. Woyzeck too seems to defy any final act of closure, all the more so for being fragmentary and unfinished. In this it seems the very epitome of a plural literary project — a play in which the order of the scenes is no longer linear and fixed, but essentially open and uncertain. Ultimately the reader or viewer decides on the sequencing of the scenes. Despite this, the dialectical nature of the content is still apparent. As in Dantons Tod, there is a dialectical tension between Tugend and Natur, the former being portrayed as part of an arbitrary bourgeois value system and the latter as a cultural construct whose basis in material reality has been lost beneath layers of popular misconceptions and reductionist paradigms. When the Captain accuses Woyzeck of behaving without ‘Tugend’, because ‘[e]r hat ein Kind, ohne den
Segen der Kirche’ (H4.5, 172), Woyzeck expresses this opposition between Tugend and Natur:

Ja Herr Hauptmann, die Tugend! ich hab’s noch nicht so aus. Sehn Sie, wir gemeine Leut, das hat keine Tugend, es kommt einem nur so die Natur, aber wenn ich ein Herr wär und hätt ein Hut und eine Uhr und eine anglaise und könnt vornehm reden, ich wollt schon tugendhaft seyn. Es muß was Schöns seyn um die Tugend, Herr Hauptmann. Aber ich bin ein armer Kerl. (H4.5, 172)

Woyzeck’s critique of the attempt to establish Tugend as a moral absolute is damning, exposing it at best as class prejudice and snobbery, and at worst as a means of concealing and reinforcing social inequality. Yet, as I have tried to demonstrate, Woyzeck’s concept of Natur, which he uses to attack the Captain’s Tugend, is naive and confused by popular misconceptions regarding the implications of the mechanistic paradigms of science such as those expressed by the ‘Marktschreier’. Woyzeck is struggling to understand Natur, but his social position and his role as an experimental subject in the Doctor’s physiological tests, condemn him to a primitive, indeed animistic, relationship with Natur. The scene following Woyzeck’s critique of the Captain’s Tugend, depicts Marie and the Drum-Major as they cast admiring glances over each other, barely concealing their passion, and each describing the other in terms of animals (see above). Immediately, Woyzeck’s defence of basic, human

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128 Obviously the positioning of the scene is provisional. This is the order in the ‘Vorläufige Reinschrift’ (H4.6, 173). For a similar representation of sexuality as the expression of animal instincts, see Danton’s comment in II. 2.35, lines 30-35.
Natur is itself relativized, suggesting that Natur is a synonym for mere animality. Again, as we have seen with St. Just’s revolutionary scientism, Natur is shown to be an ambiguous construct and, as an ethical paradigm or political slogan, potentially misleading and dangerous. As I have demonstrated, both Dantons Tod and Woyzeck overturn the superficial idea that Natur is merely synonymous with sexuality or brutish animality: the notion that human beings are wholly triebbestimmt. Instead, Büchner’s literary work suggests that a true experience of the reality of nature and the human condition lies beyond Marion’s naive sexual ontology, as well as the reductionist Latin categories of the Doctor. Neither embracing materiality, nor subjugating it to the cause of abstract rationality leads to a full understanding of the essence of Natur which Büchner’s plays suggest is more complex and differentiated than either approach allows.

As a student of the biological sciences, Büchner was keenly aware of the complexity and diversity of nature. His extant texts display a subtle understanding of the differences between the competing definitions of Natur, as well as an awareness of the debate between the idealist and materialist approaches to science and the natural world. As someone involved in campaigning for social justice, he was equally concerned with the plight of individuals and the social and political implications of scientific and philosophical theories. Büchner’s scientific and literary texts demonstrate a deep concern with the consequences of the nascent biological sciences for people’s lives and their perception of reality. His scientific work represents the attempt to construct a tentative model of the organization and development of sensible organisms. In comparative anatomy he sought to understand the origins of the somatic basis of consciousness, the brain. Through his literary work he examined
the effect of those very theories and paradigms, which he as a scientist was involved in creating, on the individual within the sociohistorical nexus of influence. As I have suggested, *Dantons Tod* and *Woyzeck* attempt to deconstruct *Natur* as a philosophical and scientific category imported into the cultural framework of society and to reveal the difficulties involved with any such translation. I believe that Büchner’s plays represent an example of the interaction of science and literature at the highest level and reveal themes which recur in debates on the role of science in culture throughout the nineteenth and twentieth centuries.
Chapter 4

The Lawful Realm:

Stifter’s *Bergkristall* and *Kalkstein*
Chapter 4

The Lawful Realm:

Stifter’s Bergkristall and Kalkstein

According to Hans-Werner Schütt, the revolutions, wars, and economic instability which dominated the beginning of the nineteenth century, as well as ‘die nationale Enttäuschung und die Duodezrestauration in einem Deutschland, das, so Metternich, ein bloß geographischer Begriff geblieben war’, led to a withdrawal of the Bürgertum from politics and a general mood of ‘Unsicherheit’ in the German speaking lands. The result of this was a ‘Doppelgleisigkeit’ in the emotional life of the Bürger in the first half of the nineteenth century:


In the nascent technological and industrial era, the holistic world-view of *Naturphilosophie* appeared to be an anachronism. Indeed in the view of most scientists in the mid-nineteenth century, the speculative approach to nature was wholly discredited. Instead empiricism and positivism dominated attitudes in science and philosophy alike.\(^2\) According to Frederick Gregory, the 1840s witnessed an upsurge in the publication of popular scientific texts, in particular by materialist writers such as Karl Vogt, Jacob Moleschott and Ludwig Büchner: ‘The respect enjoyed by philosophers in the time of Hegel was being replaced by the prestige associated with scientific achievement.’ (*Scientific Materialism*, p. 2; see previous chapter.)\(^3\) The philosopher Ludwig Feuerbach (1804-72) played an important role in forming the opinions of the age. He rejected Hegel’s *a priori* reasoning and attacked transcendent explanations in philosophy, declaring ‘Homo homini Deus est’ (**Man is

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\(^3\) See for example Vogt’s *Köhlerglaube und Wissenschaft* (1854), Moleschott’s *Kreislauf des Lebens* (1852), and Büchner’s *Kraft und Stoff* (1855). According to Gregory, materialism entailed the following ‘metaphysical’ assumptions: (1) that there is an independently existing world; (2) that human beings, like all other subjects, are material entities; (3) that the human mind does not exist as an entity distinct from the human body; (4) that there is no God (nor any other nonhuman being) whose mode of existence is not that of material entities.’ (pp. x-xi) Vogt, Moleschott and Büchner were all trained in the sciences, and were among the first and most popular scientists ‘to preach materialism to their age’ (p. xi). The 1840s also witnessed an increase in the number of journals dealing with science, such as *Die Natur* and *Das Jahrhundert* (Gregory, pp. 7-9). See Buckley’s original research into attitudes towards science in realist journals during the mid-nineteenth century, in *Nature, Science, Realism*, pp. 79-110. See also Hennemann, p. 64, and Mandelbaum, ‘Philosophic Movements in the Nineteenth Century’, pp. 18-26.
the God of man'). In 1845 the first volume of Alexander von Humboldt's *Kosmos* was published, a text that 'soon became more widely read than any book except the Bible' (Gregory, *Scientific Materialism*, p. 6). Second only in popularity to Humboldt was Liebig, whose book *Chemische Briefe* was published in 1844. This interest in popular scientific texts encouraged a general perception that science 'dealt with the real and true in contrast to the unproven claims of tradition, be they religious or philosophical' (Gregory, p. 7). Following the failed revolution of 1848 and the imposition of Prussian authority, the ideologies of natural science and materialism

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4 Cited from Gregory, p. 5. Similarly important as regards the demythologizing of Christianity in the nineteenth century was David F. Strauss's *Das Leben Jesu* (1835). Feuerbach's ideas on humanism and sensualism influenced both the scientific materialists as well as Karl Marx. As Patrick Gardiner has commented, Feuerbach focused on the primacy of physical being for philosophy: 'Thought presupposed, and was dependent upon, a sensuously apprehended natural world of objects and events; human beings belonged to that world, and it was by reference to it that the thoughts they entertained in the last analysis acquired meaning and content.' ('The German Idealists and Their Successors', in *Germany: A Companion to German Studies*, ed. by Malcolm Pasley (London: Methuen, 1972), p. 407.) On Feuerbach's critique of Hegel and influence on materialism, see Gardiner, pp. 408-17, and Gregory, pp. 13-28. On Feuerbach and Marx, see Alfred Schmidt, *The Concept of Nature in Marx*, trans. by Ben Fowkes (London: NLB, 1971), pp. 21-32. For an interesting view of Strauss and his reception of Darwin's evolutionary paradigm, see Frederick Gregory, 'Theologians, Science, and Theories of Truth in Nineteenth-century Germany', in Nye, Richards and Stuewer, *Invention of Physical Science* (1992), pp. 81-96.

5 According to Ilse Rosenthal-Schneider, Humboldt's work was 'a study concerning facts and relations between facts, whether they involved currents of the oceans, the surface of the moon, earthquakes or problems of geology, astronomy, geography, meteorology, plant and animal distribution or even ethnology' ('Scientists: Problems and Theories', in *The German Tradition: Aspects of Art and Thought in the German-speaking Countries*, ed. by Marion Adams (Sydney: Wiley, 1971), pp. 138-39). There are three references to Humboldt in Stifter's letters. See Adalbert Stifter, *Sämtliche Werke*, ed. by August Sauer, et al, 24 vols (Prague: Gesellschaft zur Förderung deutscher Wissenschaft, Kunst und Literatur in Böhmen, 1904-60; repr. Hildesheim: Gerstenberg, 1972), XXIII: *Briefwechsel*, pp. 28 and 30 (references to *Kosmos*, dated 1846), and p. 271 (to Humboldt, dated 1860). (Further references to this edition will be given as SW followed by volume and page number.) On A. von Humboldt and German science, see Berentsen, 'Vom Urnebel zum Zukunftsstaat', pp. 32-34, Knight, *Age of Science*, pp. 62 and 67; on his role in the history of Western science, see Susan F. Cannon, 'Humboldtsian Science', in *Science in Culture*, pp. 73-110, and Theodore Zeldin, *An Intimate History of Humanity* (London: Mandarin, 1995), pp. 198-201. In this thesis, see also Chapter 2, note 76, and Chapter 3, note 25.

united in the belief that change would only come about through education: ‘ideas change people and people change history’ (Gregory, p. 1).\(^7\)

In 1847, Hermann von Helmholtz’s treatise Über die Erhaltung der Kraft was published.\(^8\) In this, Helmholtz attempted to define what Dolf Stemberger has termed that ‘epoch-making’ law of nature, namely the conservation of force, or energy (\textit{Kraft}), which states that energy is never destroyed, merely transformed.\(^9\) According to David Cahan, Helmholtz ‘showed that nature had a fixed storehouse of force, one that in algebraic sum neither increased nor decreased’.\(^10\) This was an important contribution to what was to become known as the First Law of Thermodynamics, and in the second half of the nineteenth century, largely due to his \textit{Populäre wissenschaftliche Vorträge} (published in 1865 and 1871), Helmholtz took over

\(^7\) In his useful introduction to this period in German science and \textit{Geistesgeschichte} (see pp. 17-41), Buckley comments: ‘Scientific materialism is therefore, not a scientific methodology nor really a scientific perspective, but rather a political philosophy with a social agenda. It views science, technology and the economy as the determining realities of society. Reason provides the guidance with which the new rational technocracy can rule society. It is a philosophy which strives for a bettering of the human condition through society.’ (\textit{Nature, Science, Realism}, p. 29.) See also Berentsen, pp. 26-31, and Schnadelbach, pp. 96-97.


\(^9\) For a discussion of Helmholtz’s idea of the conservation of energy, see Dolf Stemberger, \textit{Panorama of the Nineteenth Century}, trans. by Joachim Neugroschel (Oxford: Blackwell, 1977), pp. 29-38. Helmholtz was not the only scientist who was working on this idea. Both Julius R. von Mayer (1814-78) and James P. Joule (1818-89) grasped the concept of the conservation of energy at the same time. Thomas S. Kuhn has examined this example of ‘simultaneous discovery’ in \textit{The Essential Tension: Selected Studies in Scientific Tradition and Change} (Chicago: University of Chicago Press, 1977). However, for a more positive estimation of Helmholtz’s work in this area, see Fabio Bevilacqua, ‘Helmholtz’s \textit{Ueber die Erhaltung der Kraft}: The Emergence of a Theoretical Physicist’, in David Cahan, \textit{Hermann von Helmholtz and the Foundations of Nineteenth-Century Science}, California Studies in the History of Science, 12 (Berkeley: University of California Press, 1993), pp. 291-333. On the implications of both the conservation of energy and of entropy (the Second Law of Thermodynamics) for literary culture in England at this time, see Chapple, \textit{Science and Literature}, pp. 43-49. See also Gregory, \textit{Scientific Materialism}, pp. 159-63, on Ludwig Büchner’s development of cosmological principles from these physical laws.

Humboldt's position as the foremost spokesperson on science in the German language.\footnote{On Helmholtz's \textit{Vorträge}, see Wetzels, op. cit., pp. 90-91. According to Cahan, Helmholtz became 'Germany's ambassador of science' during the second half of the nineteenth century ('Helmholtz and the Civilizing Power of Science', p. 560). I shall consider Helmholtz's important ideas on perception in the following chapter.}

As Helmholtz states in the introduction to \textit{Über die Erhaltung der Kraft}, the task of science is to discover the laws of nature: ‘Aufgabe der genannten Wissenschaften ist es einmal, die Gesetze zu suchen, durch welche die einzelnen Vorgänge in der Natur auf allgemeine Regeln zurückgeleitet, und aus den letzteren wieder bestimmt werden können.’ (p. 2) The premise of this search was, ‘dass jede Veränderung in der Natur eine zureichende Ursache haben müsse’ (p. 2).\footnote{Helmholtz's understanding of nature was fundamentally mechanistic. Hennemann has stated 'daß er kein Problem in Angriff nahm, das die Behandlung durch den mathematischen Kalkül noch nicht zuläßt oder durch ihn nicht zu lösen wäre', and he believed in the 'Gesetzmäßigkei der Naturscheinungen' (p. 72). Helmholtz believed that it was the 'Endziel der Naturwissenschaften [...] sich in Mechanik aufzulösen' (Hennemann, p. 68). See also Günter Bierhalter, 'Helmholtz's Mechanical Foundation of Thermodynamics', in Cahan, \textit{Hermann von Helmholtz} (1993), pp. 432-58, Cahan, 'Helmholtz and the Civilizing Power of Science', p. 566, and Schnadelbach, p. 75.}

Science was about uncovering the fundamental causality of nature: ‘Das endliche Ziel der theoretischen Naturwissenschaften ist also, die letzten unveränderlichen Ursachen der Vorgänge in der Natur aufzufinden.’ (p. 2) Like metaphors and theory, laws enabled science to make sense of the facts of nature, and such laws represented power over the realm of nature.\footnote{In his 1847 essay, Helmholtz suggested that nature was a 'material system whose changes [were] due to inner, conservative forces' (Michael Heidelberger, 'Force, Law, and Experiment: The Evolution of Helmholtz's Philosophy of Science', in Cahan, \textit{Hermann von Helmholtz} (1993), p. 464). The purpose of science was therefore 'to grasp the unobservable activity of matter behind the observable phenomena' (ibid). In 1869, at a lecture to the 'Gesellschaft Deutscher Naturforscher und Ärzte' at Innsbruck, Helmholtz changed his concept of force to a more positivist view which was synonymous with law: 'Forces, Helmholtz had argued up until now, constituted the true reality behind the appearances, and to grasp the appearances meant to find the unalterable moving forces behind them. According to his revised view, however, forces are nothing other than the epitome of lawful relations among the appearances. Forces, he now said, concerned the classifications of facts, namely, those facts whose regular connection is not a matter of convention.' (Heidelberger, p. 474, referring to Helmholtz, \textit{Über das Ziel und die Fortschritte der Naturwissenschaft}.)} The quest to discover the God-given laws of nature is, as David
Knight has suggested, a defining characteristic 'of the drive towards modern science in the West' (Age of Science, pp. 162-63). Both Helmholtz's law of the conservation of energy and Charles Darwin's law of natural selection, described in The Origin of Species (1859), set humankind in a materialist context of natural processes operating without reference to the desires of human beings. Cahan has shown how Helmholtz's theory 'analyzed the human body as a heat-consuming and work-producing machine', ridding science of the necessity for theories of vital force (p. 570). Human beings themselves were no longer privileged members of the Chain of Being but, like all material bodies, part of the lawful realm of nature.

This displacement of the human subject from a position of centrality created shock-waves to which a number of creative writers responded. One such was the

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14 Knight adds: 'A law of nature was the last word; and just as God could not break a law of logic (by making something both red and green all over, for example), so it was felt that He could not break a law of nature. The age of miracles was past' (p. 163). According to Paul Davies: 'All physics is rooted in the notion of law, the belief that we live in an ordered universe that can be understood by the application of rational reasoning. But the laws of physics are not transparent to us in our direct observations of nature. They are hidden, subtly encoded in the phenomena we study.' (Introduction to Richard P. Feynman, The Character of Physical Law (Harmondsworth: Penguin, 1992), p. 10.) See also Buckley, pp. 57-58.

15 For Sternberger, Helmholtz's treatment of the human body as an 'energy machine' 'spelled both the end of its [the human organism's] special position and a return to the one and universal Nature' (Panorama of the Nineteenth Century, p. 35). Similarly, Darwin's monistic concept of nature finally decentred humankind from its privileged place in the animate order. In her Introduction to The Origin of Species, Gillian Beer writes: 'This is a history of a world in which the human has a place but has not always been present, and where other kinds have each their own lost and fitfully recorded histories: in the strata of rocks, in reproduction, in the silt of the deep ocean, on remote islands where conditions have not changed, in pathogenesis or hermaphroditism (modes of production more stable than the two-sexed system humans share).’ (op. cit., p. ix.) See also Beer, Darwin's Plots, pp. 12-18, where she notes that Darwin's theory entailed the loss of the divine origin of nature. On the decline of the anthropocentric world-view from the eighteenth to the nineteenth centuries, see also Lepenies, 'Historisierung der Natur und Entmoralisierung der Wissenschaften seit dem 18. Jahrhundert', in Gefährliche Wahlverwandtschaften (1989), pp. 7-38, and Lovejoy's classic study, The Great Chain of Being. See Chapter 2 of this thesis.

16 Gregory notes that, because of the materialist climate of opinion in Germany, Darwin's Origin did not create such a sensation as it did in England: 'The message communicated by the scientific materialists in Germany was already perceived, at least by their opponents, as a sensationalized degradation of man. Once Germans had been told that man's mind could be compared to urine, it came as no shock that man was now supposedly related to apes.' (Scientific Materialism, p. 175.) See Chapter 3 of this thesis, note 80.
Austrian, Adalbert Stifter. His collection of stories entitled *Bunte Steine* was published in 1853 in two volumes. It comprises six stories, five of which had already been published under different titles, of which *Bergmilch* was the earliest, having been published as ‘Wirkungen eines weißen Mantels’ in 1843. According to letters to his publisher, Stifter intended the collection to be for children, but this claim enshrined an altogether adult purpose in that it was linked to his disillusionment with the 1848 revolution: ‘Kinder revolutionieren nicht und Mütter auch nicht’. The ‘Vorrede’ to *Bunte Steine* is perhaps the most cited document in Stifter’s published work. As I shall demonstrate, this is unfortunate as his literary œuvre is by no means an unambiguous working out of this ethical and aesthetic statement. Nevertheless, I

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would like to begin with a brief consideration of the ‘Vorrede’, for it provides a fascinating insight into mid-nineteenth-century Geistesgeschichte, if not into the stories themselves.

Stifter begins by seeking to disprove claims that he was only able to depict ‘das Kleine’ in his works (Bf 9, 2). However, he asserts that catastrophic events such as storms, lightning and volcanoes are less important than: ‘Das Wehen der Luft das Rieseln des Wassers das Wachsen der Getreide das Wogen des Meeres das Grünen der Erde das Glänzen des Himmels das Schimmern der Gestirne’ (Bf 10, 7). Both categories of events are merely products of ‘viel höherer Geseze’ (Bf 10, 14). The ‘Forscher[]’ is not distracted by the spectacular events in nature, and looks instead for ‘das Ganze und Allgemeine […], weil es allein das Welterhaltende ist’ (Bf 10, 22). With an analogy which could easily have been taken from a work of popular science, Stifter states: ‘Die Kraft, welche die Milch im Töpfchen der armen Frau empor schwellen und übergehen macht, ist es auch, die die Lava in dem feuerspeienden Berge empor treibt, und auf den Flächen der Berge hinab gleiten läßt.’ (Bf 10, 16) As in Helmholtz’s 1847 essay, it is the force (Kraft) behind the phenomena that concerns the writer of the ‘Vorrede’ (see above, note 13). This force, he continues, may be invisible to us, like electricity and magnetism, but science shows us: ‘daß sie auf der

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19 This was a response to Hebbel’s attack in 1849 on the new ‘Naturdichter’, under which rubric he included Stifter:

Wißt ihr, warum euch die Käfer, die Butterblumen so glücken?
Weil ihr die Menschen nicht kennt, weil ihr die Sterne nicht seht!
Schautet ihr tief in die Herzen, wie könntet ihr schwärmen für Käfer?
Säht ihr das Sonnensystem, sagt doch, was wär euch ein Strauß?
Aber das mußte so sein; damit ihr das Kleine vortrefflich
Liefertet, hat die Natur klug euch das Große entrückt.
(Friedrich Hebbel, Werke, ed. by Gerhard Fricke, Werner Keller, Karl Pörnbacher, 5 vols (Munich: Hanser, 1963-67), iii, p. 122.) Such accusations have dogged Stifter’s work ever since, but as I hope to demonstrate they are ultimately unjustified.

20 Orthography and punctuation follow that used in the Doppler and Frühwald edition of Stifter’s Werke (see note 18).
ganzen Erde und durch den ganzen Himmel verbreitet sei, daß sie alles umfleibe, und sanft und unablässig verändernd bildend und lebenerzeugend sich darstelle.’ (Bf 11, 15) Science gathers ‘Körnchen nach Körnchen’, painstakingly searching for ‘das Allgemeine’ through an inductive approach (Bf 11, 20). The ultimate goal in science is a view of the interrelation (‘Zusammenhang’, Bf 12, 1) of these isolated phenomena, a unity which is a function of the omnipresent ‘Gesez’ (Bf 12, 3).

At this point Stifter’s argument makes a dramatic leap, a leap of faith: ‘So wie es in der äußeren Natur ist, so ist es auch in der inneren, in der des menschlichen Geschlechtes.’ (Bf 12, 5) By this Stifter means that not just are people biologically

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21 According to Buckley, ‘Stifter’s method is inherently deductive, a modern scientific trait’ (Nature, Science, Realism, p. 116). However, it seems apparent from the ‘Vorrede’ that Stifter emphasizes the inductive methodology of science, suggesting it as a paradigm for other disciplines. Induction was formulated as a coherent scientific methodology by Francis Bacon in The Advancement of Learning (1605) and Novum Organum (1620). Bacon emphasized the role of repeated observations, which led to generalizations and eventually to the inference of universal laws. It is flawed however, as was proved by the discovery of black swans in Australia at a time when all known swans were white (see R. L. Gregory, Mind in Science, pp. 232-48; see also Chapter 1 of this thesis). According to Hans Dietrich Irmscher, Stifter believed that an ‘empirisch-induktive[s] Vorgehen’ was important for understanding nature (Adalbert Stifter: Wirklichkeitserfahrung und gegenständliche Darstellung (Munich: Fink, 1971), p. 105). On Bacon, see also Chapter 6 of this thesis.

22 According to Martin Tielke, Stifter’s concept of ‘das Sanfte Gesetz’ is derived from a scientific understanding of the lawfulness of nature (with its inherently deterministic connotations) and a belief in continuity and ‘organische[] Zusammenhang’ as fundamental principles (Sanftes Gesetz und Historische Notwendigkeit: Adalbert Stifter zwischen Restauration und Revolution, Europäische Hochschulschriften, Reihe 1: Deutsche Literatur und Germanistik, 298 (Frankfurt a. M.: Lang, 1979), pp. 109-11). Stifter failed to do what Darwin and Marx were doing, namely separate natural (evolutionary) development from social change: ‘Weil Stifter nicht die Natur der gesellschaftlichen Entwicklung begreift, bleibt sie Natur, die mit ihren Revolutionen als dämonisch und gesetzwidrig erscheint, als Bruch des Kontinuums, nicht als seine Konsequenz.’ (Tielke, p. 113.) For this reason Tielke sees Stifter as ‘gegenrevolutionär’ (p. 113). For Sepp Domandl, Stifter’s ‘Sanftes Gesetz’ is an expression of nature as ‘Einheit’, a position which he sees as similar to Goethe’s concept of ‘Gesetz’ (Wiederholte Spiegelungen: Von Kant und Goethe zu Stifter. Ein Beitrag zur österreichischen Geistesgeschichte, Schriftenreihe des Adalbert-Stifter-Institut des Landes Oberösterreich, 32 (Linz: Adalbert-Stifter-Institut des Landes Oberösterreich, 1982), p. 27; or Goethe’s and Kant’s idea of law, see pp. 23-26). However, Buggert notes an important difference in Stifter’s work from Goethe’s symbolic principles, such as Polarität and Steigerung: ‘An die Stelle des Naturglaubens tritt das Sammeln von Fakten, tritt Wissenschaft. Nicht mehr Symbolbeziehungen stellen Totalität, sondern Kausalbezüge. Anstelle naturmagischer Geborgenheit kann nun noch die Geborgenheit durch Wissen stehen.’ (Figur und Erzähler, p. 129.) See also above, note 14.

23 Similarly, Eve Mason comments: ‘Stifter’s greatest leap is the assertion that there is an analogy between the study of matter and the study of the moral and spiritual universe.’ (Stifter: ‘Bunte Steine’ (London: Grant & Cutler, 1986), p. 11.) Mason suggests that this idea of universal principles holding sway in both inner and outer Natur, moral and material nature, is influenced by
subject to this universal law — which as we have seen was part of the scientific climate of opinion at this time — but that people are psychologically and ethically determined by ‘das sanfte Gesetz’ (Bf 12, 16). Stifter posits the existence of truly universal forces, ‘Krâfte, die nach dem Bestehen der gesammten Menschheit hinwirken’ (Bf 12, 30), forces which create laws of ‘Gerechtigkeit’ and of ‘Sitte’ (Bf 13, 1). Stifter creates a whole metaphysics of human nature, based both on Enlightenment values of justice and human love, as well as on current scientific notions of the inherent lawfulness of the world. This is a bold cosmology which combines materialist and idealist concepts to posit common human principles, uniting the ‘niederste[.] Hütte’ with the ‘höchste[.] Pallaste’ (Bf 13, 22). To live in accordance with this ‘sanfte[s] Gesetz’ is to gain access to a transcendent order, to make one’s life an expression of ‘das Erhabene’ (Bf 13, 33 and Bf 14, 20).  

Stifter asserts that ‘das

Johann G. Herder’s Ideen zur Philosophie der Geschichte der Menschheit (1791), although she considers that Herder’s pantheistic idea of a divine Kraft is absent from Stifter. Martin and Erika Swales consider Stifter’s ‘sanftes Gesetz’ to be a ‘condensed version of Herder’s Ideen, Book 15, with its central concept of Humanitäät’, and emphasize Stifter’s structural and thematic indebtedness to the eighteenth century (Adalbert Stifter: A Critical Study (Cambridge: Cambridge University Press, 1984), p. 32). See also Wilhelm Dehn, who as well as linking Stifter’s ‘sanftes Gesetz’ to Herder, sees similarities to Goethe’s ‘sanfte Zwange’ in Die Metamorphose der Tiere (Ding und Vernunft: Zur Interpretation von Stifters Dichtung (Bonn: Bouvier, 1969), p. 19). Eva Geulen has compared Stifter’s belief in the lawfulness of the natural world with Kant’s concept of das Erhabene. She notes the recurrent motif in Stifter’s work of a moment of total helplessness followed by a return to normality, as demonstrated in ‘Die Sonnenfinsternis am 8. Juli 1842’: ‘Im Erhabenen der Natur, dem sogenannten dynamischen Erhabenen, erfährt das Subjekt die Grenzen seiner Vernunft und seiner Einbildungskraft. Gerade in dem Moment, wo es sich den Mächten schutz- und hilflos ausgeliefert weiß, schlägt das Gefühl der Ohnmacht jedoch um, und es entdeckt sich “zugleich ein Vermögen, uns als von ihr [d. i. Natur] unabhängig zu beurteilen, [...] wobei die Menschheit in unserer Person unerniedrigt bleibt, obgleich der Mensch jener Gewalt unterliegen müßte”.’ (Worthörig wider Willen: Darstellungsproblematik und Sprachreflexion in der Prosa Adalbert Stifters, Cursus: Texte und Studien zur deutschen Literatur, 7 (Munich: indicium, 1992), p. 19; citing from Immanuel Kant, Kritik der Urteilskraft (1790), Werkausgabe, ed. by Wilhelm Weischedel, 12 vols (Frankfurt a. M.: [n. pub.], 1974), X, p. 186.) For Kant and Schiller, Vernunft was the ultimate measure of Nature, but for Stifter, nature is its own measure and only partly accessible to Vernunft. In Stifter’s account of ‘Die Sonnenfinsternis am 8. Juli 1842’ he refers to the ‘lastend unheimliches Entfremden unserer Natur’ created by the solar eclipse (Gesammelte Werke, ed. by Konrad Steffen, 14 vols (Bazel: Birkhäuser, 1962-72), xiv: Vermischte Schriften, p. 108). Humanity is now subject to nature, and as in the solar eclipse, nature will restore its own equilibrium regardless of human desires. It is this alienation of humankind from nature which creates a feeling of Unheimlichkeit and it is this that distinguishes Stifter crucially from Kant’s eighteenth-century world-view (see Geulen, pp. 21-
sanfte Gesez’ will always be victorious, and the knowledge of the ‘reineren Äther des Sittengesezes’ grants us ultimate victory over the pain of death (Bf 14, 17). Paradoxically, it is in ‘die gewöhnlichen alltäglichen in Unzahl wiederkehrenden Handlungen der Menschen’ (Bf 14, 24), in ‘das Kleine’ (Bf 9, 2), that this law manifests itself.

The distinction between klein and groß is Stifter’s point of departure and originates in his defence of his work against Hebbel’s criticisms. Law is the concept which he uses to underpin his argument and to link klein and groß phenomena. The general statement about the lawfulness of the natural world which Stifter makes in the first paragraph of the ‘Vorrede’ is, as I have shown, one with which few scientists of the time would have disagreed. In many disciplines attempts were being made to establish the lawful basis of phenomena: Liebig, Darwin, and Helmholtz were all concerned with this, as were Marx and Engels in their study of the mechanisms of society and history. But Stifter’s use of this concept of law in ethics, which he

23). On the unnaturalness of nature, see also Gerald Gillespie, ‘Space and Time seen through Stifter’s Telescope’, GQ, 37 (1964), p. 120. See also above, note 15.

25 For Irmscher, the idea of the inherent lawfulness of the world defines Stifter’s whole philosophical Weltanschauung. Stifter’s understanding of the lawful basis of all matter leads to a realization of the subject’s ‘eigene Nichtigkeit’ and a loss of the anthropomorphic world-view (p. 91). Human beings, even human perceptions, are irrelevant to the reality of the natural order: ‘Angesichts der universalen Geltung der Naturgesetzes verliert der menschliche Wahrnehmungsstandpunkt seinen Maßstabcharakter für die Erfassung der Wirklichkeit.’ (pp. 106-07) The only rational option for humankind is to acquiesce: ‘Absolute Demut, das Aufgeben jedes eigenen Anspruches, das Schweigen von Leidenschaft und Interesse sind die Voraussetzungen dafür, daß die Wirklichkeit sich selbst zeigen kann.’ (p. 91) According to Irmscher, in the course of Stifter’s life his texts and characters increasingly embodied this approach. Heinrich Mettler too sees Stifter voicing a sense of humanity’s overwhelming insignificance in the face of the material lawfulness of nature: one is only free to the extent that one willingly submits to the omnipotence of nature (Natur in Stifters frühen ‘Studien’: Zu Stifters gegenständlichem Stil, Zürcher Beiträge zur deutschen Literatur- und Geistesgeschichte, 31 (Zurich: Atlantis, 1968), pp. 38, 40-43, 55). Although the concept of Gesetz is indeed fundamental to Stifter’s texts, there are crucial ambiguities in its role in his narratives, as I hope to demonstrate.

26 On the Marxian concept of law, Alfred Schmidt comments: ‘the fundamental materialist tenet could be summed up as follows: the laws of nature exist independently of and outside the consciousness and will of men. Dialectical materialism also holds to this tenet, but with the following supplement: men can only become certain of the operation of the laws of nature through the forms provided by their labour-processes.’ (The Concept of Nature in Marx, p. 98.) Marx stated in a letter of 1868, that it was impossible to transcend the laws of nature, but that the way in
develops in the second paragraph, is, I believe, comparable with Saint Just’s exploitation of the scientific understanding of nature to justify revolutionary action in *Dantons Tod*. Stifter echoes the rhetorical sleight of hand of Büchner’s revolutionary leader by attempting to justify metaphysical statements about human nature by juxtaposing them with examples taken from science. Indeed Stifter can be accused of committing (to use Gilbert Ryle’s term) a category-mistake by confusing natural science with metaphysics. The only proof that he offers for his speculations on human nature stem from the assumption of a unifying force — ‘das sanfte Gesez’ — which pertains in both physical and metaphysical realms and is underwritten by the paradigms of science. In his ‘Vorrede’, Stifter is guilty of using the scientific concept of law (and indeed force) to create what Stephen Toulmin has called a ‘Scientific Myth’. As I will show however, the stories in the *Bunte Steine* collection do not necessarily affirm this myth. Instead, both *Bergkristall* and *Kalkstein* depict a profound tension between the experience of nature as a complex and ultimately mysterious realm, and the human need to create a meaningful, indeed lawful, natural order. In contrast to the scientific spirit of the age, these stories, in my view, both demonstrate and thematize the problems inherent in any attempt to formulate truly universal laws.

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28 ‘Scientific Theories and Scientific Myths’ in The Return to Cosmology, p. 27. See Chapter 1 of this thesis.
According to Dehn, the Ding-Mystik which is central to Stifter's poetics is enacted in the use of stones in his texts:

Der Stein ist, ohne des erklärenden Wortes zu bedürfen, der Inbegriff des Dinghaften, das reinste, am wenigsten komplizierte Ding, voll Selbstverständlichkeit, aber gerade darin von solcher 'Magie', daß Stifter ihn immer aufs neue in seinen Dichtungen an bedeutende Stellen rückt. (Ding und Vernunft, p. 65.)

Stones symbolize the essence of material Sein and teach humankind their place in the natural order. Dehn asserts that the stories in Bunte Steine also fulfil this aesthetic:

‘In ihnen wird ausdrücklich auf Verbindungen zwischen der Wesenheit des jeweiligen Steines und dem Charakter des Erzählten hingewiesen’ (Dehn, p. 64). For Martin Selge an overtly scientific strategy is revealed in the choice of stones as titles in Bunte Steine. He sees ‘die Steinsymbolik als naturwissenschaftliche Garantie für den strukturellen Sinn’ and the ‘zyklischen Zusammenhalt’ of the six stories (Adalbert

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29 Dehn adds: ‘Der Stein hat, was den Menschen fehlt und was ihnen nottut [...]. Im Wandel raschen Geschehens bleibt er beständig. Den trügerischen Schein macht er mit seiner Wirklichkeit zunichte. Gegen die Flucht der Gedanken hält er die Dauer der Anschauung. Der Stein hat Alter. Er kommt aus dem Erdinnern. Er ist ein Bild des Seins. Stein und Mensch gehören polar zusammen. Jeder Stein kann an dem Stein lernen, ein deutlicheres Wesen aus sich zu bilden.’ (p. 66) Many writers have commented on the role of Dinge in Stifter’s work. For J. P. Stern, ‘Stifter’s art points to Rilke’s recreation of “die Dinge” in Stifter’s work.’ For Mettler, Stifter’s frequent use of the word Ding evokes the realm of lawful materiality, the objective representation of which was the task of the writer (Natur in Stifters frühen ’Studien’, pp. 25-35). However, Domandl counsels wisely against over-emphasizing the role of Dinge in Stifter’s work, noting that the frequency of the word’s appearance is as much due to ‘sprachliche Nachlässigkeit oder [...] mundartliche Sonderheit’ as any pseudo-mystical intent. For Domandl, Stifter has less in common with Rilke in this respect than with Goethe or Kant (Wiederholte Spiegelungen, pp. 115-16). Indeed, Domandl compares Stifter’s idea that Dinge contain intimations of lawfulness with Kant’s noumenal ‘Ding an sich’ and Leibniz’s concept of ‘wirkende Kraft’ (p. 116). It is interesting to note with regard to the latter point that Helmholtz’s concept of Kraft has also been seen as originating in Leibniz’s ideas on force (Bevilacqua, ‘Helmholtz’s Über die Erhaltung der Kraft’, p. 316). See above, note 13.

Stifter, p. 55). He suggests that previous interpretations are incorrect due to their search for Goethean symbols in the eponymous stones. Instead Selge proposes that Stifter reflected the scientific properties of the stones in the form and content of the narratives. As Selge rightly points out, geology was an area of keen scientific debate in the first half of the nineteenth century: ‘Geologie war Mode, Geologisch-Mineralogisches war schick.’ (p. 58.)

However, the relationship between title and story in the Bunte Steine collection is by no means simple. All of the stories except one were already in existence under a different title before the idea of a collection was envisaged (see note 17). Indeed, Ursula Naumann goes as far as to suggest, in debate with Selge’s view, that ‘der Interpret klüger ist als sein Autor’ (p. 33). Eckehard Czucka also denies that the influence of science in the texts extends to a direct relation between the geological qualities of stones and Stifter’s Poetologie (Emphatische Prosa, pp. 191-92). According to Eve Mason, apart from Granit, the eponymous stones do not clearly

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31 Buggert has also rightly emphasized the differences between Goethe and Stifter. Goethe saw nature intuitively as a dynamic, organic whole, whereas for Stifter, nature was an heterogenous, even chaotic realm, which only the laws of science could render meaningful (Figur und Erzähler, pp. 141-50). Goethe aimed at creating symbols through which each reader could attain an unmediated experience of phenomena and their meaning: ‘Stifter hingegen tendiert auf Distanz, auf Befreiung vom unmittelbaren Kontakt. Der Wert der wissenschaftlichen Orientierung liegt für ihn gerade darin, daß sie jederzeit wiederholbare Prinzipien der Wirklichkeitsbegegnung erstellt.’ (Buggert, p. 148.) He continues: ‘Für Goethes symbolisches Denken mußte jede Teilerfahrung von Wirklichkeit die immanente Idee des Ganzen mitberühren. Für Stifter hingegen ist durch die geschilderte Aufsplitterung von Wirklichkeit der Eindruck des Ganzen veränderbar: Das zunächst Bedrohliche und Beängstigende, das Überdimensionierte wird nun übersichtlich, wird verfügbar.’ (p. 149; cf. Buckley, pp. 134-35.) See also above, note 22.

32 Selge suggests for example that the use of polarized light to examine aspects of turmaline invisible in ordinary light, accords with Stifter’s literary intention of revealing the hidden forces in reality: ‘Was liegt daher näher, als im Titelkristall eine poetologische Metapher zu sehen für die spezifisch dichterische Leistung, normalerweise nicht wahrnehmbare Phänomene, Ansichten, Zusammenhänge ins Licht zu rücken, in diesem Fall die dichotomische Struktur des erzählten Lebens transparent zu machen?’ (p. 55). Similarly: ‘In Kalkstein korrespondiert der schichtenweise Entdeckungsprozeß mit der “sedimentären” Bildungs- und Opfergeschichte des Pfarrers. Erst auf dieser methodischen Ebene poetischer Äqualisierung von Bildungsprozessen erhält m. E. die “selbstlose Angleichung des Kärpferrers an die Dinge” symbolischen Sinn.’ (Selge, p. 57.)
relate to the story in question. Indeed, she has stated that having read the stories the reader is no closer to understanding the linkage between title and story: ‘Die Steine liegen noch so kunterbunt nebeneinander wie zuvor und entziehen sich einer Gesamtsicht.’ There appears to be no necessary order to the stories and a sense of randomness is conveyed. Czucka disagrees with this latter point, seeing a quest for cosmological unity in the form of *Bunte Steine*:

Gerade aber hat ‘bunt’ nicht die Bedeutung ‘Steine in verschiedenen Farben’, sondern das Wort meint einen ‘gesprenkelten, fleckigen (= varius, versicolor)’ Stein; jeder Stein bindet [...] verschiedene Farben in sich, ist also nicht einfarbig. ‘Bunt’ bezeichnet eine Mannigfaltigkeit in jener Einheit, die durch das dem Adjektiv folgende Substantiv angegeben ist. (p. 188)

Furthermore, Czucka suggests that the ‘System der Gesteine’ is fundamental to the inspiration of the *Bunte Steine* collection, arguing that Stifter is attempting to re-establish a cohesive, unitary world-view through his use of geological metaphor. 

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33 Mason adds that the title of *Kalkstein* merely relates to the landscape in which the story is set, and *Bergkristall* suggests the iciness of the snow-covered mountain (Stifter: *Bunte Steine*, pp. 81-82).


35 Requadt also comments that although there is a thematic unity linking the stories, their order within the collection is open and not fixed (‘Stifters *Bunte Steine* als Zeugnis der Revolution und als zyklisches Kunstwerk’, in *Adalbert Stifter: Studien und Interpretationen. Gedenkschrift zum 100. Todestage*, ed. by Lothar Steihm (Heidelberg: Steihm, 1968), p. 154).

36 Czucka posits a loss of cosmological unity in the nineteenth century (p. 128). As science became increasingly specialized and fragmented, and facticity replaced the possibility of a coherent world-view, Stifter’s attempt to create cosmological unity through the *sanftes Gesetz* was doomed to failure (p. 140). He draws interesting parallels between *Bunte Steine* and Goethe’s *Über den Granit* (1784), which was to have formed part of the ‘Roman über das Weltall’ (c. 1781; see Chapter 2, note 76 of this thesis). The union of essay and fiction, of science, literature and philosophy which Goethe’s idea envisaged is, Czucka suggests, realized in Alexander von Humboldt’s *Kosmos* (pp. 201-02). However by the time *Kosmos* appeared (see above, note 5), the vision of a unity of disciplines and knowledge is an idea whose time has passed. Czucka notes that in Chapter 3 of *Der Nachsommer*, Heinrich Drendorf reads Humboldt’s *Reise in die Aquinoctialgegenden des Neuen Continents in den Jahren 1799-1804* (1815-32). For Tielke, Humboldt’s idea of the unity of knowledge is expressed in the character of Heinrich: ‘Für ihn ist die Aneignung der Natur ein zugleich wissenschaftlicher und ästhetischer Prozeß und zielt immer auf die Frage nach dem Sinn des Ganzen.’ (p. 161; cf. Buckley, pp. 124-31.) The scientific accumulation and classification of factual reality is transformed by the aesthetic symbol (Tielke, p. 162). By contrast, Nancy Birch Wagner suggests that Heinrich embodies many of Goethe’s
That Stifter was keenly interested in science in general and geology in particular seems beyond question: 'Wer durch die Stifterschen Wälder streift, kann einer Begegnung mit Naturforschem in mancherlei Gestalt nicht ausweichen, wenn er schon wollte.' In Austria, Friedrich Mohs (1773-1839) dominated the nascent science of geology in the first half of the nineteenth century. Mohs studied at the Freiberg Bergakademie under Novalis’s former teacher, A. G. Werner (1749-1817). Mohs’s famous classification of minerals, the *Grundriß der Mineralogie* (1804), was based on Linnaeus’s *Systema Naturae* (1735-58):

So wie Linné von der Zahl der Organe ausging, beruhte das System Mohs’ ebenfalls vor allem auf einer abstrakten Systematik, auf der von ihm begründeten Härteskala der Minerale, die in zehn Stufen vom Talg bis zum Diamant reicht; in seiner Einteilung vernachlässigt er somit Wesen und Struktur der Mineralien, da er ja bewußt von bloßen ‘äußeren Merkmalen’ ausgeht. (Domandl, p. 101.)

In 1826 Mohs went to Vienna as professor of mineralogy and, according to Sepp Domandl, it is possible that Stifter attended his lectures as a student. In any event, it is certain that Stifter was acquainted with Mohs’s work on geology and that of his student and successor at Vienna, F. X. M. Zippe (Banitz, p. 224). It is significant that attitudes to science as represented in George Henry Lewes’s biography, which Stifter owned (*Goethe’s Leben und Schriften*, trans. by Julius Frese, 4th edn, 2 vols (Berlin: Duncker, 1859)): ‘The hero of Nachsommer might [...] be interpreted as Stifter’s consummate tribute to Goethe’s scientific method. Heinrich could be said to exemplify the methods and ideals of Goethe’s basic scientific pursuits, demonstrating his theory with literary practice.’ (*Goethe as Cultural Icon: Intertextual Encounters with Stifter and Fontane*, North American Studies in Nineteenth-Century German Literature, 17 (New York: Lang, 1994), p. 88.)

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Stifter rejected both the arbitrary classificatory systems of Linnaeus and Mohs, which Domandl has seen as indicating 'daß das gestalthaftige und ganzheitliche, auf reiner Anschauung beruhende Denken Goethes in Stifter lebendig und wirksam ist' (p. 102). Of more personal significance was Stifter’s friendship with the geologist Friedrich Simony (1813-96), who appears to have provided the original impetus behind the writing of ‘Der heilige Abend’. However, Rosemarie Weidinger, who has published a biographical study of Stifter’s science, has cautioned wisely against over-emphasizing the geological, and by implication, the scientific influences in Stifter’s work:

Wenn aus den zahlreichen geologischen Angaben in Stifters Werken nur rein geologische Tatsachen abgelesen werden, so mögen sie manchmal als überflüssiger Ballast erscheinen, — spottet doch Stifter selbst einmal in der Irisfassung der Feldblumen darüber: ‘Ich kenne einen Mann, dem ein Gebirg nur sehr viele Zentner Wacke, Gneis, Granit und dergleichen enthält und noch dazu viel Wasser und Holz.’ In Wahrheit sind diese geologischen Angaben


39 He first met Simony at the home of Metternich, where Stifter was tutoring Metternich’s son, Richard, in mathematics and physics (Weidinger, p. 136). Stifter visited Simony at the Hallstätter See in the Summer of 1845, and during a walk they encountered two children sheltering from the rain. According to Simony’s own account, a later discussion about the glacier and the ice-cave which Simony had sketched, gave Stifter the idea of combining the children and the mountain in a story (see Hugo Schmidt, ‘Eishöhle und Steinhäuschen: Zur Weihnachtssymbolik in Stifters Bergkristall’, *Monatshefte*, 56 (1964), pp. 322-23; cf. Banitz, p. 214, and Stern, Re-interpretations, pp. 250-51). It is noteworthy that Friedrich Simony’s account of his scaling of the Dachstein in December (something no one had been known to attempt before) contains a striking description of an ice-cave: ‘Man glaubt sich plötzlich in den geheimnisvollen Palast des Alpenkönigs versetzt, der aus dem schönsten und reinsten Lasur, Saphir, Smaragd und Bergkristall erbaut ist. […] Was die Beschaffenheit des Eisens im Gewölbe selbst betrifft, so hatte es ganz vollkommene Ähnlichkeit mit dem reinsten Bergkristalle’ (‘Drei Dezembertage auf dem Dachsteingebirge’, *Wiener Zeitschrift* (November 1843), Number 225-30, cited from Krökel, ‘Stifters Freundschaft mit dem Alpenforscher Friedrich Simony’, p. 106; see also Hugo Schmidt’s detailed comparison of Stifter and Simony, pp. 324-29). Krökel notes that Stifter’s friend Simony was a follower of Humboldt’s ‘organisch’ concept of geography and sees many similarities between Simony and the character of Heinrich in *Der Nachsommer* (pp. 112-13; cf. Banitz, pp. 219-37). See above, note 36.
aber Formeln für das Wesen einer Landschaft, die die äußere Gestaltung der Linien, die Art der Pflanzenwelt, die besondere Form der Wege oder des Einschneidens der Flußläufe, die jeder geologischen Schicht eigentümliche Färbung des Bodens und der Pflanzen in sich einschließen. 'Steine sind stumme Lehrer, sie machen den Beobachter stumm, und das Beste, was man von ihnen weiß, ist nicht mitzuteilen.' (p. 2)  

It is this quality of ironic distance created by the text between narrative voice and reader which is in my view crucial to any analysis of Stifter’s work.  

In a valuable essay, Wolfgang Preisendanz has suggested that criticisms of Stifter’s style which see in the painstaking and apparently naturalistic description of reality, either ontological profundity or (like Hebbel) superficial enumeration, are missing the point. For Preisendanz, Stifter’s interest was primarily epistemological and aimed at describing the process of perception itself:  


What is described in a Stifter text should not be taken as objective reality but as a subjective view of the world. As I shall demonstrate, Stifter exploits both the

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40 Weidinger cites from *Feldblumen* (SW 1, 44) and from Goethe, *Sprüche in Prosa* (Werke, Jubiläums-Ausgabe, ed. by F. Müncker (Stuttgart: [n. pub.], 1903), xxxix, p. 83).

41 Gillespie has also commented briefly on this: ‘Stifter’s favorite device to establish a perspective, so that we may no longer feel trapped in time but survey it and comprehend it, is the use of an “outside” or “distanced” narrator. He likes to put his tales inside one or more “frames” which foreshorten certain parts of a story and present temporal reality in a conciliatory tone.’ (p. 122)


43 Mettler offers a different view, stating that Stifter describes ‘die Natur in ihrer geschichtslosen Gegebenheit, in ihrer schlichten Gegenständlichkeit’ (p. 19). Similarly, Dehn speaks of how Stifter strives ‘vor allem aus naturwissenschaftlichem Interesse nach Sachtreue’ (p. 16). His work is characterized by a ‘Wirklichkeitssinn’ (p. 16), by an attempt to attain an ultimate objectivity.
perspective of the characters and that of the narrator(s) to suggest the subjective basis of perception and human cognition. As Torsten Pettersson has suggested in his reading of *Abdias*, ‘what we perceive of the world depends on what senses we happen to have at our disposal’, raising the interesting possibility that human perception may be inadequate to grasp the true reality of the world. By presenting different perceptions through a multi-layered narrative, the text allows viewpoints and versions of reality to be interrogated by the reader. In both *Bergkristall* and *Kalkstein* the narrative voice is challenged by the fundamental ambiguity of the language and the multivalence of the text as a whole, causing the reader to question the governing point of view and to seek alternative interpretations to that proposed by the narrator. An ironic distance is thus established between reader and narrator, a distance which leads the reader to question even the privileged gaze of science, an implicit challenge to the objectivity of the scientific *Weltanschauung* which underwrites the authority of the ‘Vorrede’. In consequence the stories in the *Bunte Steine* collection depart from the naive scientism of the ‘Vorrede’ and demonstrate a sophisticated response to the epistemological issues underlying the human relationship with reality. These

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44 "Eine Welt aus Sehen und Blindheit": Consciousness and World in Stifter’s *Abdias*, *Germanisch-Romanische Monatsschrift*, n.s. 40 (1990), p. 49. Similarly, Colin McGinn: ‘Our concepts of the empirical world are fundamentally controlled by the character of our perceptual experience and by the introspective access we enjoy to our own minds. We can, it is true, extend our concepts some distance beyond these starting-points, but we cannot prescind from them entirely (this is the germ of truth Kant recognized in classical empiricism).’ (*The Problem of Consciousness: Essays Towards a Resolution* (Cambridge: Blackwell, 1991), p. 27.)

45 See Buggert, who draws attention to the role of the narrator in Stifter: ‘Der Erzähler ist also der Vermittler zwischen konkreter und sprachlich erstellter Wirklichkeit.’ (p. 46) He suggests that Stifter’s texts are not aimed at mere transcription of reality but rather at understanding the processes of perception: ‘Es geht um eine Position also, die einerseits die Gefahr birgt, daß der Autor den Kontakt zur Wirklichkeit verliert, die ihn andererseits aber instand zu setzen vermag, gerade aus der Distanz die Erkenntnis von Wirklichkeit zu vermehren.’ (p. 48)
fundamental philosophical issues, which derive in part from a Kantian awareness of
the impossibility of unmediated perception, challenge the idea of an absolute
perspective on reality — what Richard Rorty terms a metalanguage (see Chapter 1 of
this thesis) — whether that be informed by a scientific, materialist, or religious world-
view. And this constellation undermines the conventional image of Stifter as a
philosophically naive, pseudo-realist writer.46

The narrator of Bergkristall begins the story by describing the festival of
Christmas as being imbued with a power which is universal in human society. A
complicity is assumed between narrator and reader: ‘Unsere Kirche feiert
verschiedene Feste, welche zum Herzen dringen.’ (Bf 183, 1; my emphasis.)47
Universal and immutable human values are also suggested by the reference to Herz
and to the general concept of generational continuity present in religious ritual. ‘Der
heilige Abend’, the original title of the story, refers to the celebration of the arrival of
the Christ-child, marked throughout the Christian world by the giving of presents to
children. According to the narrator it is:

46 Wolfram Malte Fues for instance suggests that Stifter’s work is characterized by ‘Ent-
Individualisierung’ produced by a surfeit of detailed descriptions which destroy all sense of
‘klassische Ganzheit’ (Poesie der Prosa, Prosa als Poesie: Eine Studie zur Geschichte der
Gesellschaftlichkeit bürgerlicher Literatur von der deutschen Klassik bis zum Ausgang des 19.
Jahrhunderts, Probleme der Dichtung: Studien zur deutschen Literaturgeschichte, 22 (Heidelberg:
Winter, 1990), pp. 216 and 223). Objectivity becomes mere facticity and individuality is lost
amongst enervating Detailrealismus. Renate Obermaier also criticizes Stifter’s Nachsommer for
its de-emotionalized and objectified notion of self and nature. Contrasting it to Musil’s epic text,
she refers to Stifter’s use of ‘einen entsubjektivierten Blick’ and of the ‘Monotonie der
Erzählsprache’ which combine to produce a novel about a ‘Mann ohne Leidenschaften’ (Stadt
und Natur: Studie zu Texten von Adalbert Stifter und Gottfried Keller, Gießener Arbeiten zur
Rationality is carried to absolute limits in order to restore a unified world-view, but the result is
ultimately lifeless and unrealistic, she suggests. See also Christoph Buggert, who says of Stifter’s
characters: ‘Die Figur geht auf im Überindividuellen.’ (p. 126)

47 This line does not appear in the Journalfassung. For similar examples of this complicity, see Bf
183, 8 and 11. ‘In den hohen Gebirgen unsers Vaterlandes [...]’ (Bf 185, 19) could also refer to a
plural narrator. On Stifter’s own religious beliefs, see Fritz Krökel, ‘Nietzsches Verhältnis zu
ein heiteres glänzendes feierliches Ding [...], das durch das ganze Leben fortwirkt, und manchmal noch spät im Alter bei trüben schwermüthigen oder rührenden Erinnerungen gleichsam als Rückblick in die einstige Zeit mit den bunten schimmernden Fittigen durch den öden, traurigen und ausgeleerten Nachthimmel fliegt. (*Bf* 183, 27)

With the celebration of Christmas Stifter explicitly thematizes the issue of perspective, contrasting the poetry of childhood wonderment with the prosaic condition of disenchanted adulthood. Important motifs are introduced in the first five paragraphs to describe this festival which recur later in the text, in particular during the two children's night on the mountain. The importance of the midnight hour, marked by the sounding of bells and the lighting of candles, is of particular significance to the subsequent narrative. The idea of bringing light into darkness, as in the above quotation, is emphasized, something which has obvious Christian symbolism. In the introduction, the narrator speaks directly to the reader, presumably from his or her own experience of past Christmases. The event is described in wholly positive and unproblematic terms.

Following the description of Christmas, the reader is introduced to the village of Gschaid. This is described in the present tense, as if also drawn from the narrator's direct experience. Again religious faith is emphasized: the stone cross is at the centre of the village (*Bf* 185, 28) and the 'Pfarrer' is 'der größte Herr' (*Bf* 186, 11). The isolation of the village is emphasized (the name 'Gschaid' is suggestive of 'geschieden') and we are told that the inhabitants form 'eine eigene Welt' (*Bf* 186, 27). However, the narrator does not wholly identify with the inhabitants, again emphasizing perspective. The account of their conservative life is occasionally ironic:

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48 See also *Bf* 184, 2 and 7. It is also the 'Abglanz' (reflection or afterglow) of the event which 'in das Alter hinauf reicht' (*Bf* 185, 16), a term which continues the symbolism of light. Similarly, the subsequent appearance of the aurora in the night sky continues this theme.
Sie sind sehr stettig und es bleibt immer beim Alten. Wenn ein Stein aus einer Mauer fällt, wird derselbe wieder hineingesetzt, die neuen Häuser werden wie die alten gebaut, die schadhafte Dächer werden mit gleichen Schindeln ausgebessert, und wenn in einem Hause scheckige Kühe sind, so werden immer solche Kälber aufgezogen, und die Farbe bleibt bei dem Hause. (Bf 187, 1)

The mountain, which we later learn is called Gars,49 is ‘das Auffallendste, was sie [die Bewohner] in ihrer Umgebung haben’ and is ‘der Gegenstand der Betrachtung der Bewohner, und er ist der Mittelpunkt vieler Geschichten geworden’ (Bf 187, 12 and 13). Indeed, the mountain has attained the status of a mythical object, the focal point of the village’s imagination and identity:

Es lebt kein Mann und Greis in dem Dorfe, der nicht von den Zaken und Spizen des Berges, von seinem Eisspalten und Höhlen, von seinen Wässern und Geröllströmen etwas zu erzählen wüßte, was er entweder selbst erfahren, oder von andern erzählen gehört hat. Dieser Berg ist auch der Stolz des Dorfes, als hätten sie ihn selber gemacht, und es ist nicht so ganz entschieden, wenn man auch die Biederkeit und Wahrheitsliebe der Thalbewohner hoch anschlägt, ob sie nicht zuweilen zur Ehre und zum Ruhme des Berges lügen. (Bf 187, 14)

Truth and fiction merge in the villagers’ accounts of the ‘Schneeberg’. Indeed the narrator seems not to trust the accounts of these villagers despite the fact that they live in such close proximity to the mountain. In his or her detailed description of the seasonal changes affecting the mountain, the narrator draws on the comments of the villagers, but also corrects them:

Im Sommer, wo Sonne und warmer Wind den Schnee von den Steilseiten wegnimmt, ragen die Hörner nach dem Ausdruck der Bewohner schwarz in den Himmel, und haben nur schöne weiße Äderchen und Sprekeln auf ihrem Rücken, in der That aber sind sie zart fernblau, und was sie Äderchen und

49 Both the names of the village and that of the mountain are given after they have been described (Bf 192, 10-11). Similarly, the name of the shoemaker is not mentioned until the reunion with his wife and children at the end of the story (Bf 236, 1). In Kalkstein neither the priest nor the surveyor is named.
Sprengeln heißen, das ist nicht weiß, sondern hat das schöne Milchblau des fernen Schnees gegen das dunklere der Felsen. (Bf 188, 23)\footnote{See also Bf 188, 14 and 18. Although we are told that there are few visitors to the isolated valley (‘ein einsamer Fußreisender’, Bf 186, 22), we also learn that ‘wenn eine Gesellschaft von Gebirgsreisenden herein kommt’ the villagers act as guides (Bf 187, 25). These are not contradictory statements but the latter statement suggests an element of ambiguity. The landscape too is capable of deception: the reader learns at one point that there are ‘keine Strassen’ (Bf 186, 19), but we are later told that even where it seems that there are no paths, this is a ‘Täuschung’ and there are often many to be found (Bf 192, 4).}

At the end of the story we learn that the rescue of the children ‘hat auf lange den Stoff zu Gesprächen gegeben, und man wird noch nach Jahren davon reden, wenn man den Berg an heitem Tagen besonders deutlich sieht, oder wenn man den Fremden von seinen Merkwürdigkeiten erzählt’ (Bf 239, 26). The children have become part of the mythical status of the ‘Schneeberg’, and are counted among its ‘Merkwürdigkeiten’ (cf. Bf 187, 24). Indeed one is permitted to wonder whether the narrator is merely narrating a tale told to him or her by the villagers. Clearly the narrator is not a villager, not a local, but rather one of the people to whom the villagers relate the ‘Merkwürdigkeiten’ of the mountain. The veracity of the story of the children can be viewed as open to question. It is clear that the narrator is retelling a story of uncertain origin and that therefore the text which we read is more complex and refracted than might otherwise be thought; it contains potentially ambiguous elements created by this merging of texts and alternative perspectives.

Understanding the narrator’s perspective is fundamental to the text as a whole. The narrator describes in detail the ascent of the mountain, with great attention to compass directions (‘Mittagsrichtung’ Bf 189, 28), points of reference (‘Unglüksäule’ Bf 190, 5), types of landscape (‘lauter Tannenwald’, ‘dürrer Haideboden’ Bf 190, 2 and 20), types of snow and ice (Bf 191, 1-5; 188, 30 to 189,4), even dangers to climbers (Bf 191, 9-16). The wealth of detail reads like a travel guide, with comments
on seasonal changes and advice to walkers.\(^{51}\) The detail is clearly informed and the narrator has a keen understanding of matters geological and geographical. The narrative voice attends to empirical and factual information, seeking to create an impression of objectivity and naturalism. In the context of the introduction concerning the traditional role of Christmas in family life, one can say that the narrative viewpoint is one of informed bourgeois rationality. The absence of technical language means that the narrative cannot be said to be scientific in any specialized sense.\(^{52}\)

There are also frequent anthropomorphisms such as in the descriptions of the mountain.\(^{53}\) The ‘Schuster’ and his history are related in a similarly circumstantial...

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\(^{51}\) Thomas Bernhard’s *Alte Meister* (Frankfurt a. M.: Suhrkamp, 1985) characterizes Stifter as ‘der langweiligste und verlogenste Autor, den es in der deutschen Literatur gibt’ (p. 74), accusing him of being ‘phantasielos[,]’ and ‘unpoetisch[,]’ (p. 75): ‘Stifter hat aber die Natur gar nicht beschrieben, er hat sie nur verkitscht.’ (p. 86) It is not an original criticism of Stifter’s style and is similar to Hebbel’s derogatory remarks about the concentration on nature descriptions (see note 19). Stern comments: ‘The ideal of a “scientific” precision which on occasion Stifter hopes to impart to his descriptive prose leads to a kind of encyclopaedic enumeration of data, which sometimes leaves the reader gasping for air.’ *(Re-interpretations,* p. 251.) On this, see above note 46. For a comparison of Stifter’s and Bernhard’s approaches to nature and science, see Alfred Barthofer, *Die Sprache der Natur: Anmerkungen zur Natur und Naturdarstellung bei Adalbert Stifter und Thomas Bernhard*, VASILo, 35 (1986): 213-26.

\(^{52}\) Buckley sees the absence of scientific language or descriptions in *Bergkristall* and *Bunte Steine* as a whole, as evidence of ‘a simpler and more straightforward bond with nature’ than that present in a relationship based on scientific understanding (p. 120). He suggests that the relationship between villagers and nature in *Bergkristall* is ideal, seeing in the villagers a ‘child-like’, pre-scientific understanding of the natural world (p. 123). As I will show, the presentation of nature is more complex than this allows. On Stifter’s dislike of scientific Latin terms in meteorology, see Wagner, pp. 92-93.

\(^{53}\) The description of the mountain and its role in the lives of the villagers suggests a symbiotic relationship between humankind and nature: ‘Dann sendet der Berg von seinen Schneeflächen die Wasser ab, welche einen See in seinen Hochwäldern speisen, und den Bach erzeugen, der lustig durch das Thal strömt, die Brettehöfe die Mehlmühle und andere kleine Werke treibt, das Dorf reinigt, und das Vieh tränkt.’ (Bf 188, 1) The villagers take the mountain for granted, ‘[sie] meinen, das sei immer so gewesen’ (Bf 188, 12). In the villagers’ descriptions, the mountain is anthropomorphized, and they talk of the mountain’s twin peaks as ‘Horner’ and the ridge which connects two mountains as a ‘Hals’ (Bf 188, 14 and 189, 30). The narrator creates distance between their vocabulary and his or her descriptions: ‘nach dem Ausdruck der Bewohner [...]' (Bf 188, 25; cf. 188, 14 and 18). Indeed the narrator corrects their descriptions (Bf 188, 27). But significantly the narrator also helps create this impression of a unity of humankind and nature, and uses anthropomorphic language: the steep, snow-covered mountain is ‘wie ein Zauberpallast’ (Bf 188, 21). A sense of the mountain as an active presence is created by the narrator, who describes how it ‘auf die Bewohner unten hinab grüßt’ (Bf 189, 3). Similarly: ‘dann schaut eine viel größere Fläche von Grün und Blau in das Thal’ (Bf 189, 9), ‘Das Dörfllein heißt Gschaid, und der Schneeberg, der auf seine Häuser herab schaut, heißt Gars.’ (Bf 192, 10) Compare also the final sentence, where the mountain is once again a benign, anthropomorphized presence: ‘und so blau
way. We learn about the situation and layout of his house before we are told about his background. We are not told his name until the end of the story (Bf 236; see note 49).

The account of his life is full if rather colourless: it is by no means a psychological Lebenslauf, although of course within the context of the narrative as a whole, judgements regarding his character are implicit. Up until the children's journey to the grandparents on Christmas Eve, the view created by the narrator of environment, village, and the shoemaker's life suggests an unproblematic, even idyllic, existence.

The description of nature on the children's path up into the mountain is however anything but idyllic. Even on the way to their grandparents' home, unexpected things occur. Although the ground in the higher village of Gschaid was unfrozen when they set out, the ground in the usually warmer village of Millsdorf was

wie das sanfte Firmament auf sie hernieder schaut' (Bf 240, 7). As I will show, this use of anthropomorphisms reveals crucial tensions in the narrative.

54 The father's neglect of his children and his obsession with his business is more pronounced in the Journalfassung. The glimpse into the mother's thoughts afforded by the Buchfassung states that 'sein Angesicht war meistens ernsthaft und mit seinen Arbeiten beschäftigt' (199, 24). In the Journalfassung we read that his face 'erheiterte sich nur, wenn er von seinem Geschäfte sprach, das sein Stolz war, und in seinem Buche las, wo er aufgeschrieben hatte, was er bis jetzt hervorgebracht habe' (Jf 147, 29). When he is drinking in the village inn, he is also prone to angrily challenging the villagers to find a better shoemaker (Jf 147, 33). The father's culpability in granting the children permission to visit the grandparents on Christmas Eve is also increased in the Buchfassung: 'ihr müsst den Vater noch vorher fragen' (Bf 203, 15). In the Journalfassung the children do not even say goodbye to their father who is engaged with a customer (Jf 151, 26).

frozen (Bf 204, 19; 206,10). Also the red ‘Unglüksâule’, which marked both the point where the path branches off into the mountain and commemorating the death of a baker, has fallen over (Bf 205, 22). The grandmother tells them to hurry back because it will become windy (Bf 207, 29). This proves not to be the case: ‘der von der Großmutter vorausgesagte Wind stellte sich nicht ein, im Gegentheile war es so stille, daß sich nicht ein Ästchen oder Zweig rührte’ (Bf 209, 23). As the snow falls on their way back, the forest is unusually silent:

Von den Vögeln, deren doch manche auch zuweilen im Winter in dem Walde hin und her fliegen, und von denen die Kinder im Herübergehen sogar mehrere zwitschem gehört hatten, war nichts zu vernnehmen, sie sahen auch keine auf irgend einem Zweige sizen, oder fliegen, und der ganze Wald war gleichsam ausgestorben. (Bf 210, 4)

The narrator does not attempt to explain these unexpected occurrences. More commonplace phenomena are explained however, with the same authority demonstrated in the introductory sections. Although it is snowing heavily and it is getting late, the forest seems warmer than the valley: ‘wie es in lokeren Körperm, dergleichen ein Wald auch ist, immer im Winter zu sein pflegt’ (Bf 209, 26). At first the snow is exciting for the children, but the environment becomes increasingly hostile and alien. Both walking and seeing become difficult in the increasingly heavy snowfall (Bf 211,9 and 20) and the landscape begins to take on an unheimlich quality, as normal points of reference, such as the ‘Unglüksâule’, are lost: ‘Der Knabe konnte die Zeit nicht ermessenn, weil keine Sonne am Himmel stand, und weil es immer

56 See also Bf 211, 18, and 215, 8. When the children are safe once again, the grandfather comments that the lack of wind is exceptional: ‘Hundert Jahre werden wieder vergehen, daß ein so wunderbarer Schneefall niederfällt’ (Bf 238, 11).

57 The children also observe an almost dry stream about which the narrator comments: ‘sowohl die Wenigkeit als auch die Farbe des Wassers zeigten an, daß in den gröberen Höhen schon Kälte herrschen müsse, die den Boden verschließe, daß er mit seiner Erde das Wasser nicht trübe, und die das Eis erhärte, daß es in seinem Innern nur wenige klare Tropfen abgeben könne’ (Bf 205, 1).
They lose all sense of direction: 'so konnten sie nicht merken, ob sie über den Berg hinabkämen oder nicht' (Bf 214, 9). Vision is impossible because of 'das blendende Weiβ' (Bf 214, 24): "Wenn ich nur mit diesen meinen Augen etwas zu erblicken im Stande wäre", says Konrad helplessly (Bf 214, 21). Neither can they hear anything (Bf 214, 30). The wind predicted by the grandmother is absent: 'ja was in diesen Gegenden selten ist, nicht das leiseste Liiftchen rührte sich an dem ganzen Himmel' (Bf 215, 9). The light is 'weiβ[ ] und undurchsichtig[ ]' (Bf 215, 20). Although there is adequate light nothing can be seen, a paradoxical situation, leading the narrator to use an apt oxymoron: 'Es schien eine große Lichtfülle zu sein, und doch konnte man nicht drei Schritte vor sich sehen; alles war, wenn man so sagen darf, in eine einzige weiße Finsterniß gehüllt' (Bf 215, 33).

The extreme conditions, which run counter to one’s everyday experience of reality, justify the use of such contradictory figures of speech. Indeed, the very unnaturalness of nature experienced by the children demands it, although the rational, commonsensical narrator apologizes for such imprecise and even poetic language.

Throughout, the narrator seeks to maintain a mood of rationality and causality, whilst the descriptions underline the strangeness and otherness of the experience. This is suggested through adjectives which occur repeatedly in the text and which stress the extreme conditions: ‘die ungemeine Fülle des herabfallenden Schnees’ (Bf 212, 14), ‘alles war still, unermehlich still’ (Bf 216, 26), ‘das ungeheure und unermüdliche Schneien’ (Bf 220, 6), ‘der ungeheuren Stille’ (Bf 227, 28), ‘den

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58 According to Eva Geulen, this unheimlich quality is a recurrent motif of the experience of nature in Stifter’s works, often denoted by the use of oxymoronic tropes (Worthörig wider Willen, p. 20; see above, note 24). See also Geulen’s discussion of Stifter’s use of oxymora in ‘Aus dem Bayrischen Walde’ to describe snow (‘ein Emblem seiner Prosa’, p. 29), pp. 25-29. According to John Reddick, oxymora are used in ‘Der Hochwald’ as a ‘perspectivist device’, increasing the polysemic qualities of the text (see ‘Mystification, Perspectivism and Symbolism in “Der Hochwald”’, in Lachinger, Stillmark and Swales, Adalbert Stifter Heute (1985), p. 70, note 3).
unerhörten Schneefall' (Bf 228, 16) (my emphases). The ice-cave, into which the children wander, symbolizes this radical otherness of nature: ‘In der ganzen Höhlung aber war es blau, so blau, wie gar nichts in der Welt ist, viel tiefer und viel schöner blau, als das Firmament, gleichsam wie himmelblau gefärbtes Glas, durch welches lichter Schein hinein sinkt.’ (Bf 219, 14) Although it is free from snow and warmer than the outside air, it is ‘schrekhaft blau’ in the cave and ‘die Kinder fürchteten sich, und gingen wieder hinaus’ (Bf 219, 23). The cave symbolizes the wonder of nature and yet its paradoxical alienness to humankind: it is ‘schön’ but also ‘schrekhaft’.

Similarly ambiguous is the children’s experience of nature whilst seeking shelter in the stone ‘Häuschen’. Sitting in the gloom of dusk they notice that the snow ‘hie und da in der Finsterniß seltsam zu funkeln begann[,] als hätte er bei Tag das Licht eingesogen, und gäbe es jezt von sich’ (Bf 223, 17). The wonder of this and of the ‘schimmerndes breites milchiges Band’ of stars in the sky (Bf 224, 28), is however not enough to keep them awake. Indeed, they would have fallen asleep and frozen to death ‘wenn nicht die Natur in ihrer Größe ihnen beigestanden wäre’ (Bf 227, 25), a crucially ambiguous narratorial comment to which I shall return. First the silence of the night is shattered by ‘das Krachen des Eises’:

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59 It is interesting that the fact that the children were afraid in the ice-cave is added only in the Buchfassung (see Jf 162, 14).

60 In an attempt to stay warm and avoid falling asleep, the children drink the coffee-extract given to them by their grandmother. The narrator comments that the effect of the coffee is immediate: the bitter drink ‘steigerten ihre unschuldigen Nerven zu einem Fieber, das im Stande war, den zum Schlummer ziehenden Gewichten entgegen zu wirken’ (Bf 226, 28). A narratorial awareness of causality is apparent here which is thoroughly empirical and scientific. Indeed, alkaloids such as caffeine were only isolated in the first half of the nineteenth century as part of the growing realization of the physiological effect of chemicals on the human nervous system. The narrative represents human beings as physico-chemical systems subject to physical laws. With the same attention to material facticity, the narrator has described the physical changes of state which the mountain undergoes throughout the year. A version of reality which is wholly rational and materialistic is carefully established by the narrator, whose authoritative tone seeks to impose a scientific order onto nature.
Was das Starrste scheint, und doch das Regsamste und Lebendigste ist, der Gletscher, hatte die Töne hervorgebracht. Dreimal hörten sie hinter sich den Schall, der entsezlich war, als ob die Erde entzwei gesprungen wäre, der sich nach allen Richtungen im Eise verbreitete, und gleichsam durch alle Aderchen des Eises lief. (Bf 227, 30)

Their next experience of the ‘Größe’ of Natur is ‘ein bleiches Licht’ which ‘erblühte’ in the night sky. The children sit and stare ‘mit offenen Augen’ (Bf 228, 25):

Es hatte einen grünlichen Schimmer, der sich sachte nach unten zog. Aber der Bogen wurde immer heller und heller, bis sich die Sterne vor ihm zurück zogen, und erblaßten. Auch in andere Gegendendes Himmels sandte er einen Schein, der schimmergrün sachte und lebendig unter die Sterne floß. Dann standen Garben verschiedenen Lichtes auf der Höhe des Bogens wie Zaken einer Krone, und brannten. (Bf 228, 5)

The ‘Krachen des Eises is explained mechanistically in terms of cause and effect, but this later phenomenon proves less easy for the narrator to explain: ‘Hatte sich nun der Gewitterstoff des Himmels durch den unerhörten Schneefall so gespannt, daß er in diesen stummen herrlichen Strömen des Lichtes ausfloß, oder war es eine andere Ursache der unergründlichen Natur.’ (Bf 228, 15)61 Throughout the story the narrator presents nature as a mechanistic realm explicable through causality. Here however, a crucial ambivalence has entered the narrative voice. The narrator admits that nature is possibly ‘unergründlich’: there is a depth in nature which humankind is unable to fathom. Nature is paradoxically presented as both rational and knowable, as well as alien and unknowable. The phrase ‘die Natur in ihrer Größe’, which is absent from the Journalfassung, is similarly ambiguous, suggesting both a divinely ordained realm

61 The organic language used to describe this phenomenon (its green colour, its Erblühen in the sky, its amorphic, ethereal substance) illustrates the narrator’s inability to find mechanistic explanations. The suggestion that it might be due to static electricity (Bf 228, 15-17, and If 170, 20-22) recalls the ‘Vorrede’ which uses the invisibility of electricity and magnetism as an analogy for the unseen yet omnipresent sanftes Gesetz (Bf 11, 8-18). For the writer of the ‘Vorrede’ this green light becomes a symbol of the lawful realm of nature to which humanity must submit if it is to survive.
of perfect lawfulness, as well as the vastness of nature, its otherness. The word 'Größe' also implies magnanimity, reinforced by the anthropomorphic 'beigestanden', as if nature were a person, or perhaps a divine presence — the 'Christkindlein[].' (Bf 183, 26). This interpretation would fit in perfectly with the communal symbolism of Christmas developed at the beginning of the narrative, suggesting the presence of the Christ-child even in the 'öden, traurigen und ausgeleerten Nachthimmel' of the mountain (Bf 184, 3). Indeed this is how Sanna interprets what the modern rational reader assumes is the aurora borealis: "'Mutter, ich habe heute Nachts, als wir auf dem Berge sassen, den heiligen Christ gesehen.'" (Bf 239, 4) But although there have been many commentators who have accepted the Christian interpretation of the story, others have seen this as unsatisfactory. That Christmas is a major theme of the story is undeniable, but there is also an unavoidable tension present in the text. This tension is highlighted by the change of title from an overtly Christmas theme to one

62 For a story which first appeared at Christmas under the title 'Der heilige Abend' there are naturally many allusions to Christian symbols. According to Hugo Schmidt, Simony may have given Stifter the original idea for this in his description of the December ascent of the Dachstein, commenting that the village of Hallstatt 'erinnerte mich lebhaft an ein besonders schön und niedlich geschnitztes Bethlehem, welches ich einst in meiner Kindheit zu sehen bekommen hatte' ('Eishöhle und Steinhauschen', p. 326). Schmidt notes that the children are found by shepherds, which also has Biblical resonances (p. 334). Similarly, the description of the aurora borealis as appearing to the children like a crown (Bf 228, 13) can be seen as symbolizing Christ as king and his dominion over nature. The 'Krachen des Eises' which the children hear three times could suggest the trinity (Bf 227, 30). The mountain top as a place of revelation is also a powerful religious symbol in both Old and New Testaments. The cracking of the ice and the lights in the night sky occur after the midnight hour has been marked in the valley by the sounding of bells and the lighting of candles. This suggests a narrative strategy to link the religious celebrations with the natural phenomena. The narrative thus attempts to create an impression of cohesion between human, natural and transcendent worlds.

63 It is noteworthy that the mother misunderstands her daughter's comment, seeing it merely as the child's way of asking for her presents: "'O du mein geduldiges, du mein liebes, du mein herziges Kind,' antwortete die Mutter, "er hat dir auch Gaben gesendet'" (Bf 239, 8). There is no suggestion that the child's experience is taken seriously.

64 For Hugo Schmidt the initial descriptions of Christmas are essential to the text's understanding: 'Das gemächlich ausklingende Ende schließt den Kreis, der sich von der einfach geschilderten dörflichen Weihnachtsfeier bis zu einem gewaltigen Erleben des Mysteriums in der Natur spannte,' (p. 334; cf. 331) As Martin and Erika Swales have shown however, Bergkristall is a 'doubly woven text' and the Christmas symbolism is only one aspect of the story (see pp. 192-205; see also Erika Swales, 'The Doubly Woven Text: Reflections on Stifter's Narrative Mode' in Lachinger, Stillmark and Swales, Adalbert Stifter Heute (1985), pp. 37-43, especially p. 40).
which focuses on nature, a change necessitated by the supposedly unifying vision behind the *Bunte Steine* collection, a vision formulated in the ‘Vorrede’. In this change is revealed the underlying tension between nature as a divinely ordained, rational domain, and nature as radically other, alien and *unergründlich*. The ambiguities present in the narrative are indicative of inconsistencies in the narrator’s understanding of *Natur*, an understanding which is indebted to both the prevailing materialist and scientific world-view and also to the teachings of the Christian faith. By reflecting this uncertainty, *Bergkristall* articulates the central epistemological issues of nineteenth-century Europe. The narrator, an educated and rational observer of events, uses frequent anthropomorphisms, of which the phrase ‘wenn nicht die Natur in ihrer Größe ihnen beigestanden wäre’ (*Bf* 227, 25) is the most striking example (see above, note 53). However, anthropomorphism is an anachronistic mode of representation in the context of the narrator’s usually scientifically accurate descriptions. Indeed, anthropomorphisms belong to the era of the Chain of Being (see Chapter 2), and co-exist uneasily with nineteenth-century scientific materialism and the demythologizing works of Strauss and Ludwig Büchner. Therefore it is clear that the ambiguous language used by the narrator unwittingly subverts both his or her religious and scientific world-views, creating a deeply problematic interrogation of humankind’s place in the natural order.

The narrator attempts to create order out of chaos, to find meaning in the experience of nature’s otherness, and for this reason the story has a happy ending. As Stifter writes in the ‘Vorrede’, the *sanfte Gesetz* triumphs in the end. The positive ‘welterhaltende’ and ‘menschenerhaltende’ (*Bf* 15, 2) values which are the essence of the *sanfte Gesetz* are shown to triumph over the destructive forces of nature and the
law of nature is itself shown to be an expression of the divine principle. Thus the bourgeois social order which the introduction exemplifies (faith, family, tradition) is upheld. The narrator attempts to reinvent a unified world-view through the religious myth of Christmas at a time when writers such as Feuerbach and Strauss were questioning the role of Christianity in the age of science (see above, note 4). The experience on the mountain (a common Biblical motif of revelation) is embedded in and enclosed by the ritual celebration of Christmas: candles, presents and Christmas trees (Bf 239, 11). The narrator refers to the integration of the children’s experience into the villagers’ tales about the mountain (Bf 239, 26). The final paragraph states that the children will not forget their experience. But the narrator communicates this in a form which has been used twice already, by juxtaposing the mountain with the garden, the experience of unrestrained nature with that of the idyllic, tamed ‘natural’ environment:

Die Kinder aber werden den Berg nicht vergessen, und werden ihn jetzt noch ernster betrachten, wenn sie in dem Garten sind, wenn wie in der Vergangenheit die Sonne sehr schön scheint, der Lindenbaum duftet, die Bienen summen, und er so schön und so blau wie das sanfte Firmament auf sie hernieder schaut. (Bf 240, 3)

It is significant that the narrator closes this paragraph, and thus the text, with an anthropomorphism: the mountain looking down benignly on the children in their garden. Gone is the real terror of the ice-cave, the ‘schrekhaft blau’, the unheimlich disorientation of the silent snow storm, the ‘weiße Finsterniß’. Instead the mountain becomes a backdrop for the idyllic, divinely ordained order of existence which has existed unchanged in the minds of the villagers for centuries: it is merely ‘schön’ and ‘sanft’ like the blue sky, and seemingly just as distant. The threat of the otherness of
nature is concealed beneath the fairy-tale imagery of Christmas. Nature is once again an anthropomorphic realm, whose laws are underwritten by God, and where humankind is accorded the place of privilege in the Chain of Being.

However it is a narrative view which as we have seen is profoundly problematic, and the reader is left with a disquieting sense of the unanswered questions, the ‘Leerstellen’ in the narrator’s supposedly seamless logic. Konrad still believes in his own ability to overcome the forces of nature; Sanna believes she has seen the Christ-child; her parents believe their prayers have been answered. But the reader, by comparing the perspectives of the children and the narrator, can see beyond these particular viewpoints and senses the ultimate inadequacy of their attitudes. Both the religious and the materialist explanations seem insufficient in the harsh, blue environment of the ice-cave and the frozen silence of the ‘Schneeberg’: here there is ‘nichts zu verkündigen’ and the ‘Größe’ of nature is ‘unergründlich’. The narrator’s descriptions of Natur as a mechanistic, lawful realm undermine the overt assertion of a divine, transcendent order in nature, a God-given Grund to existence. But Natur is also shown to be fundamentally other, written in a wholly inaccessible language, one

65 Martin and Erika Swales have suggested that Wolfgang Iser’s notion of ‘Leerstellen’ is useful for understanding Stifter’s texts. Iser suggests that ‘a text may set up certain expectations which it only incompletely fulfils, and the point at which the expectations break down may well be decisive for the interpretation of the text’ (Adalbert Stifter, p. 46, referring to Der Akt des Lesens (Munich: [n. pub.], 1976)). Martin Swales has developed this idea in a later article. He alludes to Stifter’s attempt to bridge the gap between inner and outer nature in the ‘Vorrede’ (Bf 12, 5) as a crucial Leerstelle: ‘Jener harmlos anmutende Satz “so wie es in der äußeren Natur ist, so ist es auch in der inneren” sollte die entscheidende Brücke schlagen zwischen der dinghaften Umgebung und dem Bereich menschlichen Handelns. Im Gedankengerüst Stifters ist das die kritische Nahtstelle. Aber die Naht platzt. Und das hat zur Folge, daß die Übergangsstelle zu einer Leerstelle wird.’ (‘Litanei und Leerstelle: Zur Modernität Adalbert Stifters’, VASILIO, 36 (1987), p. 73.)

66 In a letter to Leo Tepe written 26 December 1867, Stifter described his need to understand ‘den Grund aller Dinge, die uns umgaben’. As Martin and Erika Swales have shown, ‘Grund’ is a crucially ambiguous term, suggesting both the material and scientific basis of existence, without excluding the possibility of a metaphysical, even transcendent dimension to the world (Adalbert Stifter, pp. 27-28; cf. M. Swales, ‘Litanei und Leerstelle’, pp. 72-73). It is interesting to compare this search for the ‘Grund’ of things, with Helmholtz’s stated aim of discovering ‘die letzten unveränderlichen Ursachen der Vorgänge in der Natur’ (see above).
alien even to the discourse of science. All explanations are revealed to be limited and approximate, even those of the supposedly objective ‘Forscher’ (Bf 10, 22), an epistemological uncertainty which the narrative voice seeks (I suggest unsuccessfully) to conceal through the narrative strategy of a happy ending. Ultimate knowledge of nature may be inaccessible to humankind but life continues, albeit permanently in the shadow cast by the ‘Hörner’ of the ‘Schneeberg’.

*Kalkstein*, like *Bergkristall*, begins with a brief introduction, providing a context in which to view the subsequent narrative. In the *Joumalfassung* a plural narratorial voice introduces a story supposedly told by a friend concerning a priest. The story is ‘unglaublich’ (Bf 59, 4), and the subjective mediation of events is emphasized by the narrators: ‘[Wir] erzählen durch das Auge unseres Freundes’ (Bf 59, 11). Similarly, in the *Buchfassung* the narrator (now singular) relates a story told by a friend, ‘in der nichts Ungewöhnliches vorkommt, und die ich doch nicht habe vergessen können’ (Bf 63, 2). In contrast to the *Joumalfassung*, the unexceptional nature of the story is asserted, but paradoxically we are told it is nonetheless memorable. In this way an element of mystery is created, a sense of some hidden quality which the reader must elucidate. In fact there are three overt narrators in this short story: the ‘ich’ of the introduction, the surveyor, and the priest. As in

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67 In the *Joumalfassung* both the priest at Schauendorf (or Ober-Schauen as it is in the earlier version) and the priest in the Steinkar are Protestants. Thus whilst visiting Ober-Schauen, the surveyor refers to the ‘Pastor und seine Familie’ and ‘das von der Wärme geröthete Angesicht der Pfarrerin, die flüchtig aus dem Küchenzimmer herausgrüBte’ (If 60, 11 and 61, 3). Similarly, the surveyor asks the priest he befriends if he is married, causing the man some embarrassment: ‘Hiebei war er roth geworden, als ob ein schöner sanfter Rosenhauch iiber seine altersden Ziige gegangen wäre.’ (If 72, 29)

68 Selge notes the ‘unverkennbar kriminalistische[ ] Züge[ ]’ in *Kalkstein*, but where detective stories end with the unmasking of an ‘Übeltäter’ this story reveals ‘ein Wohltäter’: ‘Ohnehin ist klar, daß es in dieser Erzählung nicht um die logische Enträtselung oder psychologische Aufklärung eines Kriminalfalles geht, sondern um das schrittweise Kennenlernen eines Mannes, der mit viel Vernunft und wenig Verstand begabt ist.’ (Adalbert Stifter, p. 50.) Similarly, M. Walter-Schneider’s study of the journey in Stifter’s texts notes the ‘Schritt-für-Schritt-Verfahren’ which characterizes his narrative technique (p. 212). See also Mason, *Bunte Steine*, p. 44.
Bergkristall the effect of this narrative technique is to create distance between the reader and the text and to cause the reader to question the authority of the narrative voice. The sense of a mediated reality is emphasized, and through this perspectivist effect, meaning is shown to be complex and multivalent. I would even suggest that, as the reader progresses through the Bunte Steine collection, in retrospect even the 'Vorrede' appears as the product of subjective experience, as a partial contribution to an elusive and multifaceted truth rather than the unchallengeable delineation of an unambiguous certainty. Thus the perspectivist narrative technique employed in the stories undermines the quasi-scientistic authority of the 'Vorrede'.

I believe it is useful to compare the surveyor with the narrator of Bergkristall. As one would expect from someone in his profession, the surveyor demonstrates an exact, scientific understanding of the geological structure of landscape. Nevertheless, even he does not abstain from subjective judgements concerning landscape. He initially describes the Steinkar region, where he meets the priest and where he has been engaged by the 'Regierung' to conduct a survey (Bf 64, 8), as 'eine fürchterliche Gegend' (Bf 67, 7):

Nicht daß Wildnisse Schlünde Abgründe Felsen und stürzende Wässer dort gewesen wären — das alles zieht mich eigentlich an — sondern es waren nur sehr viele kleine Hügel da, jeder Hügel bestand aus naktem grauem Kalksteine, der aber nicht, wie es oft bei diesem Gesteine der Fall ist, zerrissen war, oder steil abfiel, sondern in rundlichen breiten Gestalten auseinander ging, und an seinem Fuße eine lange gestrekte Sandbank um sich herum hatte. (Bf 67, 7)

The surveyor's idea of an interesting landscape is influenced by Romantic concepts of 'natural' beauty, that is landscape which is wild and dramatic.69 Indeed it is likely that

69 In spite of this comment, he does not approve of nature being left in its natural, unordered state. He speaks approvingly of the efforts of the priest at Schauendorf who has turned his village into a
he would rather have been working in the mountainous region where Bergkristall is set. In the course of the story we learn that in addition to being an employee of the government, a Beamter, and being enthusiastic about his work ('Meßkunst', Bf 64, 7; cf. 96, 9), he has a wife and children, and enjoys good food and wine (Bf 79, 30-33; cf. 70, 21). Like the narrator in Bergkristall then, he is a respectable if rather conventional Bürger, who prides himself on his common-sense, empirical view of the world. Indeed, he is an unlikely companion of the eccentric and introverted priest.

As has been mentioned, the surveyor is a precise observer of objects and people. His first encounter with the priest at the meal in Schauendorf is recorded in meticulous detail, although the event he describes occurred many years ago. The surveyor was unacquainted with many of the guests, but made friends readily: 'Nur ein einziger Gast war nicht zu erkennen.' (Bf 65, 9) This seemingly innocuous sentence is laden with significance in the context of what he later learns concerning the priest. Indeed, it is the very opacity of the priest's character to his curious gaze that attracts the surveyor's interest. There is something inexplicable about the priest, something beyond mere facticity, beyond the mere enumeration of details. Nevertheless, the surveyor's observation of the empirical facts is impressive, noting amongst other things his stooped posture (Bf 65, 18), his threadbare appearance (Bf 65, 20), his constant attempts to conceal his 'Handkrausen' (Bf 65, 29), and his self-
denial in food and drink (Bf 65, 32). In particular he remembers the poor priest’s ‘schöne[] klare[] blau[] Augen’ (Bf 66, 18), a feature which becomes an important motif in the surveyor’s narrative. When he meets the priest again by chance eight years later,\(^7\) he notes that his hair is greyer but that his eyes are ‘blau und klar wie früher’ (Bf 68, 11).\(^7\) Again he studies the priest’s appearance. He is fascinated by the priest’s apparent poverty:

Waren seine Kleider schon bei jenem Gastmale schlecht gewesen, so waren sie jetzt wo möglich noch schlechter. Ich konnte mich nicht erinnern, seinen Hut damals gesehen zu haben, jetzt aber mußte ich wiederholt auf ihn hin blicken; denn es war nicht ein einziges Härchen auf ihm. (Bf 70, 1)

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\(^7\) The Buchfassung downplays the role of chance. In the Journalfassung, the surveyor states: “Und in dieser abscheulichen Gegend haben wir uns zufällig wieder gefunden” (66, 3), but the reference to chance is removed in the later version. Similarly, compare Jf 71, 16 and Bf 73, 31. Rainer Rath concludes that random occurrences had to be eliminated from the Buchfassung to show the functioning of the sanftes Gesetz (‘Zufall und Notwendigkeit: Bemerkungen zu den beiden Fassungen von Stifters Erzählung “Der arme Wohltäter” (i), “Kalkstein” (ii), VASILIO, 13 (1964), pp. 73, 78-79).

\(^7\) The adjectives klar and blau are used repeatedly to describe the priest’s eyes: see also Bf 95, 9. They are the aspect of the priest that remains constant through the years: ‘Seine klaren blauen Augen waren die nehmlichen geblieben’, comments the surveyor returning to visit the priest five years after his work in the region is completed (Bf 123, 27). His sermons are also ‘klar und ruhig’ (Bf 95, 14), a description which appears a few lines after a description of his ‘ruhigen klaren blauen Augen’ (Bf 95, 9). The surveyor seems to link the priest with the landscape, as his description of his first meeting with the priest after the meal at Schauendorf shows: ‘sah ich meinen armen Pfarrer auf einem Sandhaufen sizen. Er hatte seine großen Schuhe fast in den Sand vergraben, und auf den Schößen seines Rokes lag Sand.’ (Bf 68, 4) Here the priest seems to merge with the very material of the landscape, to be subsumed in its fabric. In the Buchfassung the priest is increasingly identified with the region, the ‘Kar’ which is both name and geographical description: the reference in the Journalfassung to the priest’s village as being called ‘Gargen’ (Jf 67, 21) is removed from the later version. A feature of the Kar landscape which the surveyor learns to appreciate is the blue shadows in the hollows between the gentle limestone hills: ‘dazwischen lagen die länglichen nach rückwärts immer schöneren luftblauen Schatten’ (Bf 85, 24). When he leaves the area, ‘die schönen blauen Schatten’ are one of the things he notes as memorable (Bf 123, 19). Within a few lines of this the surveyor refers to the priest’s clear blue eyes (see above). The identification in the surveyor’s mind between the blue shadows and the priest’s eyes is unmistakable. Similarly, the phonetic relation between the Kar region and the description of the priest’s eyes as klar is also significant. In this way the narrator creates a skilful interrelation of man and nature. It is possible that the influence of Goethe’s Farbenlehre is present in the foregrounding of the blue shadows. Domandl has noted that Stifter’s ‘Lehrer und Förderer’ at Vienna University, Andreas Baumgartner, made a study of ‘[d]ie schönen blauen Schatten’ described by Goethe, in a science textbook (Wiederholte Spiegelungen, p. 79; above, note 37). Blue is also an important thematic colour in Bergkristall, where both the ice-cave and the mountain are blue, suggesting the ethereal otherness of nature.
The surveyor's repeated glances at the priest's threadbare hat reveal his conventional bourgeois view of the world. It is clear that his sense of bourgeois respectability is shocked: 'Die ungemeine Armuth, wie ich sie noch niemals bei einem Menschen oberhalb des Bettlerstandes angetroffen habe, namentlich nicht bei solchen, die andern als Muster der Reinlichkeit und Ordnung vorzuleuchten haben, schwebte mir beständig vor.' (Bf 70, 11) Although he does not doubt the priest's essential integrity and worth for a moment, he cannot square this with his lowly appearance. As at the meal in Schauendorf, he cannot 'erkennen' the priest; a lacuna has opened in the surveyor's common-sense understanding of the world. Significantly the surveyor returns to his 'Gasthof to dine off 'Ziegenbraten' and to mull over this break in his sense of order, thus ironically reinforcing his Bürgerlichkeit within the text as a whole (Bf 70, 21).

The motif of the surveyor's repeated glances at the priest's clothing is emphasized in the Buchfassung. Compare the above passage to Jf 65, 5-11, where although the oldness of the hat is discussed, the unconcealed fascination of the surveyor is omitted.

Similarly, the surveyor notes that in the 'Seitenzimmer', which constituted the third 'Stube' of the priest's home, there were only 'sehr schlechte Gerathe' (Bf 87, 7) as in the other rooms. In the Journalfassung he goes further, claiming that the main room 'erinnerte mich lebhaft an ein Gefängnis' (75, 19), a strong statement and indeed a psychologically suggestive one for both the introverted priest and the bourgeois surveyor.

The surveyor's liking for bourgeois comforts such as good food and wine are also demonstrated by the meal he eats at the priest's home following the storm. It is significant for the contrast it reveals between the two men: the priest's ascetic, frugal lifestyle (black bread, milk and strawberries, Bf 78, 21-25) and the surveyor's comfortable existence ('guter Wein', 'feinem weißen Weizenbrote', 'Scheibchen von Schinken von kaltem Braten und Käse', Bf 79, 21 and 30). Clearly the surveyor expects to eat well, for by the time they eat in the evening, he has already lunched from the supplies he has brought, and yet there is still enough for two people. The extraordinary lengths to which the surveyor is prepared to go in order to maintain his bourgeois life-style, is revealed by the use of ether to cool a glass of wine (Bf 80, 7-12). This is absent from the Journalfassung (see p. 78). It serves to demonstrate both his pedantic Bürgerlichkeit as well as his practical, scientific approach to life and nature: unlike the priest, the surveyor knows how to use and manipulate his environment. On this theme, see Johann Lachinger who suggests that Stifter's interest in science was not so much practical as theoretical: 'aufkläerisch-theologisches' ('Der Umgang des Menschen mit der Natur in Stifters Werk: Ein Modell für unsere Zeit? Ein Vortrag', Literaturwissenschaftliches Jahrbuch (im Auftrage der Görres-Gesellschaft), n.s. 20 (1979), p. 150). Nevertheless, Lachinger is quite wrong to suggest that the surveyor is a pure scientist with no interest in applying his knowledge to the real world (p. 151). Also added to the Buchfassung is the surveyor's awareness of his own 'Unhöflichkeit, die ich eigentlich in der Übereilung begangen hatte' (Bf 80, 21). The reference to Übereilung in relation to a character associated with science, is suggestive of Goethe's cautionary words against haste in science (see
The surveyor's close observation of the priest, which verges on the tactless, uncovers many facts but he is unable initially to construct a meaningful unity from them. His keen observation of facts bears comparison with the inductive methodology of the 'Forscher' in the 'Vorrede' (Bf 11, 20-23). It should also be noted that his observations are by no means as reliable as he likes to suggest. Under the influence of the priest the surveyor comes to see that his initial view of the landscape was incorrect. At his second meeting with the priest he describes the landscape as 'abscheulich[]' (Bf 69, 14) to which the priest responds: "'Sie ist, wie sie Gott erschaffen hat, [...] es wachsen hier nicht so viele Bäume wie in Schauendorf, aber manches Mal ist sie auch schön, und zuweilen ist sie schöner als alle andern in der Welt.'" (Bf 69, 16) Following his overnight stay at the priest's home, the surveyor looks with new eyes at what he had once seen as a grey and featureless landscape: 'Wie sie [die Kalksteinhügel] hinter einander zurück wichen, wiesen sie in zarten Abstufungen ihre gebrochenen Glanzfarben in Grau, Gelblich, Röthlich, Rosenfarbig, und dazwischen lagen die länglichen nach rückwärts immer schöneren luftblauen Schatten.' (Bf 85, 21) Indeed, once his work is completed in the Steinkar and he has to leave the area he feels 'eine tiefe Wehmuth' (Bf 123, 13) and in particular for 'die schönen blauen Schatten' (Bf 123, 19; see above, note 73). As the priest tells him, "'Sie [die Leute] sagen, die Gegend sei häßlich, aber auch das ist nicht wahr, man muß sie nur gehörig anschauen.'" (Bf 118, 14) This is an important sentence. It suggests that knowing depends not just on observation of empirical reality but on the observer's attitude to what he or she perceives. Mere enumeration of facts is not sufficient. True understanding does not increase with the quantity of observations, as

'Der Versuch als Vermittler von Objekt und Subjekt' (1793), HA XIII, pp. 11 and 14-15; see also Chapter 2, note 109 of this thesis).
inductive science suggests (see above, note 21). The quality of observations is integral to our understanding of what we see, the priest suggests. This is an implied criticism of the surveyor and his naturalistic epistemology. By extension it is also a criticism of the narrator of Bergkristall and indeed the writer of the scientistic ‘Vorrede’.

The surveyor’s most important misinterpretation of the facts concerns the weather in the Steinkar. The surveyor has been working with his men in the open countryside. He has let his workers go early because of the ‘besondere Hize’ (Bf 72, 31). Although the heat is exceptional, the sun has remained a ‘blasses Bild’ through the veil of cloud (Bf 73, 1). The mood created by the weather is unnatural: ‘um alle Gegenstände des Steinlandes [lag] ein wesenloses Licht [...] , dem kein Schatten beigegeben war’ (Bf 73, 2). Although only ‘ein halbes Sonnenlicht’ penetrated the clouds it was as hot ‘als wären drei Tropensonnen an heiterem Himmel’ (Bf 73, 6). The surveyor seats himself ‘unter einen Steinüberhang, der eine Art Höhle bildete’ (Bf 73, 11) where he eats his food, drinks his specially cooled wine and reads a book. There is a striking similarity between the surveyor being forced to seek shelter in a natural Häuschen from the unnatural, even unheimlich, weather and the two children hiding out in the stone hollow on the mountain in Bergkristall. Just as the children are subsequently exposed to the otherness of Natur, so too is the surveyor. The surveyor meets the priest who predicts that he will be unable to return to his Gasthof, ‘Weil das Gewitter ausbrechen wird’ (Bf 73, 29). Although the surveyor agrees that a storm is likely, he thinks it is impossible to say when. However the priest says that his

77 The surveyor is wholly confident that he understands the mechanisms behind the weather. He acknowledges that a storm is coming, ‘allein wie bald die Dunstschichte sich verdichten, erkühlen, den Wind und die Electricität erzeugen, und sich herabschüttten wird, kann man, glaube ich, nicht ermessen’ (Bf 74, 1-3). This statement is overturned by events which prove the priest’s prediction to be correct. In the Journalfassung it is interesting that there is no such opposition of views (compare the above passage with If 71, 12-21). Undaunted by his apparently unreliable understanding of meteorology, the surveyor gives a further account of the mechanism of storms,
twenty-seven years experience of the region’s weather gives him accurate knowledge of its development. The priest is proved right, and they reach the ‘Pfarrhof’ just in time. According to the surveyor, ‘Ich hatte selten ein solches Gewitter erlebt.’ (Bf 78, 1) Here a direct example is provided of the importance of perspective in understanding nature. The surveyor’s scientific understanding of weather is not disproved by the priest, but he demonstrates that science does not have all the answers. In this case local knowledge proved more valuable than the theoretical generalizations of science.78

Following the storm, having left the home of the priest, the surveyor comes upon the flooded river Zirder. He watches the attempts of the children to cross with his ‘Handfernrohr’ (Bf 88, 11), without apparently thinking to help. It is only after he has noticed that the priest is helping the children to cross safely that the surveyor comments: ‘Da ich sah, daß keine Gefahr in dem überall seichten Überschwemmungswasser vorhanden sei, blieb ich auf meiner Stelle stehen’ (Bf 89, 7). It will be remembered that in the Journalfassung, the priest does not help the children through the flood-waters, and the surveyor merely stands and watches the children from the bank. Over three pages later, as he is leaving the children, he

which is an expanded version of the statement at Bf 74, 1-3 (see pp. 84-85). This is not present in the Journalfassung. It will be noted that weather serves as an example of the ‘Größe’ of Natur in both Bergkristall and Kalkstein.

78 There is an exchange of knowledge and of ‘ways of seeing’, between the two men: ‘Wir gingen später öfter mit einander in den Steinen herum, oder saßen auf einem, und betrachteten die andern. Er zeigte mir manches Thierchen, manche Pflanze, die der Gegend eigenthümlich waren, er zeigte mir die Besonderheiten der Gegend, und machte mich auf die Verschiedenheiten mancher Steinhiügel aufmerksam, die der sorgfältigste Beobachter für ganz gleich gebildet angesehen haben würde. Ich erzählte ihm von meinen Reisen, zeigte ihm unsere Werkzeuge, und erklärte ihm bei Gelegenheit unserer Arbeiten manchmal deren Gebrauch.’ (Bf 70, 32) Walter-Schneider notes that after the revolution of 1848, instead of depicting a character’s attainment of ‘Vorurteilslosigkeit’ which represented the state of objectivity, Stifter attempted to guard against ‘Orientierungslosigkeit’ by providing ‘Mentorfiguren’ in his texts, ‘die mit ihrer Erfahrung, ihrem Wissen den Zögling auf dem Weg zur Wahrheit der Dinge begleiten und ihn damit bewahren vor der Gefahr der Verirrung, des Schießens’ (‘Der Erzähler auf dem Weg’, pp. 224-25). Indeed, the above passage does not appear in the earlier version (see Jf p. 69).
comments: ‘denn die Gefahr ist bei den Überschwemmungen der Zirder sehr groß, und kann bei der Unwissenheit der Kinder unberechenbar groß werden’ (Bf 93, 13).

This apparent inconsistency suggests the limited nature of the surveyor’s response to his environment and especially people. In this incident the surveyor’s judgement is seen to be compromised by his own scientific view of reality, a fact symbolized by his observation of the children’s plight through a telescope, part of this Homo faber’s fascination with ‘Instrumente’.79 As a quasi scientist figure he provides an example of the distanced observer, an embodiment of the Cartesian dichotomy in science, the division of res cogitans and res extensa, of subject and object. In this, the surveyor illustrates a theme to which I have alluded in previous chapters, namely the development of what Stephen Toulmin has termed the scientist as ‘Spectator’, by which science adopts a position of value neutrality (Return to Cosmology, pp. 242-43).80 Equally, the undermining of the surveyor-narrator’s version of reality — as with that of the narrator in Bergkristall — represents a problematization of the idea of science as metalanguage, as an unchallengeable discourse with privileged access to the truth about reality.

79 On the motif of the telescope as introducing distance between subject and object, see Gillespie, pp. 128-29. Despite the surveyor’s obvious pride in the tools of his trade (see references: Bf 71, 6; 76, 14-21; 96, 3-6), it is possible that he is not as skilful or reliable as he suggests. According to his account, the Kar is a ‘schwieriger[r] Erdwinkel’ to map (Bf 96, 8), and he takes pride ‘es recht schön und ansehnlich zu thun’ (Bf 96, 9). In order to do so he must work late into the night and must draw many of the maps twice (Bf 96, 11). It will be remembered that this is his uncorroborated account and that in other cases his judgement has been wrong, as with the example of the storm (see note 77). A further example is his failure to act on hearing of the priest’s final illness. When he receives a letter from the school master informing him of the priest’s death, the surveyor writes back that the priest will probably recover in due course. Other letters follow without any improvement being reported (Bf 124-25). The surveyor feels unable to visit: ‘Mein Beruf gestatte für den Augenblick keinen Besuch.’ (Bf 125, 7) When finally the news arrives that the priest has died, the surveyor comments: ‘Ich machte mir Vorwürfe, setzte jetzt alles beiseite’ (Bf 125, 14). He acknowledges implicitly that his work could have been postponed for a visit and that he should have visited the sick man earlier. See also Mason, Bunte Steine, p. 58.

80 As I have shown, the Professor/Doctor in Büchner’s Woyzeck is a grotesque embodiment of these tendencies in science (see above, Chapter 3, note 112). Both texts reveal the inadequacy of these scientific characters’ responses to reality and to human beings in particular.
The surveyor’s statement concerning the Steinkar after the storm provides an insight into the narrator’s world-view. The weather is very different from the oppressive and unnatural weather of the previous day: ‘die Sonne erhob sich strahlend in einem unermeßlichen Blau’ (Bf 84, 30). The surveyor then gives a meteorological account of the cyclical process whereby storms develop in hot weather — evaporation, condensation, precipitation:

Und haben sie sie nieder geschüttet, und hat die Luft sich gemischt, so steht sie bald wieder in ihrer Reinheit und Klarheit oft schon am andern Tage da, um wieder die Dünste aufzunehmen, die in der Hize erzeugt werden, wieder allmählich dasselbe Spiel zu beginnen, und so die Abwechslung von Regen und Sonnenschein zu bewirken, welche die Freude und das Gedeihen von Menschen Thieren und Gewächsen ist. (Bf 85, 11)

This is a statement which could have been made by the narrator of Bergkristall. Nature is presented as benign and life-giving, both a picturesque backdrop to human exploits and a source of human sustenance. It is primarily an anthropomorphic world-view: nature exists for the benefit of humankind. And yet the disturbing implication of the otherness of nature, encountered by Konrad and Sanna on the mountain and experienced by the surveyor and the priest in the storm, is that humankind exists in a natural world indifferent to the desires of individuals. The same storm which produces the beautiful, radiant morning which the surveyor enjoys, also creates the flood which threatens the children, a paradox which the surveyor notes but does not comment upon (Bf 85, 30). As in Bergkristall, there is an undeniable tension between the anthropomorphic view of nature and the scientific materialist world-view which

81 The choice of adjective is interesting here: unermeßlich. Similarly, the approach of the storm cannot be ‘ermessen’ according to the surveyor (Bf 74, 3). The surveyor also notes ‘Der unermeßliche Regen’ of the storm (Bf 85, 19; see above, note 77). These suggestions of the limitations to our knowledge of the natural world recall the possibility in Bergkristall that nature is ‘unergründlich’ (Bf 228, 19). On the use of similar adjectives in Bergkristall, see above. See also the use of ‘unermeßlich’ in Die Wahlverwandtschaften, above, Chapter 2, note 68.
suggests a radically decentred role for humankind in the world. This tension is apparent to the reader but the narrator is seemingly unaware of its subversive potential.

The priest's story, retold by the surveyor, similarly challenges the view of humankind's privileged place in the hierarchy of nature as well as implicitly undermining attempts to see Natur as a divinely ordained realm. Throughout Kalkstein the priest has, as I have shown, been identified with the landscape in which he lives (see above, note 73). Once he has heard the priest's lifestory, the surveyor believes that he now understands ('erkennen' Bf 65, 9; see above) the enigmatic man: 'Ich wußte nun, weßhalb er sich seiner herrlichen Wäsche schämte.' (Bf 120, 3)\(^{82}\) It is a comment that totally fails to account for the problematic and ambiguous nature of the lifestory, which raises more questions than it answers. Many commentators have followed the surveyor's example and sought to interpret the priest and his lifestory with notions of inner Reinheit and saintliness.\(^{83}\) Just as the narrator of Bergkristall attempts to appropriate the story of the rescued children to create a bourgeois

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82 Reddick has focused on the 'Unterdrückungsprinzip' in the text, manifested in the contrast between narrator and narrated, noting that Stifter uses 'ein Erzähler, der sich und den unwachsmnen Leser in der Annahme täuscht, er verstehe zuletzt alles, was zu verstehen sei, während er in Wahrheit nur teilweise begreift und die eigentliche, maßgebliche Symbolik in der Existenz des Pfarrers bloß unwissend vermittelt.' ('Tiger und Tugend in Stirfers Kalkstein: Eine Polemik', ZDP, 95 (1976), pp. 238-39.) See above, notes 68 and 77.

83 John Reddick has rightly criticized the way much writing on Kalkstein has contributed to a 'Verharmlosung' of the text ('Tiger und Tugend', p. 254). He notes that many critiques of Kalkstein failed to take account of the priest's story and its thoroughly ambiguous implications (pp. 240-41). Joachim Müller for example does not consider the possibility that the priest's obsession with white linen might be in any sense pathological: 'Die Wäsche wird damit zum vielschichtigen strukturbestimmenden Dingssymbol, das mehr als nur die rührende Integrität eines weltfremden Sonderlings beleuchtet, sondern sich ausweitet zum Zeugnis eines zarten Dauergefühls und einer unbeschreiblichen Reinheit, worin sich die Schönheit dieses Menschentums kristallisiert.' ('Die Pechbrenner und Kalkstein: Strukturanalysen einer Urfassung und einer Endfassung der Bunten Steine', VASILO, 15 (1966), p. 21.) According to Blackall, 'the life of this parson is rich and full, if we but see it aright' (p. 265). By contrast, Reddick emphasizes the priest's constant awareness of temptation and sin as the forces which mould his way of life in the Steinkar: 'the choice of stone and sand is a perfect symbolic complement to the choice of priestly cloth for this ultimate self-exile. Stony ground, like the ritual celibacy of his office, is a safeguard against temptation: there are no succulent peach-trees here, no inviting luxuriance of undergrowth.' ('The Wild Beyond: Symbolic Journeyings in the Stories of Adalbert Stifter', Oxford German Studies, 20/21 (1991-92), p. 117.) For Reddick, the priest is a 'predator turned protector' (ibid., p. 118).
religious allegory, so too the surveyor portrays the priest as a pure and saintly figure in accordance with his own unreflective Christian faith. To accept without question such an interpretation is to ignore the surveyor’s frequently unreliable interpretation of reality and to gloss over the real complexities of human inner Natur described in the priest’s lifestory. If one discounts this religious telos which grants the priest a transcendent meaning, and focuses on the known details of his life, then I believe a very different interpretation can be reached than that suggested by the surveyor. By identifying the priest with the landscape, with material nature, the surveyor creates a fundamental dilemma. As we have seen, the surveyor’s view of nature is underpinned by scientific materialist concepts of lawfulness and causality. To make the priest the personification of material nature entails problems for both Christians and humanists alike, representing a denial of both the freedom to choose between good and evil, and of the faculty of Vernunft. The text that we read is largely the surveyor’s narrative, and it is a narrative fraught with paradox and contradiction. His attempt to portray a life imbued with the spirit of natural lawfulness and Christian meaning, is undermined both by his own limited scientific perspective and by the priest’s lifestory, which reveals the deep complexity and uncertainty of human life, of innere Natur (see above, note 71). A subtext is created which implies that the workings of human nature are part of the ‘unergründlich’ otherness of nature that Konrad and Sanna encounter on the mountain, an otherness which subverts the universal order of Christianity and science alike.

In his family history, the priest emphasizes the tremendous constructive vitality of the previous three generations. The word ‘bauen’ is repeatedly associated

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84 The Journalfassung concentrates on the father’s generation, rather than the earlier generations of the family. The father dies within two and a half sides of the beginning of the priest’s story. In the
with their activities: ‘Der Großvater war überhaupt ein Freund des Bauens.’ (Bf 100, 18)\textsuperscript{85} The father is however associated with the garden: ‘Er hatte eine Freude an der Obstzucht’ (Bf 101, 28).\textsuperscript{86} Although the priest and his brother are twins, their difference is quickly apparent as regards learning: ‘Der Bruder war viel geschickter als ich, er konnte sich die Buchstaben merken, er konnte sie zu Silben verbinden, er konnte deutlich und in Absäzen lesen, ihm kam in der Rechnung immer die rechte Zahl [...]. Bei mir war das anders.’ (Bf 103, 3).\textsuperscript{87} Repeated reference is made to the priest's Fleißigkeit, as if to counter suggestions that he might be lazy or feckless.\textsuperscript{88}

The priest thus suggests that what distinguishes him from his brother is something deeper than mere character weakness. Indeed, the detailed descriptions of the family and upbringing of the twins clearly illustrates the introductory discussion about the

\textit{Buchfassung} however, so much more information about the family’s history is given that he dies only after nine and half sides.

\textsuperscript{85} See the following references to Bauen in the \textit{Buchfassung}: Urgroßvater: 100, 8; Großvater: 100, 15, 17, and 19; Vater: 100, 31, 32, and 33. The priest’s lifelong dedication to the idea of building a new schoolhouse can thus be seen as an extension of this family tradition of building.

\textsuperscript{86} Similarly, the priest at Schauendorf has turned his village into a garden which contrasts with the barrenness of the Kar. The surveyor describes him as ‘eine vortrefflichen Mann, der die Obstbaumzucht eingeführt, und gemacht hatte, daß das Dorf, das früher mit Heken, Dikicht und Geniste umgeben war, jetzt einem Garten glich, und in einer Fülle freundlicher Obstbäume da lag’ (Bf 64, 15). It is with a peach plucked from his father’s fruit trees that the priest attempts to seduce Johanna (Bf 114, 4-5). The priest has made no attempt to cultivate the barren soil around his ‘Pfarrhof’ (Bf 71, 9-29). In \textit{Bergkristall} the opposition between the alien environment of the mountain and the human environment of the village is symbolized by the final paragraph which anticipates a future time when the children ‘in dem Garten sind, wenn wie in der Vergangenheit die Sonne sehr schön scheint, der Lindenbaum duftet, die Bienen summen’ (Bf 240, 4). On the contrast between the garden and the stony Kar landscape, see Reddick, ‘The Wild Beyond’, pp. 116-17.

\textsuperscript{87} The \textit{Buchfassung} expands considerably on the original version, where only half a side is devoted to the priest’s difficulties with school work. By contrast the \textit{Buchfassung} devotes over two sides to this theme. It is perhaps significant that the only area where the priest shows any sign of ability is in Italian and French. It will be remembered that in Goethe’s \textit{Die Wahlverwandtschaften}, Ottile, who is also a slow learner, also shows consistent progress in French (Wv 278: ‘Im Französischen übertapirierte und überelexponierte sie manche’; see Chapter 1 of this thesis). It is clear that both the family tradition of Bauen and the priest’s own feeling of inadequacy in academic matters provide psychological clues to his commitment to the building of a school house. These suggestions of unconscious motives determining the behaviour of characters (a psychological causality), subvert the transcendent, religious interpretation of his life. See also the notion implied in the ‘Vorrede’, that the \textit{sanftes Gesetz} may determine human psychology (see above).

\textsuperscript{88} See Bf 104, 19; 106, 21; 108, 7; and 111, 26.
origins of people’s ‘Geistesgaben’ (Bf 63, 7). The facts of the twins’ lives become the basis of a quasi-scientific experiment into human Natur: being the same age they are brought up together, schooled away from other children, and experience the same rites of passage. The fact that they grow up to be very different would seem to disprove the idea that ‘die Gaben der Seele seien immer im gleichen Maße vorhanden [...], nur hänge es von dem Geschike ab, welche Gabe vorzüglich ausgebildet wurde’ (Bf 63, 12). Indeed, the implication of the opening lines when compared to the priest’s story and to the final Pointe of the story, namely the priest’s philanthropic will, suggests that the religious interpretation of character is the correct one: ‘Gott habe die Menschen erschaffen, wie er sie erschaffen habe, man könne nicht wissen, wie er die Gaben vertheilt habe, und könne darüber nicht hadern, weil es ungewiß sei, was in der Zukunft in dieser Beziehung noch zum Vorscheine kommen könne’ (Bf 63, 29). I would suggest that the surveyor’s story is told as an illustration of this opening statement. But as in Bergkristall the attempt to create a religious narrative proves problematic when placed in the context of the prevailing scientific world-view.

There is a profoundly life-denying aspect to the priest’s world-view which is ignored by the surveyor. The priest seems to have been an isolated figure from his youth and his life has been peculiarly lacking in close relationships.\(^8^9\) His life in the

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\(^8^9\) His mother died giving birth to the twin brothers (Bf 102, 7-8). His father subsequently surrendered their care to a family servant and later a private tutor (Bf pp. 102-03). There does not seem to have been a close relationship between the father and his sons. When the father becomes ill and the brother takes over the family business, the priest (we are never told his name) becomes isolated from his family, moving into their childhood ‘Studierzimmer’: ‘Weil der Vater in dem Geschäfte keine Anordnungen und keine Befehle ertheilte, und weil mir die Bruder keine Arbeit auftrug, hatte ich Muße, zu thun, was ich wollte.’ (Bf 107, 22) There is no mention of any friends, and certainly no female acquaintances, until the incident with Johanna. Indeed, not only does he seem to be oblivious to the world beyond the family home, but he even restricts himself to the garden wing: ‘ich kam wenig in die andern Räume des Hauses hinüber’ (Bf 111, 26). When the brother dies, apparently from grief at the failure of the family business (Bf 117, 20-21), he is also unmarried. The failure to form close personal relationships is comparable to the shoemaker’s extreme dedication to work and subsequent neglect of his children (see note 54).
Steinkar is characterized by total self-denial: the threadbare clothing, the frugal eating habits and self-imposed privations such as sleeping on the window bench. These impoverishments are not suffered solely in order to save money for the new school. Rather they have become a way of life for the priest. This is expressed for example in the priest’s refusal to treat his illnesses (Bf 97, 1-8, and 125, 28-32). His view of life is fatalistic and envisages a total submission to external events, as can be seen in the way he patiently sits out the storm, expressing his acquiescence to the forces of nature. His life at the family home seems stunted and restrained, as if he lacks the will to leave the house, or even the room in which he grew up. His one attempt seemingly to break out of this prolonged childhood is the failed attempt to form a relationship with the neighbour’s daughter. This extraordinary account, which as some commentators have noted is ambiguously laden with both sexual and religious allusions, is symptomatic of the self-denial and inner division that characterizes his life. Although they only talk through the bars dividing their gardens and

90 It is perhaps for this reason that in the Journalfassung, the priest does not intervene to help the children across the flooded river (pp. 88-89). Only in the later version does he stand in the flood-waters marking the dangerous hole in the ground (Bf, pp. 88-89). The idea of moving the schoolhouse to the children’s village again expresses acceptance of the forces of nature. No suggestion is made of the possibility of diverting the Zirder or of raising the riverbanks. Such suggestions would be wholly out of character for the priest and would have more in common with the surveyor’s approach to nature (see note 76). On the theme of ‘Unterwerfung’ to the forces of nature, see Matz, pp. 723-24, and 748. See also above, note 25.

91 According to Reddick the priest’s story becomes a ‘maßvoll verhaltenen Bericht einer maßlosen Leidenschaft’ in which meanings are only expressed indirectly, through symbols (‘Tiger und Tugend’, p. 245). Reddick examines the role of the peach, the linen and the railings dividing the gardens (pp. 245-51). He concludes that it is only through ‘stärkste Disziplin’ that the order of the sanftes Gesetz functions in human society (p. 255). In spite of the statement in the ‘Vorrede’, äußere Natur obeys this law unconditionally, but innere Natur is more complex: ‘In der menschlichen Natur hingegen sind die gefährlichen “Einzelkräfte” so mächtig, daß das notwendige Gleichgewicht allein durch Zwangsmaßnahmen aufrechterhalten werden kann’ (p. 254). The significance of the priest’s story, Reddick suggests, is not that it is an example of human Reinheit, but rather it represents ‘eine erschütternde Krisis’ in the priest’s life, the knowledge of sin and guilt: ‘beim Gerberssohn wacht der Tiger auf und läßt sich nie mehr verleugnen’ (p. 240). Martin and Erika Swales trace this ambiguity back to the original version, which states that the priest ‘nicht nur diese Handlung unternehmen konnte, sondern daß er sie unternehmen mußte’ (Jf 59, 7). They highlight the conflict between moral and psychological categories, which reveals a narrative tension between human autonomy (konnte) and determinism (mußte) (Adalbert Stifter, pp. 209-10, 214-15). See also Mason, Bunte Steine, p. 59.
occasionally hold hands (Bf 114, 23-25), the incident is dominated by feelings of intense and disproportionate shame. His desire for the girl-woman manifests itself in collecting the material objects he associates with her, namely white linen and silver. The failure of this tentative relationship is a formative experience in the priest’s life: “Ich meinte damals, daß ich mir die Seele aus dem Körper weinen

92 In the Journalfassung she also gives him ‘Pflaumen, Nüsse und einmal ein Stück Kuchen’ (107, 2). This increases the sense of the child-like innocence of the encounter and it is significant that this is excised from the later version, thus emphasizing the implicitly sexual nature of their encounter. Reddick comments that the priest’s description of their conversation as ‘gewöhnliches Ding’ (Bf 114, 24) suggests that his own memory of the encounter has become ‘etwas durchaus Zweideutiges’, symbolizing the inner struggle with the ‘geweckten Tiger’ (‘Tiger und Tugend’, p. 246).

93 Reddick suggests that the ‘sanfte[r] rothe[r] Wange’ of the ‘sehr schöne[r] Pfirsich’ (Bf 114, 15 and 4) ‘etwas durchaus Unerlaubtes symbolisierte sowie mobilisierte’ (‘Tiger und Tugend’, pp. 248-49). It is symbolic of the Garden of Eden, of forbidden fruit and the Fall: ‘schuldhafter Sinnlichkeit’ (p. 249). The symbolism is of course undeniable. The peach also stands for the girl herself, who has ‘sehr feine rothe Wangen’ (Bf 113, 11). Even before he gives her the peach, he has waited by the ‘eiserne[r] Gitter’ as she passes by with the white linen underwear: ‘es schämte sich immer, und nahm sich im Gange zusammen’ (Bf 114, 1). The feeling of shame exists before the peach is accepted (at the third attempt; see above, note 62) and before the mother scolds her daughter, which causes the priest feelings of intense shame: ‘Wir schämten uns wirklich, und liefen auseinander. Mir brannten die Wangen vor Scham, und ich wäre erschrogen, wenn mir jemand im Garten begegnet wäre.’ (Bf 115, 24) The affair ends as it began, with the girl passing the railings ‘mit geröteten Wangen und mit niedergeschlagenen Augen’ (Bf 115, 31). Reddick suggests that the priest is an ‘Opfer eines aufgezwungenen, fast ausweglosen Systems’ and the iron railings are symbolic of his status as ‘Quasi-Gefangener’ (p. 247). On this latter point, see the surveyor’s own remark that the priest’s quarters remind him of a prison (Jf 75, 19-20).

94 There is a striking ambiguity in the priest’s uncertainty over the girl’s age: ‘ein Töchterlein, ein Kind, nein es war doch kein Kind mehr — ich wußte eigentlich damals nicht, ob es noch ein Kind sei oder nicht’ (Bf 113, 9). In the Journalfassung the surveyor sees a direct link between the priest’s affair with the neighbour’s daughter and the children to whom he has dedicated his remaining years: ‘ich fragte nämlich, ob keines der Kinder, die er über den Steg gehen gesehen habe, der einstigen Susanna ähnlich gesehen habe’ (Jf 111, 2; in the Bf her name becomes Johanna; see Reddick, ‘Tiger und Tugend’, p. 249, note 23). The priest replies that he can no longer recall her appearance, an unconvincing response, made all the more suspect by his earlier remark describing her work in the garden: ‘Es waren Krausen, Vorhemden, und dergleichen — ich erinnere mich noch sehr gut darauf.’ (Jf 106, 6) The priest’s initial uncertainty over the girl’s age reveals his own attempt to suppress the youthful experience of sexual longing, the sublimated desire for a young woman is transformed into the wish to protect children. See also M. and E. Swales, Adalbert Stifter, p. 213.

95 In Freudian terms, it is an act of transference. The priest’s fascination with linen and silver relates to the intense emotions provoked by his desire for Johanna (‘begierig’ is used to describe his gaze in the Journalfassung, 107, 24). It is also related to Johanna’s comment that white linen, like silver, ‘kann, wenn sie unrein ist, immer wieder zu feinem weißen Silber gereinigt werden’ (Bf 115, 6). Again Reddick rightly highlights the ambiguity in this fixation: ‘ein Sinnbild zugleich von erzwungener Reinlichkeit und von der ursprünglichen Reinheit des kindhaften, vor kurzem noch unschuldigen Mädchens; aber ein Sinnbild auch vom Allerintimsten an diesem Mädchen, das ja “an dem Körper” eben solche Wäsche als “nächstes Kleid” trägt, und bei dem die Wäsche
müsse."" (Bf 116, 11)\(^{96}\) He seems unable to approach her or her mother directly and it is only 'nach geraumer Zeit' that he discovers that she has married (Bf 116, 6). The story demonstrates the priest's inability to deal with human relationships and his life reads like a case-study of failed individuation and integration into society.

These disturbing aspects to the priest's world-view are ignored by the surveyor, who appropriates the priest's lifestory to reinforce his own bourgeois Christian values. For the surveyor the priest's life is a spiritually uplifting illustration of the rightness of Creation, of the prevalence of what the scientistic 'Vorrede' terms the _sanftes Gesetz_. But it is a narrative which is undermined by the text's structure, by its perspectivism, something which, as I have suggested, also retrospectively subverts the authority of the scientific myths employed in the 'Vorrede'. The atrophied emotional life of the priest reads not as a vindication but as a condemnation of a divinely underwritten natural order. The priest is a victim of those same forces of otherness which are part of the große of nature in _Bergkristall_. True to his profession, the surveyor attempts to rationalize the priest's life by making him one with the landscape, by seeing the man as an expression of scientific concepts of lawfulness and causality. Through this strategy the surveyor attempts to conceal the true complexity, the true otherness, of the priest's inner life. Similarly the Christian _telos_ grants his life

\(^{96}\) The _Buchfassung_ increases the significance of the affair for the priest's subsequent life. As has been said, in the _Journalfassung_ the priest is a Protestant and thus able to marry (see note 67). The decision to become a priest is made before the involvement with Susanna is mentioned (see Jf 104-05). In the later version it appears to be the result of the collapse of the family business and the disappointment resulting from the failed attempt to form a relationship with Johanna. Prior to these events he has confessed to his brother that he has never thought about what vocation or profession he might take up (Bf 111, 3-6). Only afterwards, once the family home has been sold and Johanna has married, does he decide 'ein Verkünder des Wortes des Herrn, ein Priester, zu werden' (Bf 117, 28), adding, '[w]enn ich auch unwürdig wäre' (Bf 117, 29). The sense of a causal relation between the elements in the priest's life is thus increased and hence the role of free will is subverted.
a spurious and ultimately conventional meaning. Just as the narrator of *Bergkristall* seeks to exclude the otherness of nature by an act of transcendent closure, so too does the surveyor, seeing the priest as a symbol of spiritual *Reinheit*. Neither the surveyor nor the narrator of *Bergkristall* realize the inherently paradoxical nature of their understanding of the world: the Christian and scientific world-views co-exist uneasily in their narratives. Only the reader, by juxtaposing the different voices and perspectives within each text, is able to see beyond the rhetoric of divine order and scientific lawfulness to the ultimate mystery of nature, the *Unergründlichkeit*, which the text implies is the true condition of being.

As I have shown, the climate of opinion at the time Stifter was writing was one in which the fundamental lawfulness of humankind and nature was increasingly accepted. The ‘Vorrede’ to *Bunte Steine* proposes just such a world-view, but the texts, which were predominantly re-workings of earlier stories, reveal an inherent ambiguity that belies such scientistic conclusions. The narrators of both *Bergkristall* and *Kalkstein* are both indebted to the idea of scientific lawfulness, a paradigm which can be seen as subverting the ideology of Christianity which paradoxically also informs the narrative viewpoint of both stories. Their descriptions of nature attempt to be objective and empirical, distanced from involvement in the events described: approaches typical of the scientist-observer. However, the texts reveal that knowledge is not merely quantifiable but is a function of perspective and self, as well as of material facticity. As such the texts communicate a sense of the relativity of discourses, of the perspectivist basis of all cognition. I am not arguing that *Bergkristall* and *Kalkstein* attempt to directly undermine the scientific discourse of their day. Rather that the stories complement the scientific *Weltanschauung* of the
lawfulness of nature by showing that human knowledge is always limited and perspectivist. Both texts create distance between reader and narrative. The priest says of the Steinkar, 'man muß sie nur gehörig anschauen' (Bf 118, 14). The perspectivist strategy underlines the priest's advice through the structure of the literary text, making the reader aware of the importance of this approach for a fuller understanding of the stories and ultimately of the world itself. Bergkristall and Kalkstein suggest that nature offers humankind more than merely quantifiable knowledge: rather it is a source of insight into ontological questions. In the emphasis on Anschauung there is a phenomenological element in the texts which looks back to Goethe and forward to Husserl. It does not constitute a rejection of the dominant scientific world-view so much as a challenge to its vociferous claims to exclusivity, as expressed through the work of the scientific materialists. In a real sense the children on the mountain experience something of the wonder of nature which is beyond the empirical perspective of the narrator. Similarly the surveyor is unable to grasp the complex inner-life of the priest. However, both Sanna and the priest experience only a limited aspect of nature, a different perspective to that experienced by the scientific surveyor. The competing narrative voices reveal that the complexity of the natural world and of the human relation to it, is something which demands more than one perspective: the mysticism of religion, the wonderment of the child, the quantifiable facticity of science — all these views contribute to the human understanding of nature. And to this list can also be added the meta-perspective of the writer, who by revealing the role of human consciousness in perception also deepens our understanding of the world and of the place of humankind within it.
Chapter 5

Beyond the Logos of Science:

Musil’s Die Verwirrungen des Zöglings Törleß
In recent years much attention has been paid in literary and cultural studies to the period of the fin de siècle in Vienna. Trends in Viennese art, literature, philosophy and science at this time have been seen as anticipating many of the themes of modernity.\textsuperscript{1} For Janik and Toulmin, in their seminal study of Wittgenstein's Vienna, the interrelation of discourses is the key to understanding this period: 'we overlook the interdependence of the different Viennese arts and sciences at our peril'.\textsuperscript{2} Jacques Le Rider has described the mindset of Viennese intellectuals as:

a critical approach to modernity, centring on aesthetic, ethical or psychological priorities and questioning certain modernist ideas, such as the idea of progress guided by scientific and technological rationality, or the programme of emancipation envisaged by individuals inspired by Enlightenment optimism.


\textsuperscript{2} Allan Janik and Stephen Toulmin, Wittgenstein's Vienna (London: Weidenfeld and Nicolson, 1973), p. 18. For Janik and Toulmin, Wittgenstein's philosophy has been misunderstood because it has been seen outside of its 'historico-cultural milieu' (p. 27). Their approach to Wittgenstein is interdisciplinary because they suggest that the cultural climate in Vienna at this time was itself characterized by a proliferation of interrelated disciplines leading to a period of intense creativity: 'Was it an absolute coincidence that the beginnings of twelve-tone music, "modern" architecture, legal and logical positivism, nonrepresentational painting and psychoanalysis — not to mention the revival of interest in Schopenhauer and Kierkegaard — were all taking place simultaneously and were so largely concentrated in Vienna?' (p. 18)
Viennese modernism can be interpreted as an anticipation of certain important 'postmodern' themes.\(^3\)

Perhaps more than any German-language writer, Robert Musil's work has been seen as exemplifying this critical examination of the concerns of modernity, not least for the fact that, as I will show, his own interests demonstrate that interdisciplinarity which characterized Vienna at the start of this century.\(^4\)

In his article 'The Rise of Modern Science and the Genesis of Romanticism', Hans Eichner suggests that the work of Schelling and the other speculative Naturphilosophen was an aberration in the history of science (see above, Chapter 2). According to Eichner, the physical sciences of the twentieth century do not represent a fundamental break with the scientific world-view of Galileo's era. However, this fails to account for the revolutionary developments in physics which occurred in the

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3 Jacques Le Rider, *Modernity and Crises of Identity: Culture and Society in Fin-de-Siècle Vienna*, trans. by Rosemary Morris (Cambridge: Polity/Blackwell, 1993), p. 6. Le Rider notes however that Freud, Hofmannsthal and many other contemporaries looked enviously towards the intellectual life of other European capitals, in comparison with which Vienna appeared conservative and archaic: 'it is only in retrospect that certain historians of Viennese modernity — creating an updated version of the "Habsburg myth" — are able to wonder at the exceptional fertility of that cultural milieu, as if it had been a kind of "Silicon Valley of the mind" (the phrase is Allan Janik's)' (p. 15). Between 1903 and 1938, Musil lived and worked in both Vienna and Berlin. On his place in the intellectual life of these two cities, see Cornelia Blasberg, *Krise und Utopie der Intellektuellen: Kulturkritische Aspekte in Robert Musils Roman 'Der Mann ohne Eigenschaften'* , Stuttgarter Arbeiten zur Germanistik, 140 (Stuttgart: Heinz, 1984), especially pp. 8-19.

4 Marike Finlay's *The Potential of Modern Discourse: Musil, Peirce, and Perturbation* (Bloomington: Indiana University Press, 1990) is typical of works which see Musil in this light. She attempts to develop 'an alternative theory of discourse' which incorporates trends in science and literature at the turn of the century (p. 3). It is an ambitious endeavour in which Musil's work plays a crucial role and which she sees as contributing to the demise of 'classical discourse' and the formation of 'modern discourse' (p. 5). According to Finlay: 'Musilian narrative and Peircian semiotics are paradigmatic of the transformations of the epistemic climate of the times' and have contributed to 'a radical contextualization of the episteme' (p. 3). Finlay, whose work is influenced by Foucault's definition of discourse (pp. 6-7), sees Musil's use of irony as a feature of the intertextuality which characterizes modernity: 'Since the turn of the century "moderns" have been preoccupied with the crisis of representation, the problematization of the status of reality, the distinction between fact and telling and between narrated and narration, the self-reflexive acknowledgment of the subject's complexity within the system under study, the inadequacies of totalizations, and the melting of disciplinary boundaries such as literature as distinct from science.' (p. 19)
fin-de-siècle period. According to Erwin N. Hiebert these included the following key discoveries:

X-rays in 1895, natural radioactivity in 1896, identification of the electron as a particle of discrete mass and charge in 1897, and by 1911 evidence that the atom was 100,000 times the size of its nucleus. Conceptually too, physicists were compelled to come to terms with quantized energy notions (1900), the relativity of space, time and motion (1905), and an internally structured atom where classical mechanics collapsed. Study of properties and processes for the atomic nucleus — for which there was no precedent, not even in chemistry or quantum theory — opened up new worlds that were inconceivably complex. (‘The Transformation of Physics’, pp. 237-38.)

These discoveries challenged accepted paradigms in physics as well as raising a question mark over the assumption implicit in science since at least the Enlightenment, that nature was a rational order, obeying mechanistic and causal laws.

N. Katherine Hayles, commenting on Eichner’s view, states:

Galileo would require far more than a crash course in mathematics to become acclimated to twentieth-century science. He would also have to abandon a belief in strict causality and accept the idea that our ‘particles,’ rather than existing as collections of enduring, definitive objects, manifest themselves as ‘tendencies to exist.’ Perhaps most disturbing [...] would be the notion that a strict separation between subject and object is not possible and that, accordingly, there are inherent limits on how complete our knowledge of any physical system can be. These twentieth-century epistemological assumptions have more in common with Romanticism than they do with seventeenth-century science. (The Cosmic Web, p. 18.)

By the 1920s the term classical physics was in use to distinguish the mechanistic Newtonian world-view from that of the new physics of quantum theory and relativity (Hiebert, p. 236). The names of Planck, Einstein, Bohr and Heisenberg have since

Berentsen cites the physicist Carl von Weizsäcker as saying that quantum theory is conceptually equivalent to ‘einer spiritualistischen, monistischen Metaphysik’: ‘Die Quantentheorie heute bestätige im Grunde die geistreiche Phantasie der Schelling’schen Naturphilosophie, die das Wirkliche mit dem Namen Geist belegte: “Die Natur ist der Geist, der sich nicht selbst als Geist erkennt”.’ (‘Vom Urnebel zum Zukunftstaat’, p. 9; citing from ‘Bin so hinausgeworfen aus dem
become synonymous with this new, complex world-view in which the secure coordinates of time, space, and motion have been undermined, and the fundamental scientific principles of causality and objectivity have been shown to be local rather than universal in their application.  

At the same time as the profoundly mysterious world of subatomic physics was being revealed, systematic attempts were being made to describe the interplay of the conscious and subconscious human mind. According to Antoon Berentsen, the most discussed issue amongst scientists in the 1890s was the interrelation of Natur and Geist (p. 12). Biology was initially seen as offering the best hope of explaining the intangible phenomenon of mind. The anatomist Oscar Hertwig stated in 1900, 'die Biologie klärt uns über unsere eigene menschliche Natur in körperlicher und auch in geistiger Beziehung auf'. Both Ernst Haeckel (1834-1919) and Wilhelm Bölsche (1861-1939) propagated monistic world-views at this time based on biology and...
Darwinism.⁸ Gustav Theodor Fechner (1801-87) attempted to bring together *physisch* and *psychisch* realms in a monistic theory that sought to unify physiological research into the nervous system with a theory of mind. It was generally accepted that materialist theories had failed to explain the mind-body problem. The basis of Fechner’s ‘Psychophysischen Parallelismus’ was the belief that ‘überall und generell dem materiellen Erscheinungszusammenhang ein geistiger entsprechen müsse’⁹. For Fechner, Seele was immanent in matter. The human body was the ‘Träger der seelischen Prozesse’ (Fick, p. 38). His *Elemente der Psychophysik* (Leipzig, 1860) was an immediate success. Similarly influential was Eduard von Hartmann’s *Philosophie des Unbewußten* (1868), which went into a new edition each year until 1878 (Fick, p. 75). Hartmann thought das Unbewußte was needed ‘um die immer tiefer aufräumende Kluft zwischen der Sinnenwelt und der physikalischen “Realität” zu überwinden’ (Fick, p. 76).¹⁰ The philosopher Franz Brentano (1838-1917) also contributed significantly to the development of psychology as an independent

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⁸ Haeckel’s *Die Welträtsel: Gemeinverständliche Studien über monistische Philosophie* (1899) had sold 300,000 copies by 1914 (Berentsen, pp. 42-45). On Bölsche’s ideas and in particular his *Das Liebesleben in der Natur: Eine Entwicklungsgeschichte der Liebe* (1898) as a work of ‘populärwissenschaftliche Prosa’, see Berentsen, whose study focuses on this work.


¹⁰ According to Lancelot Law Whyte, Hartmann’s *Philosophie des Unbewußten* (1868) was an expansion of Carl Gustav Carus’s *Psyche: Zur Entwicklungsgeschichte der Seele* (1846) ‘into a comprehensive metaphysical and quasi-scientific system’. Although it was an ‘extraordinary achievement’ for its time, it was ‘neither good philosophy nor good science’ (The Unconscious before Freud (London: Tavistock, 1962), p. 164). It was however extremely influential and was translated into both French (1877) and English (1884). According to Whyte, it was widely read in Vienna in the 1880s and 90s, although not apparently by Freud (p. 166). Maurice Maeterlinck’s essays, such as the collection *Le trésor des humbles* (1896; translated as *Schatz der Armen* in 1898), were commonly seen ‘als poetische Version und Varianz’ to Hartmann’s *Philosophie des Unbewußten* (Fick, p. 93). Musil read Hartmann’s work as comments in his early diaries show (see Robert Musil, *Tagebücher*, ed. by Adolf Frisé, 2 vols (Reinbek bei Hamburg: Rowohlt, 1976), i, pp. 36 and 75; hereafter cited as *Tb* followed by volume and page number). In his later
discipline. In his seminal work *Psychologie vom empirischen Standpunkt* (1874), Brentano asserted the fundamental importance of subjective experience in our understanding of the world. His work provides the basis for a phenomenological approach to reality and foregrounds the self as the constitutive moment in our relation to the world.\(^{11}\) Clearly, as Fick has stated, the notion of *das Unbewußte* was by no means the exclusive preserve of Sigmund Freud, whose *Traumdeutung* was published in 1900, but was rather an idea that ‘in der Luft liegt’ at this time (p. 19).\(^{12}\)

In mid-nineteenth-century Germany, the philosophers Hartmann, Fechner and Hermann Lotze (1817-81) shared the aim of ‘endeavouring to find a means by which

\(^{11}\) According to Le Rider, philosophy was the key element in the ‘modernity’ of Vienna. The nineteenth-century philosophers Johann Friedrich Herbart (1776-1841) and Bernard Bolzano (1781-1848) were typical in defending ‘empiricism, realism, linguistic criticism and the philosophy of science (in the tradition of Leibniz, Locke and Hume) against “German” Idealism, and especially against Hegel and the Hegelians’ (Le Rider, p. 12). Brentano, who taught at Vienna University from 1874, continued this anti-Kantian tradition bringing Austrian philosophy closer to English philosophy. By 1900 J. S. Mill was more influential than Kant in Vienna, Le Rider states, and during 1879-80 Freud assisted in the translation of Mill’s works (p. 12).

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the concrete findings of science could be incorporated within the framework of an idealist metaphysics' (Mandelbaum, ‘Philosophic Movements in the Nineteenth Century’, p. 4). During the late nineteenth century, psychology came to play an increasingly significant role in philosophy. By the 1880s, as psychology began to establish itself as a science, psychologism became a feature of philosophy, undermining logic as a normative science:

Psychologism in logic, according to which the structure and validity of the principles of logic are based on the organization of the human psyche, can be regarded as the standard opinion of philosophers from the middle of the last century up until well into our own: Gottlob Frege and Edmund Husserl were fairly isolated in their campaign against it. (Schnadelbach, Philosophy in Germany, 1831-1933, pp. 98-99.)

The scientists Justus von Liebig and Hermann von Helmholtz contributed to this development and played a crucial role in the mid-nineteenth-century ‘rehabilitation of philosophy’ (Schnadelbach, p. 103) in its relation to science by attacking the extreme claims of both Hegelianism and the vulgar materialists, such as Ludwig Büchner (see Chapters 3 and 4 of this thesis). According to Maurice Mandelbaum: ‘The task of relating philosophy and the sciences to one another can in fact be said to have been the dominant task of German philosophy in the latter half of the century.’ (p. 4) Helmholtz contributed to a widespread revival of Kantianism in the late nineteenth century. For Helmholtz, Kant’s investigation into the possibility and validation of knowledge was the fundamental question which philosophy had to answer. He thought that the solution lay in a theory of sense-perception which would reunite science and philosophy (Schnädelbach, pp. 104-05).\(^{13}\) This scientific valorization of

\(^{13}\) On Helmholtz’s interpretation of Kant, Mandelbaum comments: ‘one can scarcely imagine a version of Kantianism more antithetical to the presuppositions of Kant’s own thought, for the universal and necessary forms of experience were interpreted by Helmholtz as consequences of
the subjective basis of perception seemed to offer empirical support for a psychological understanding of the problems of epistemology. Friedrich Nietzsche’s philosophical writings, which were of such crucial influence on fin-de-siècle art and literature, reflect this faith in science and in particular psychology:


the nature of our sensing organs. Thus, his form of phenomenalism rested directly upon the limits of the human organism, not on a priori categories of the mind." (p. 13) On the revival of Kant which lasted well into the twentieth century, see Schnadelbach, pp. 105-06.

14 Helmholtz developed his ideas on perception in Über das Sehen des Menschen (1855), Die Thatsachen in der Wahrnehmung (1878) and the Handbuch der physiologische Optik (1856-66). Fick has shown how the unintentional implication of Helmholtz’s physiological approach to epistemology was that all perception was inherently subjective. According to Helmholtz, Kant’s a priori principles were located within the physical structure of human beings: ‘Kant hatte gezeigt, wie uns a priori gegebene Sätze dennoch objektiv gültige Erkenntnis ermöglichen. Helmholtz dagegen zeigt, daß aufgrund der physiologischen Bedingungen unseres Daseins wir nur subjektive Urteile über die Gegenstände fällen können.’ (Fick, p. 34.) Causality was not to be viewed as a principle inherent in the rational order of nature but integral to the physiological process of perception (Fick, pp. 34-35). According to Fick, the implication of Helmholtz’s theory was dualistic, implying ‘der Erhebung unserer Sinnenwelt zur einzigen Realität’ (p. 36).


16 Friedrich Nietzsche, Werke: Kritische Gesamtausgabe, ed. by Giorgio Colli and Mazzino Montinari (Berlin: de Gruyter, 1967- ), vi:2: Jenseits von Gut und Böse, Zur Genealogie der Moral (1886-1887) (1968), here citing from Jenseits von Gut und Böse (1886), pp. 32-33. See also Schnädelbach, p. 98, and Fick, pp. 88-93. For Nietzsche science was not a metalanguage but rather one among many possible ways of seeing the world: ‘Science, he argues, provides neither an ultimate description of the world nor a description of the world as it is in itself. It is therefore not a practice to which all the others are secondary and inferior. He does not object to science itself [...] but rather to an interpretation which refuses to acknowledge that science is itself an interpretation in the sense that it provides a revisable description of a part of the world which is no more real than any other. The problem has been that the methods of science have been assumed to be better than any others, and its objects have been considered to be more real or ultimate than anything else. Nietzsche attacks only this privileging of the methods and objects of
For Carl E. Schorske, the *fin de siècle* was the period in which 'psychological man' arose, signalling the end of what Le Rider calls the 'classical liberal view of man' and heralding the beginning of a more complex view of the interrelation between the human subject and the phenomenal world.¹⁷

As well as the influence of psychology and theories of perception on the intellectual climate of opinion at the turn of the century, other thinkers (particularly in Austria) highlighted instead the role played by language in cognition. According to Janik, one of the effects of Kant's *Kritik der reinen Vernunft* (1781) was to bring language into the foreground of philosophical investigation. Kant had suggested that *Vorstellung*, or 'structured sensory representations', were the foundation of epistemology: 'logical or linguistic forms of judgement' were the basis of all experience of the world (Janik and Toulmin, pp. 120-21). This was the point of departure for the nominalist philosopher Fritz Mauthner (1849-1923). For Mauthner, all knowledge of the world was conditioned by language use. Names were metaphors of perception and cognition, and he attacked the reification of concepts used in everyday language, such as *Volk* and *Geist*.¹⁸ Mauthner came to represent a view


¹⁸ Mauthner's *Beiträge zu einer Kritik der Sprache* (Stuttgart: Cotta, 1901-02) was extremely influential particularly amongst the Jung Wien group of writers. According to Janik and Toulmin, the implication of Mauthner's radical *Sprachskепsis* was that language was more suited to poetry than to science. Indeed because language is inherently metaphorical according to Mauthner, science was a form of poetry: hypotheses were just good guesses and laws were 'historical generalizations' (Janik and Toulmin, p. 129). Mauthner's work suggests that 'the term “law of nature” is a metaphor left over from the bygone days of mythological explanation, when Nature was personified in the endeavor to comprehend it', and he concluded that 'there are no “laws” anywhere, only chance phenomena' (pp. 129-30). True knowledge of the world is impossible because we can never break through the barrier of language. Silence was the condition of true understanding for Mauthner and according to Le Rider, he acknowledged the influence of Meister Eckhart, Agrippa von Nettesheim and Buddhism in his form of 'godless mysticism' (p. 53). On Mauthner and Austrian literature, see also Cegienas de Groot, 'Schein—Wirklichkeit—Entfremdung: Ein Thema der österreichischen Literatur des 20. Jahrhunderts', *Neophilologus*, 72 (1988): 258-77, and Walter Eschenbacher, *Fritz Mauthner und die deutsche Literatur um 1900*:
similar to that of Schopenhauer, Kierkegaard and Tolstoy, namely that 'the “meaning of life” is not a matter for rational debate, cannot be given “intellectual foundations”, and is in essence a “mystical” matter' (Janik and Toulmin, p. 165). For Peter Kampits (p. 13) this is a philosophical position that typifies Austrian philosophy of the fin de siècle, as represented by the work of Ferdinand Ebner, Martin Buber, and Ludwig Wittgenstein, who wrote in his Tractatus Logico-philosophicus (1922) that 'Alle Philosophie ist “Sprachkritik.”'[^19]

The Austrian nominalist Mauthner was a student of Ernst Mach (1838-1916), who became particularly influential in Vienna, where he was appointed Professor of Physics at the University in 1895. Essentially Mach’s philosophy stemmed from a critique of science. He continued the philosophical study of perception begun in the physiological investigations of Johannes Müller and continued by Helmholtz (see above). His philosophical position is similar to that of Hume and John Stuart Mill.[^20] Mandelbaum has summarized it thus:

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[^20]: See above, note 11. For a wide-ranging examination of Mach’s life and his contribution to physics, psychology and philosophy, see John T. Blackmore, *Ernst Mach: His Work, Life, and Influence* (Berkeley: University of California Press, 1972); hereafter Blackmore, *Ernst Mach*
In line with the heritage of traditional British empiricism, it was assumed by
associationists and by Helmholtz that all of our everyday concepts, such as our
concepts of ordinary material objects, develop on the basis of a series of
simple, recurring sensations, some of which ordinarily recur in groups. Past
recurrences create tacit expectations regarding future sensations, and when
apparently stable groupings are formed we fix them by giving them a name.
(p. 14)

In his philosophy of science, Mach attempted to expurgate all assumptions that could
be regarded as metaphysical. He also proposed that it was 'theoretically legitimate
to pass back and forth among the data of physics, physiology, and psychology'
(Mandelbaum, p. 15). Mach's fundamental assumption was that all human
understanding and knowledge of the world comes from sense-data, or what he called

(1972). On his philosophy of science, see pp. 164-79. See also J. Blackmore, ed., Ernst Mach: A
Deeper Look: Documents and New Perspectives, Boston Studies in the Philosophy of Science,

21 In this sense then Mach's philosophy of science was 'in line with the whole development of
positivism, both systematic and critical' (Mandelbaum, p. 15). Positivism may be characterized by
the following theses: 'first, a rejection of metaphysics; second, the contention that science
constitutes the ideal form of knowledge; third, a particular interpretation of the nature and the
limits of scientific explanation' (Mandelbaum, p. 8). For a discussion of the different aspects of
positivism from Comte and Spencer to Mach and Huxley, see Mandelbaum pp. 6-17. Blackmore
also sees many similarities between Mach and Comte, although notes that Mach did not apply his
ideas in the sociological sphere (Ernst Mach (1972), p. 164; see also pp. 164-69). Frederick
Suppe notes that at the turn of century there were three main philosophical positions in Germany:
'mechanistic materialism, neo-Kantianism and Machian neo-positivism, with neo-Kantianism
being the most commonly held' (The Structure of Scientific Theories, p. 10). He adds that the
New Physics seemed to contradict the Machist view (ibid.). On Mach's place in the history of
ideas, see also Schnädelbach, pp. 87-88, and Janik and Toulmin, pp. 135-45, Groot, pp. 259-68,
Le Rider, pp. 12, 47. On Mach's contribution to the logical positivism of the Vienna Circle during
the 1920s, see Suppe, pp. 11-15, Blackmore, Ernst Mach (1972), pp. 301-10. More generally, see
Leszek Kolakowski, Positivist Philosophy: From Hume to the Vienna Circle (Harmondsworth:

22 Mach states: 'Ich mache keinen Anspruch auf den Namen eines Philosophen. Ich wünsche nur in
der Physik einen Standpunkt einzunehmen, den man nicht sofort verlassen muß, wenn man in das
Gebiet einer andern Wissenschaft hineinblickt, da schliesslich doch alle ein Ganzes bilden sollen.' (Dr E[rnst] Mach, Die Analyse der Empfindungen und das Verhältniss des Physischen zum Psychischen, 2nd edn (Jena: Fischer, 1900) (first publ. as Beiträge zur Analyse der
Empfindungen (Jena, 1886), p. 21, note. Hereafter Analyse.) Blackmore states: 'Ernst Mach
thought that a positivistic approach could be applied advantageously to all the sciences and in
such a way as to unite the sciences together. This has been the dream of positivists from Auguste
Comte to Philipp Frank' (Ernst Mach (1972), p. 168).
'Elemente.' He concluded that science should therefore concern itself solely with relationships between observables:

Just as perceptible objects are, in the last analysis, merely the sensory elements which we find often appearing together and to which we attach a name, so scientific concepts, properly conceived, only represent bundles of the elements of experience. This view allowed Mach to argue that concepts such as 'force' and 'atoms' had no proper place within science; it also permitted him to hold that different sciences are distinguished from one another solely with respect to the manner in which they find it useful to group the elements of experience. According to these assumptions, science is confined to ordering the flow of experiences according to whatever patterns permit us to predict future experiences. (Mandelbaum, p. 15.)

Concepts such as 'atoms' served to connect the Elemente in the simplest possible way; they were part of what Mach termed 'die Oeconomie des Denkens' (Analyse, p. 37) and were not to be viewed as actual physical phenomena. Mach rejected...

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23 Mach distinguished between Elemente and Empfindungen. Elemente were closer to physical bodies than to subjective experiences: 'Eine Farbe ist ein physikalisches Object, sobald wir z.B. auf ihre Abhängigkeit von der beleuchtenden Lichtquelle (anderen Farben, Wärmen, Räume u.s.w.) achten. Achten wir aber auf ihre Abhängigkeit von der Netzhaut [...] so ist sie ein psychologisches Object, eine Empfindung.' (Analyse, pp. 11-12.) In later editions of the Analyse, Mach further emphasized this point (see for example the English language edition which was revised using the fifth edition of the Analyse (1906): E. Mach, The Analysis of Sensations and the Relation of the Physical to the Psychical, trans. by C. M. Williams, rev. by Sydney Waterlow (New York: Dover, 1959), pp. 15-17; see also the useful Introduction in this edition by Thomas S. Szasz, pp. v-xxxii; here p. xv).

24 Mach's notion of Denkökonomie in science derives from a theory of knowledge rooted in Darwinist biology. According to Jan Aler, Mach 'bestimmt Sinn und Wert der Erkenntnis funktional. Sie wird als Instrument zur Selbsterhaltung der Menschheit charakterisiert: um durch Anpassung an die Tatsachen diese mit dem geringsten Kraftaufwand zu beherrschen.' ('Als Zögling zwischen Maeterlinck und Mach: Robert Musils literarisch-philosophische Anfänge', in Probleme des Erzähllens in der Weltliteratur: Festschrift für Käte Hamburger zum 75. Geburtstag am 21. September 1971, ed. by Fritz Martini (Stuttgart: Klett, 1971), p. 266.) For Mach, intellectual history was about 'the story of the "survival" of the "fittest" idea' (Janik and Toulmin, p. 138). Max Planck criticized this view of science, accusing Mach of anthropomorphism, of equating physical and psychical states rather than imposing order on the world through mathematical paradigms (ibid.). Janik and Toulmin have shown how the view of science proposed by Planck, and similarly by Hertz and Boltzmann, has ultimately eclipsed that of Mach in the physical sciences (see pp. 138-45, 166, 180-83). In his Die Prinzipien der Mechanik (Leipzig: Barth, 1894), Hertz proposed the idea that the Bild (meaning the mathematical model, or Darstellung, as opposed to the Vorstellung) is central to physics. According to Hertz, 'men are not merely passive spectators to whom "representations", like Humean "impressions" or Machian "sensations", just happen; on the contrary, Darstellungen are consciously constructed schemes for knowing.' (Janik and Toulmin, p. 140.) Hertz's theory derived from Maxwell's work, where mathematical equations enabled a range of phenomena to be ordered and simplified (ibid., p.
attempts in science to reify such concepts and, in his major work *Die Mechanik in ihrer Entwicklung, historisch-kritisch dargestellt* (Leipzig, 1883), even attacked the absolutes of space, time and motion in Newton’s *Principia Mathematica* (1687) as conceptual monstrosities.\(^{25}\)

Mach was equally devastating in his critique of concepts of substance in philosophy. According to Claudia Monti:

die Welt ist im Grunde nichts weiter als ein unendliches und sich ständig veränderndes Geflecht aus vielfachen funktionalen Beziehungen zwischen Empfindungen, das an einigen Stellen relativ stärkere und beständigere Abhängigkeiten aufweist. Diese anscheinend stärkeren Beziehungskomplexe werden vom Menschen aus dem fließenden totalen Weltzusammenhang durch einen Prozess der Abstraktion oder der Fiktion herausgelöst und dann 'Ich', 'Körper' oder 'Ding' genannt, das heisst, sie werden auf den philosophischen Rang von 'Substanzen' erhoben. [...] Aber 'Ich', 'Ursache', 'Ding' existieren in Wirklichkeit nicht, sind reine Namen, Worte, denen nichts entspricht, die aber praktischen Zwecken dienen, dem Machschen Oekonomismus zufolge also ökonomische 'Fiktionen' sind, pragmatische Hilfsmittel der Selbsterhaltung, um sich in der Welt orientieren zu können.\(^{26}\)

If Mach’s attack on Newtonian absolutes of time and space was influential amongst scientists such as Einstein,\(^{27}\) then his rejection of the idea of *substance* and of the

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\(^{27}\) Albert Einstein read Mach’s *Die Mechanik in ihrer Entwicklung* in 1897 and was profoundly influenced by Mach’s challenge to the mechanical basis of the physical world and by his epistemological position (Holton, p. 239; see also Blackmore, *Ernst Mach* (1972) pp. 247-59). According to Holton: ‘The influence of Mach’s point of view, particularly in the German-speaking countries, was enormous — on physics, on physiology, on psychology, and on the fields of the history and the philosophy of science, not to mention Mach’s profound effect on the young
notion of a unified and permanent self attracted particular attention amongst writers and artists.\(^\text{28}\) Mach’s proposition in the *Analyse* that ‘das Ich ist unrettbar’ (p. 17) was a source of both torment and inspiration for Bahr’s impressionism,\(^\text{29}\) for Hugo von Hofmannsthal’s *Brief des Lord Chandos* (1902),\(^\text{30}\) and provoked the criticisms of Otto Weininger in his study of sex and gender, *Geschlecht und Charakter: Eine prinzipielle Untersuchung* (1903).\(^\text{31}\) According to Le Rider: ‘The combined influence


\[\text{30}\] According to Le Rider, Hofmannsthal’s *Brief des Lord Chandos* represents a response to the ideas of Brentano and Mach and demonstrates ‘the crisis of identity in an ego undermined by an empiricist-type critique which reduced subjectivity to a series of perceptions’ (p. 49). The ‘deconstructed’ ego is reconstituted by means of mystical symbolism (ibid.). Groot sees the influence of both Mach and Mauthner on Hofmannsthal at this time (p. 259). However Monti, in contradiction to her title, says that although ‘das Werk Hofmannsthal [weist] zwar viele mögliche Analogien zum Werk Machs auf’ there are no direct links only general expressions in common with the *Zeitgeist* (‘Mach und die oesterreichische Literatur: Bahr, Hofmannsthal, Musil’, p. 266). Lothar Huber also refers to Hofmannsthal’s *Brief* in relation to a general mood of *Sprachkritik* (‘Robert Musils *Törlless* und die Krise der Sprache’, *Sprachkunst: Beiträge zur Literaturwissenschaft*, 4 (1973): 91-99).

\[\text{31}\] According to Achim Aurnhammer, Weininger attacked Mach’s ideas together with those of positivists in general for their undermining of the notion the coherent, unified self (*Androgynie: Studien zu einem Motiv in der europäischen Literatur*, Literatur und Leben, 30 (Cologne: Böhlau, 1986), pp. 213-16). On this see also Le Rider, p. 42, and on Weininger’s analysis of sex, pp. 101-03.
of Mach and Nietzsche suggested to these authors that behind all the substantialist masks and illusions of language there was nothing but an aching void of subjectivity.'

(p. 42) Fick has shown how this mood of subjectivity contributed to a valorization of individual perceptions of reality and thus of Erleben:

Das 'Erleben' wird zum Metaphysik-Ersatz. Die Reduktion dessen, was als Realität bestimmt wird, ausschließlich auf das Erlebte birgt zugleich die subjektive Emphase: Kraft des Erlebnisses können metaphysische Gehalte sich erneut als 'wahr', ja, durch die Wirklichkeit beglaubigt, ausweisen. Vor diesem Hintergrund ist die für die Literatur der Jahrhundertwende typische — und in der Forschung gut beschriebene — minutiöse Wiedergabe des sinnenhaften Details zu verstehen, die ein Aufgehen im sinnlichen Eindruck vorraussetzt. Der 'Augenblick', in dem mit geschärften Sinnen die Wirklichkeit wahrgenommen wird, wandelt sich zur 'Ekstase', die das in einem dieseszeitigen Sinn Gültige dieser Wirklichkeit erfahren läßt. (Fick, p. 8)32

As August K. Wiedmann has recently demonstrated, the first years of the twentieth century witnessed an upsurge in neo-Romantic movements in German art, literature and philosophy which defined itself by opposition to nineteenth-century positivism and by an affirmation of organicist Ganzheitsstreben.33


32 Fick suggests that this emphasis on experiential reality is reflected at this time in Wilhelm Dilthey's discussion of philosophy according to Weltanschauungen in his work Das Wesen der Philosophie (1907). By seeing philosophy as a function of historical context, Dilthey established a relativistic but also pluralist approach to the history of ideas (Fick, p. 1). Dilthey, like Nietzsche, emphasized the role of inner, psychological processes as constitutive of reality for the individual (see Fick, p. 7, and Schnädelbach, pp. 123-29; cf. above, note 16). Le Rider, referring to Bahr's retrospective comments on Jung Wien in his Selbstbildnis (1923), writes: ‘The Austrian artist or writer had to compensate for Germany's “outward” success as a great power — her military victories, the evident solidity of her Reich and the prestige of her Kultur — by turning inwards. While naturalism busied itself with the states of things (Sachenstände, Bahr's pun on the French états des choses), the Viennese would turn to “states of mind”. Individuality and subjectivity were to be cultivated and explored at the expense of social ideas and realistic styles.’ (Le Rider, p. 12.)

33 According to Wiedmann, Ganzheitsstreben was a 'paradigmatic mode of thought and sensibility before and during Weimar' (The German Quest for Primal Origins in Art, Culture, and Politics 1900-1933: Die 'Flucht in Urzustände', Studies in German Thought and History, 16 (Lewiston: Mellen, 1995), p. 36). Wiedmann's work is a wide-ranging discussion of holistic approaches to nature, although unfortunately excluding the sciences. See in particular 'Cosmic Nature and the Claims of the Whole: The Holistic Dominant', pp. 15-46, and 'Animate Nature: The Organistic
Alone amongst creative writers of this period, Robert Musil attempted to confront Mach’s ideas from the rationalist position of science and academic philosophy, writing his doctoral thesis on Mach.\textsuperscript{34} Musil studied at the Friedrich-Wilhelm-Universität in Berlin from November 1903 until 1908.\textsuperscript{35} During this time he was enrolled at the Institute of Psychology under the supervision of the experimental psychologist Carl Stumpf (1848-1936).\textsuperscript{36} As a doctoral student he was also reading the subsidiary subjects philosophy, physics and mathematics.\textsuperscript{37} At the beginning of his thesis, Musil writes favourably on the influence of science:

\begin{quote}
\end{quote}

\textsuperscript{34} Robert Musil, \textit{Beitrag zur Beurteilung der Lehren Machs und Studien zur Technik und Psychotechnik} (Berlin: Arnold, 1908; repr. Reinbek b. H.: Rowohlt, 1980). Hereafter \textit{Beitrag}. It is not my intention to give a full critical account of Musil’s doctoral thesis but rather to provide a context of ideas with which Musil was preoccupied both before and after the writing of \textit{Törleff}.

\textsuperscript{35} For biographical details of Musil’s early life, see Sibylle Mulot, \textit{Der junge Musil: Seine Beziehung zu Literatur und Kunst der Jahrhundertwende}, Stuttgarter Arbeiten zur Germanistik, 40 (Stuttgart: Heinz, 1977). According to Mulot, Musil left the Militär-Oberrealschule in Mährisch-Weiβkirchen in September 1897 and enrolled at the Technische Militär-Akademie in Vienna. Between 29 January 1898 and 18 July 1901, Musil studied ‘Maschinenbau’ at the Deutsche Technische Hochschule in Brünn, taking the 1st and 2nd Ingenieur-Staatsprüfung. From the 1 October 1901 to the 30 September 1902, Musil took his Einjährigen-Freiwilligenjahr in Brünn. From October 1902 to October 1903, he was an assistant at the Technische Hochschule, Stuttgart (Mulot, p. 205, note 1; cf. Karl Dinklage, ‘Musils Herkunft und Lebensgeschichte’, in \textit{Robert Musil: Leben, Werk, Wirkung}, ed. by K. Dinklage (Reinbek b. H.: Rowohlt, 1960), pp. 187-264). It is interesting to compare the apparent ease with which Musil found an assistantship with Einstein’s fruitless efforts to obtain similar positions at the Polytechnic Institute in Zurich and in Wilhelm Ostwald’s department at Leipzig University, amongst others, during 1901. According to Holton, Ostwald failed even to reply to three letters of inquiry, one of which was from Einstein’s father, a chemical engineer (pp. 235-37).


\textsuperscript{37} Musil’s original version of his thesis, submitted in 1907, was more wide-ranging in its scope, as its title suggests: ‘Studien zur erkenntnistheoretischen Grundlage der Physik mit Bezug auf die Anschauungen E. Machs’ (\textit{Beitrag}, p. 7). Stumpf rejected this version, advising Musil to reformulate the theme and title. Although Stumpf accepted the final version, he was not overly
Das Wort des Naturforschers wiegt schwer, wo immer heute erkenntnistheoretische oder metaphysische Fragen von einer exakten Philosophie geprüft werden. Die Zeiten sind vorbei, wo das Bild der Welt in Urzeugung dem Haupte des Philosophen entsprang. Die Philosophie versucht heute ihr Verhältnis zu der in so weitem Bereiche aufgedeckten Gesetzlichkeit der Natur [...] mit Berücksichtigung aller Mittel und Ergebnisse der exakten Forschung neu zu gestalten. (Beitrag, p. 15.)

In general Musil is sympathetic to Mach’s attempt to lay down an inductive philosophy of science that seeks to integrate psychological and physical aspects of reality whilst rejecting the universality of mechanistic modes of thought. However, as Musil states at the beginning of his *Beitrag*, he seeks to reveal by means of an

impressed, describing it as ‘laudabile’ (Beitrag, p. 136; on this see Gesine Bey, “‘Bei mir laudabile’: Zu Robert Musils Berliner Studienjahren”, *Wissenschaftliche Zeitschrift der Humboldt-Universität zu Berlin, Reihe Gesellschaftswissenschaften*, 38.6 (1989): 659-66). Musil’s thesis was also examined by the Austrian philosopher Alois Riehl (1844-1924). Kaiser-El-Safti comments that the original title shows Musil’s initial interest in physics, an interest no doubt encouraged by Einstein’s Special Theory of Relativity published in 1905: ‘Unter diesem Gesichtspunkt könnte Musils Einschätzung der Lehre Machs und ihrer diesbezüglichen innovativen Leistungen wesentlich positiver ausgefallen sein als in der zweiten Fassung. Allerdings hätte er sich dann auch in eklanter Gegenposition zu seinem Doktorvater befunden.’ (pp. 151-52) In her view, ‘Musil hatte mit der Thematik keine glückliche Wahl getroffen’: the epistemological investigation of physics was too broad a subject for the Berlin Psychological Institute and to suggest that the trend of modern physics might have been in agreement with Mach would have been provocative to such an inveterate opponent of Mach as Stumpf. Kaiser-El-Safti accuses Musil of neglecting the philosophical critiques of Mach’s epistemology as developed by Husserl, Lucka and Stumpf (pp. 152-55) and attributes his mediocre marks to ‘ein ganz beträchtliches Unterschätzen des “Subjekts” und der “Gegner”’ (p. 155).

Claudia Monti comments: ‘Musil fühlt sich angezogen vom wissenschaftlichen Denken, in dem er ein Modell sah für jenes Sich-an-die-Tatsachen-halten, jene “Genauigkeit”, die Methoden liefern kann, damit “wir unsere tiefsten Aufgaben [...] besser anpacken als bisher”; das heißt, sie ist dazu besser geeignet als falsche Metaphysiken und falsche Synthesen, die auf nunmehr irrealen vergangenen Maßstäben basieren.’ (‘Funktion und Fiktion’, p. 49; citing from *Der Mann ohne Eigenschaften*.) Henri Arvon is exceptional in Musil criticism in asserting that Musil was enthusiastic towards positivism and Mach in particular. Arvon suggests that Musil only criticizes Mach in the *Beitrag* due to Stumpf’s influence (‘Robert Musil und der Positivismus’, in *Robert Musil: Studien zu seinem Werk*, ed. by Karl Dinklage, Elisabeth Albertsen and Karl Corino (Reinbek b. H.: Rowohlt, 1970), pp. 200-13; here p. 204). According to Arvon, Musil’s original encounter with Mach’s ideas was characterized by ‘bedingungslose Annahme’ (p. 204) and that Mach’s philosophy is one of the ‘kenntzeichnende Merkmale der Musilchen Romankunst’ (p. 206). According to David S. Luft, Musil ‘was that unusual case, a poet who loved science, and he sought to relate his passion for scientific objectivity to his exploration of the realm of the feelings’ (*Robert Musil and the Crisis of European Culture, 1880-1942* (Berkeley: University of California, 1980), p. 63; see also Luft’s introduction to Robert Musil, *Precision and Soul: Essays and Addresses*, ed. and trans. by Burton Pike and David S. Luft (Chicago: University of Chicago Press, 1990), pp. xv-xxviii). However, I believe it is wrong to confuse Musil’s interest in science with a positivist world-view.
'immanente[] Kritik' (p. 22) fundamental inconsistencies in Mach's philosophy of science.\(^{39}\) In his thesis Musil attacks Mach's notion of *Denköonomie* and the *Anpassungslehre* (*Beitrag*, pp. 22-42), the role of concepts in science (pp. 42-66), Mach's replacement of causality through the *Funktionsbegriff* (pp. 66-89), as well as his denial of *Naturnotwendigkeit* (pp. 89-113). Throughout Musil argues against Mach's sceptical and neo-positivist approach to epistemology, suggesting instead the need for a broader and more flexible conception of scientific theory. In particular Musil highlights inherent contradictions in Mach's epistemology, which ostensibly rejected metaphysics in science but according to Musil merely posited its own metaphysical assumptions. Mach like Nietzsche saw science and rationality as a struggle for domination, 'als ein im Kampf ums Dasein notwendig gewordenes Instrument [...]', um die Tatsachen mit dem geringsten Aufwand zu beherrschen, also ein 'ökonomisches', pragmatisches Instrument im Interesse der biologischen Selbsterhaltung' (Monti, 'Musils “Ratioïd”', pp. 181-82). Mach transformed the rationale of capitalism and the marketplace into biological necessity and incorporated this into his epistemology (see above, note 24). Musil recognized this as a metaphysical assumption thinly concealed behind a veil of scientism. Mach was clearly guilty of the reification of hypotheses and concepts, a metaphysical crime of which he had accused Newton in *Die Mechanik in ihrer Entwicklung* (above, note 25).\(^{40}\) As Jan Aler has shown, Mach's notion of a physiologically founded epistemology, of *Denköonomie*, subverts his own refutation of *Naturnotwendigkeit*:

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\(^{39}\) Musil asserts 'dass in den Darstellungen Machs, trotz ihrer zahlreichen Vorzüge, doch so viele Widersprüche oder wenigstens Unklarheiten enthalten sind, dass es nicht möglich ist, ihnen eine entscheidende Bedeutung zuzuweisen' (*Beitrag*, p. 22; cf. p. 42).

\(^{40}\) See also Fick, pp. 278-79, Kaiser-El-Safti, p. 154, Monti, 'Funktion und Fiktion', pp. 50 and 57.

Musil also criticized the tendency, which he saw as inherent in Mach’s scepticism, towards relativism in science. Musil writes that Mach’s notion of *Denkökonomie* leads to the conclusion that there is ‘keine feste, sozusagen absolute Wahrheit, sondern nur eine in dem Sinne relative [...] es gibt überhaupt keine Wahrheit im eigentlichen Sinne, sondern nur eine praktische, erhaltungsförderliche Konvention’ (*Beitrag*, p. 34). Luft has shown how in the *Beitrag*, Musil argued for a ‘refined concept of functional relations’ (*Robert Musil*, p. 86), not rejecting concepts and theories and returning to sense-data in science but accepting their usefulness in picturing a world that was increasingly perceived as complex beyond the imagination of nineteenth-century scientists. Luft suggests this is an approach that would have accommodated even the complexity of Heisenberg’s *Unbestimmtheit* and quantum theory:

Musil did not want the theory of functions to lead to irrationalism or to a radical empiricism that would undermine the development of scientific theory. In practice, Musil argued, the problem with the primitive concept of cause was that it oversimplified both the process of observation and the complexity of

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41 Similarly, Aler, pp. 273-74. Musil writes concerning Mach’s notion of *Naturnotwendigkeit*, that this is the point at which ‘Mach in den scharfsten Widerspruch gegen sich selbst versetzt, in den Widerspruch gegen sich als Forscher’ (*Beitrag*, p. 130; cf. 131-33).

42 Musil writes that if our knowledge of nature is merely an ‘Anpassungsprodukt’ (*Beitrag*, p. 34) then the history of science could have been different. Similarly, ‘was heute als wahr gilt, morgen als ein Irrtum eingesehen werden kann’ (*Beitrag*, p. 39). Error is as likely as ‘Erkenntnis’, a conclusion which Musil says is opposed to Mach’s whole epistemological endeavour which aims at introducing ‘Bestimmtheit’ into science (*Beitrag*, p. 38).
physical events. Thus, the concept of cause is used less and less in more sophisticated science, but the concept of function turns out to be a euphemism for everything essential to natural causality. [...] Musil’s treatment of cause and function reveals a powerful sense of the complexity of reality and the partial nature of human knowledge. (Robert Musil, p. 86.)

Musil did not want science to class theories as mere functional relations but to view them as tentative approximations of knowledge about the world. This is an approach that has much in common with Hertz’s notion of the role played by Bilder in physics and is therefore in line with the trend in the twentieth century towards the hypothetico-deductive model of science (see above, note 24).

More importantly for his literary work as we will see, Musil is unable to accept Mach’s claim that the Ich is a sensory illusion, a reified linguistic construct (see Aler, p. 284). Musil argues that in his critique of concepts in science, such as causality or Kraft, Mach is unable to prove conclusively that they do not exist. Merely because we cannot perceive them as solid bodies does not mean that they do not exist in some other form, such as a “Gruppe” funktioneller Abhängigkeiten’ (Beitrag, pp. 86-87). Just as he challenged Mach’s neo-positivist view of epistemology, it is clear that Musil was unsatisfied with Mach’s rejection of the Substanzbegriff. According to Monti, Musil’s understanding of phenomenology and of Gestalt psychology made him aware of the inadequacy of Mach’s sensationalist view of the self as merely a functional concept.43 Musil realized that Mach’s work provided support for two contradictory interpretations of the self:

43 As I will show, Törleß suggests that Musil saw the self as being a more complex phenomenon than Mach’s sensationalism would allow. Monti has described some of the other approaches to the self that were current at this time: C. von Ehrenfels in his Über Gestaltqualitäten (1890) says: ‘daß uns die Empfindung selbst organisierte Strukturen oder Gestalten gibt und daß diese etwas anderes sind als die Summe der einzelnen Elemente bzw. Empfindungen, aus denen sie bestehen’ (Monti, ‘Mach und die österreichische Literatur’, pp. 272-73). In the same year Husserl’s Philosophie der Arithmetik appeared in which he develops the idea of ‘das figurale Moment’, by which he means that within the sensations themselves, in their structure or pattern, there is a
As Monti has said, in the final analysis, ‘Musil ist ein Verfechter der Lehre Machs’ (‘Funktion und Fiktion’, p. 50.) However, as Luft notes, within the context of the neo-Romanticism of the period it is important to remember that, ‘Musil’s critique of Mach was not an escape hatch into art and irrationalism, but a defense of scientific knowledge — in psychology as well as physics and biology.’ (Robert Musil, p. 86.) Indeed Musil’s five year study of Mach and contemporary science is proof of his committedness to a world-view that acknowledges the validity of an empirical, scientific understanding of the world. But as I shall show, Musil’s critique of Mach’s neo-positivism is also an indication of his awareness of the limits of rationality and of the scientific approach to reality.

In 1909 following his graduation, Musil was offered an assistant lectureship at ‘the foremost Austrian institute for experimental psychology’ under the philosopher Alexius Meinong at the University of Graz (Hickmann, ‘Freud, Musil and Gestalt Psychology’, p. 101). However, Musil declined the offer, and with it the possibility of coherence that permits a sense of self ‘auch wenn diesmal nicht mehr im substantiellen, sondern im funktionellen und strukturellen Sinn’ (ibid.). On Gestalt see also Hickmann, ‘Freud, Musil and Gestalt Psychology’. On Husserl, see Hartmut Cellbrot, Die Bewegung des Sinnes: Zur Phänomenologie Robert Musils im Hinblick auf Edmund Husserl, Musil-Studien, 17 (Munich: Fink, 1988). See also above, note 11.

Musil ‘kann die letzten und lahmenden erkenntnistheoretischen Konsequenzen des Machschen Denkens nicht akzeptieren, das in der Skepsis und einem totalen Sensualismus mündet und das [...] nicht genau aus der wissenschaftlichen Forschung hergeleitet, sondern ihr willkürlich zugeordnet wird’ (Monti, ‘Funktion und Fiktion’, p. 51).
an academic career, in favour of full-time writing.\(^{45}\) In 1902-03 whilst at Stuttgart, he
began writing his first novel Die Verwirrungen des Zögling Törleß (see above, note
35). The manuscript was completed in the spring of 1905 and Törleß was published
the following year to generally positive reviews, in particular from Alfred Kerr who
commended its sophistication.\(^{46}\) Törleß was written at a time when Musil was
uncertain which world-view could offer a systematic way of approaching the
psychological and ontological questions he found himself asking. Having found life in
the military and as an engineer unsatisfactory, Musil had left the technical university
in Stuttgart to find explanations in the nascent discipline of psychology. It has been
suggested that Musil became disillusioned with the experimental work conducted at
Stumpf's Institute of Psychology and that his thesis failed to deal adequately with the
philosophical problems raised by Mach's work.\(^{47}\) It is my contention that Törleß
reflects and confronts the profound uncertainty that characterized the fin de siècle and
the early years of the twentieth century, uncertainty which affected epistemology,
language, and ethics, as well as notions of sexuality and gender. That Musil was

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45 See TB II, 893-94 for Musil's letters declining the offer because of his 'Liebe zu künstlerischer
Literatur'. Musil later regretted this decision; see his letter to J. Nadler (1 December 1924), in
46 Alfred Kerr, review in Der Tag, 21 December 1906: 'In diesem jungen und wohl bald verrufenen,
verzeterten, bespieienen Werk [...] sind Meisterstrecken. Das Starke seines Wertes liegt in der
ruhigen, verinnerlichten Gestaltung abseitiger Dinge dieses Lebens, — die eben doch in diesem
Leben sind.' (cited from Matthias Luserke, Robert Musil (Stuttgart: Metzler, 1995), p. 16.) Not all
reviews were positive however, some criticizing the novel for its risqué subject matter,
interpreting the title to mean 'Verirrungen' (see Christian Rogowski, Distinguished Outsider:
Robert Musil and his Critics (Columbia: Camden House, 1994), pp. 8-9). Kerr was a friend of
Musil's and had helped him revise the novel. After many failed attempts, Kerr even helped the
young writer to find a publisher, suggesting the Wiener Verlag, which had previously published
Arthur Schnitzler's Reigen (Luserke, p. 8; cf. Luft, pp. 52-54). Following its publication Musil
declined the publisher's offer to write a second novel in order to concentrate fully on his thesis.
47 Kaiser-El-Safi suggests that Musil’s decision to decline the offer of an assistantship at Graz
resulted from a disillusionment with experimental psychology: 'Stumpf's Engagement für die
wissenschaftliche Philosophie und Psychologie sowie für das wunderbare und rätselhafte
Phänomen Musik (als vielleicht genuinster Ausdruck menschlicher Geistigkeit und schöpferischer
Kraft) bot weder weltanschauliche Identifikationen an noch philosophische Patentlösungen,
welche das philosophische „Einheitsstreben“ befriedigten.' (p. 157) Nevertheless, she suggests
himself keenly aware that these areas were in need of redefinition is obvious from his own Lebenslauf, which in its alternation between science and literature reflects both this newly felt uncertainty as well as the interdependence of disciplines typical of Vienna at this period. Indeed it is a measure of Musil’s creative versatility that in the same year as his novel was published he constructed a chromatometer for his friend Johannes von Allesch, who later became Professor of Psychology at Göttingen. It is clear that once he had completed his doctorate at Berlin, Musil was faced with a choice between pursuing a career in science or one in literature. It is significant that following the success of Törleß he chose to pursue the answers to the questions raised in his first novel and in his dissertation through the medium of literature rather than in the academic disciplines of psychology or philosophy. As I shall show, Törleß is indeed successful at raising questions, problematizing both the epistemological assumptions of positivistic science as well as the ethical position of the scientific observer. Törleß effectively challenges reductionist solutions to the problems of cognition, resisting both sensationalist and, as I will suggest, contemporary postmodern approaches which, like Mauthner’s nominalism, reduce epistemology to linguistics.

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48 See Musil’s description of his ‘Variationskreisel’, including a photograph, in Robert Musil, Gesammelte Werke, ed. by Adolf Frisé, 9 vols (Hamburg: Rowohlt, 1978), VII: Kleine Prosa, pp. 943-44 (subsequently cited as GW followed by volume and page number). According to Hickman: ‘Musil’s colour wheel was a great improvement on the one previously in use, since in contrast to the latter it was made entirely of metal, was equipped with numbered scales for exact setting and could be re-set during an experiment [...]. It was subsequently manufactured by the firm of Spindler and Hoyer in Göttingen and appears in their catalogues for the years 1908 and 1921.’ (Robert Musil and the Culture of Vienna (London: Croom Helm, 1984), p. 19.)

49 Monti states that, although Musil’s thinking does develop between the completion of Törleß and the writing of his doctoral thesis, the answers he finds are not conclusive: ‘weil der Schriftsteller das Bewußtsein erlangt hat, daß eine Antwort auf seine erkenntnistheoretischen Fragen weder von seiten einer Theorie der Wissenschaft noch von der Philosophie kommen kann, sondern von einer Erkenntnis ästhetischer Art’ (‘Funktion und Fiktion’, p. 41).
Musil read Mach’s *Populärwissenschaftliche Vorlesungen* (1896) in 1902 at about the same time as did Hermann Bahr (see *Tb* I, 20). Musil’s reception of Mach’s philosophy of science is modified by his contemporaneous reading of Nietzsche, Maeterlinck, Emerson, and Novalis. As I have suggested, Mach’s work is characterized by a scepticism towards the role of concepts and theories in science, a position which Musil amongst others saw as implying a relativistic attitude towards science: ‘Kein Standpunkt hat eine absolute bleibende Geltung; jeder ist nur wichtig für einen bestimmten Zweck.’ (Mach, *Analyse*, p. 27.) Mach’s critique of mechanistic science is based on a sensationalist epistemology:

Nicht die Körper erzeugen Empfindungen, sondern Empfindungencode (Elementencode) bilden die Körper. Erscheinen dem Physiker die Körper als das Bleibende, Wirkliche, die Empfindungen hingegen als ihr flüchtiger vorübergehender Schein, so beachtet er nicht, dass alle Körper nur Gedankensymbole für Empfindungscode (Elementencode) sind. [...] Die Welt besteht also für uns nicht aus räthselhaften Wesen, welche durch Wechselwirkung mit einem andern ebenso räthselhaften Wesen, dem Ich, die

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allein zugänglichen Empfindungen erzeugen. Die Farben, Töne, Räume, Zeiten ... sind für uns die letzten Elemente, deren gegebenen Zusammenhang wir zu erforschen haben. Bei dieser Forschung können wir uns durch die für besondere praktische temporäre und beschränkte Zwecke gebildeten Zusammenfassungen und Abgrenzungen (Körper, Ich, Materie, Geist ...) nicht hindern lassen. (Analyse, pp. 20-22.)

As a result of this, Mach thought the notion of *substance*, the reification of the *Ich*, was an illusion and should be discarded as epistemologically and psychologically misleading:


However, in Musil’s *Törleß* the *Ich* is not rejected, but rather it is the attempt to define the self and its relation to the world that is the source of the protagonist’s ‘Verwirrungen’. Through Törleß’s confusions the narrative seeks a new relationship between percipient and world that incorporates the truth of sense-impressions without denying the individual’s awareness of selfhood. *Törleß* is not wholly opposed to Mach’s epistemology. As I shall show, Mach’s functional view of concepts, represented in the text by mathematical concepts such as infinity, is integrated into the text as part of a relativization and problematization of rationality.

*Törleß* is prefaced by a motto taken from a collection of essays by the Belgian symbolist writer Maurice Maeterlinck.52 This passage aptly encapsulates the

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52 Musil cites from Maeterlinck’s essay ‘La Morale Mystique’ from the collection *Le trésor des Humbles* (Paris, 1896), using the German edition: *Der Schatz der Armen*, trans. by Friedrich von
subsequent themes of the division between experience and language and has also been seen by some to align the text with the Sprachkrise inspired in part by Mauthner's nominalism. Such a view, although useful in locating the text in its cultural context, implies a far-reaching disillusionment with rational discourse and the possibility of knowledge of the world which I believe is unsupported by the textual evidence. Rather I would suggest that the dichotomy of experience and language alluded to in the quotation from Maeterlinck, highlights the problematic relationship between the rationalistic world-view of science and the meta-rational and inherently psychological response of the creative individual as expressed through art and literature. Although

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Oppeln-Bronikowski (Florence/Leipzig, 1898). See above, note 10. According to Gerd Müller, 'der Einfluß Maeterlincks tritt im Törleß allenthalben offen zutage' (p. 57). Maeterlinck's influence in the German-speaking countries was at its height between 1902-04. Austria in particular was enthusiastic in its reception of Maeterlinck and Vienna was 'das eigentliche Zentrum der Maeterlinck-Begeisterung im deutschsprachigen Raum' (Müller, p. 58). Musil was well acquainted with Maeterlinck's works from 1898. On the similarity between images and metaphors in Törleß and ones used by Maeterlinck, see Müller, pp. 59-60. Later Musil distanced himself from association with the Belgian symbolist, accusing him of a lack of intellectual rigour in his suggestion of an intuitive, or mystical, form of knowledge (Müller, pp. 62-64). In Der Mann ohne Eigenschaften, Ulrich refers to ideas like those expressed by Maeterlinck concerning Seele as "Eine Art Schmetterlingssprache!" (GW III, p. 807, cf. reference to Maeterlinck, p. 804; subsequent references to the Mann ohne Eigenschaften will be taken from GW I-V and cited as MoE followed by page number). According to Fick, the 'Grundgedanke' of Der Schatz der Armen is: 'Wir führen ein doppelter Leben; weit entfernt von dem Dasein, das wir mit unseren Sinnen erleben, und unserem verstandesmäßigen Erkennen unerreichbar spielt sich das Leben der Seele ab; unser wahres Leben, in dem die für unser Wesen gültigen Entscheidungen fallen. Dieses "Leben" ist noch "tiefer", noch innerlicher, als das "Innenleben" unserer Gefühle und Gedanken' (p. 94). As I shall show, the notion of dualism is central to Törleß. For an excellent discussion of Maeterlinck's dualistic world-view, including his Leben der Bienen (1901; German 1902), see Fick, pp. 93-104. See also Aler's article, 'Als Zögling zwischen Maeterlinck und Mach'.

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53 See for example Huber, pp. 91 and 97, Theodore Ziolkowski, 'James Joyce's Epiphanie und die Überwindung der empirischen Welt in der modernen deutschen Prosa', DVLG, 35 (1961): 594-616, and Wilhelm Braun, 'The Confusions of Toerless [sic]', GR, 40 (1965): 116-31. Elisabeth Stopp has criticized the tendency to link the Maeterlinck quotation with the theme of the 'failure of language', as seen in Hofmannsthal's Brief. According to Stopp the original passage by Maeterlinck 'does not stress so much the failure of words in general as the incomparability between the verbal and the pre-verbal realm, between light and dark' ('Musil's Törless: Content and Form', MLR, 63 (1968), p. 106). She is right to emphasize Musil's faith in the ability of rational language to delineate the world and that his hope was to use language 'to go beyond the limits of what is generally considered expressible' (p. 106, note 1). Sibylle Deutsch also rejects the idea that Musil's writing reflects 'Sprachskeptizismus' and emphasizes instead his epistemological agenda, noting that Musil's use of language is traditional rather than avant garde (pp. 81-87). See also Katalin Neumer who sees a contrast between the 'vom Unaussprechbaren sprechenden Motto' and Törleß's new-found relationship to words at the conclusion of the text ('Die Verwirrungen im Labyrinth der Sprache: Ein Interpretationsversuch zu Musils Törleß', Musil-Forum, 13/14 (1987-88), p. 20).
intensely aware of the difficulty of expressing the experience of the self in words, Törleß at no point rejects rational language as a valid mode of representing reality. Indeed the text itself constitutes a supreme affirmation of the efficacy of language and, as I will show, invokes literature and art as being paradigmatic of materiality transformed. This dichotomy of experience and language provides the creative tension in the text, a tension which remains unresolved at the conclusion either through Mach’s monistic sensationalism or through linguistic approaches to epistemology.

The use of dualistic motifs and metaphors is a defining theme in Musil’s text. Törleß is aware that he possesses qualities which his friends do not. Compared to Reiting and Beineberg, his ‘Geist war der beweglichste’.\(^{54}\)

Die Verwirrungen des Zöglings Törleß, in GW vi: Prosa und Stücke, p. 41. Subsequent references will be given as VZT followed by page number.

Einmal auf eine Fähre gesetzt, war er im Ausdenken der winkelzügigsten Kombinationen überaus fruchtbar. Es vermochte auch keiner so genau wie er die verschiedenen, von dem Verhalten eines Menschen in einer gegebenen Lage zu erwartenden Möglichkeiten vorauszusagen. (VZT, 41)

His sensitivity to the subtleties of a situation is inhibiting and when it comes to a decision between ‘den vorhandenen psychologischen Möglichkeiten’, Törleß loses interest and is unable to decide (VZT, 41). For Törleß events seem to be part of ‘ein Spiel’ and he is unable to take life seriously as do Reiting and Beineberg. This sense of alienation from the real world causes Törleß concern: ‘Dann sehnte er sich danach, endlich etwas Bestimmtes in sich zu fühlen’ (VZT, 42). It is his sense of ‘Möglichkeiten’, his feeling for the ambiguities inherent in his experience of reality, which estranges him from the world. Gradually Törleß becomes aware of a profound dichotomy in life, one which is psychological and epistemological but also, as I will
show, cultural and which seems to challenge the bourgeois mode of life which he had previously viewed as immutable and unproblematic:

Er fühlte sich gewissermaßen zwischen zwei Welten zerrissen: Einer solid bürgerlichen, in der schließlich doch alles geregelt und vernünftig zuging, wie er es von zu Hause her gewohnt war, und einer abenteuerlichen, voll Dunkelheit, Geheimnis, Blut und ungeahnter Überraschungen. Die eine schien dann die andere auszuschließen. (VZT, 41-42)

‘Diese innere Zwiespältigkeit’ (VZT, 42) is most apparent to Törleß whilst he is in the secret hideout, the ‘Versteck’ which he shares with his two friends. But it is the revelation of Basini’s duplicity and the realization of the possibilities inherent in human nature which bring his Verwirrungen to a climax.

55 The ‘Versteck’ is situated in the ‘Dachboden’ of the school and is reached by passing through a space used to store ‘alte Kulissen’ (VZT, 37). The boys pass through a concealed ‘schmaler, schluchartiger Durchgang’ between the pieces of stage scenery and reach a small door leading to a room beneath the staircase which had once been ‘eine kleine Kammer für Geräte’ (VZT, 38-39). The symbolic status of this secret chamber as a subliminal space in the protagonist’s psyche has been noted by Andrew Webber: ‘The “Versteck” (Middle High German vorstecke = Heimlichkeit, Hintergedanke) is [...] a highly ambivalent space, one enclosed by false walls (“Kulissen”) that are constructs of fantasy, and sustained by deceit, its sense of “Heimlichkeit” merely “eine äußerste Illusion” [VZT, 39]. The “Versteck” as scene for a fantastic theatre is clearly created by analogy with the subliminal world of the unconscious mind. The false walls are as it were “Vor-wände”, the “set” constructed by the psyche in order to divert attention from the desires which actually motivate the scenarios played out there.’ (Sexuality and the Sense of Self in the Works of George Trakl and Robert Musil, MHRA Texts and Dissertations, 30; IGS Bithell Series of Dissertations, 15 (London: MHRA, 1990), p. 120.) Although in this passage Webber exaggerates the theatrical nature of the ‘Versteck’ (the text clearly states that the ‘Versteck’ is an actual room and is only reached through the ‘Kulissen’, not created by them; see VZT, 39), he is right to suggest it acts as a place where the protagonist’s perception of the duality in life becomes tangible: ‘Als er in die Kammer getreten war, hatte sich diese innere Zwiespältigkeit, wie stets an diesem Orte, wieder seiner bemächtigt.’ (VZT, 42) Similarly after his revelatory experience of the depth of the blue sky (see below), we read: ‘Nun aber schien der helle Tag selbst zu einem unergründlichen Versteck geworden zu sein’ (VZT, 66). The ‘Versteck’, which exists in a secret space between walls, symbolizes the liminality which characterizes Törleß’s dualistic experience of reality and his sense of occupying the threshold between two modalities of existence. In addition to Webber’s Lacanian reading, see also Harry Goldgar’s Freudian interpretation: ‘The square root of minus one: Freud and Robert Musil’s Törleß’, CL, 17 (1965): 117-32, and the critical response of Annie Reniers[-Servranckx]: ‘Törless: Freudsche Verwirrungen?’, in Dinklage, Albertsen and Corino, Robert Musil (1970), pp. 26-39.
The knowledge that his classmate Basini is a thief is a profound shock for Törleß. It is shocking precisely because it seems to confirm to him that his intimations of a fundamental dichotomy in the world actually exist in reality:

Da war nun etwas zum ersten Male wie ein Stein in die unbestimmte Einsamkeit seiner Träumereien gefallen; es war da; da ließ sich nichts machen; es war Wirklichkeit. Gestern war Basini noch genau so wie er selbst gewesen; eine Falltür hatte sich geöffnet, und Basini war gestürzt. [...] Dann war aber auch alles andere möglich. Dann waren Reiting und Beineberg möglich. War diese Kammer möglich... Dann war es auch möglich, daß von der hellen, täglichen Welt, die er bisher allein gekannt hatte, ein Tor zu einer anderen, dumpfen, brandenden, leidenschaftlichen, nacktenden führe. (VZT, 46)

The normality of everyday bourgeois life, the world of his parents and of his privileged social milieu, suddenly appear to be a deceit concealing activities previously unthinkable for the adolescent Törleß. A comment by Beineberg allows Törleß to express in words this feeling of an additional, invisible existence beneath the surface of reality. Beineberg says that he exploits Basini in order to learn, ‘daß das bloße Menschensein gar nichts bedeutet, — eine bloße äffende, äußerliche Ähnlichkeit’ (VZT, 60). This latter phrase, suggesting the dichotomy of Schein and Sein, provokes the thought in Törleß that: ‘War nicht, als er sich vorhin Basini vorgestellt hatte, hinter dessen Gesicht ein zweites, verschwimmendes gestanden?’

56 Jakob A. Zelyolet compares Törleß to Clarisse’s breakdown in Der Mann ohne Eigenschaften and suggests that as a result of Basini’s behaviour Törleß experiences psychological trauma, from which his Verwirrungen stem (‘Zum Törless von Robert Musil’, Musil-Forum, 13/14 (1987-88), pp. 22-26). This unusual interpretation, based on Freud’s theory of hysteria (1895), does not account for Törleß’s experience of the plötzliche[s] Schweigen, das wie eine Sprache ist’ in the Konditorei with Beineberg (VZT, 24; cf. 25-26). It is clear that Törleß’s confusions cannot be attributed solely to Basini’s duplicity.

57 We learn that Törleß comes ‘aus einem bürgerlich-freidenkenden Hause’ (VZT, 11). It seems however that it is more bürgerlich than freidenkend as we later learn that his parents own copies of Goethe and Schiller merely for show: ‘Zu Hause standen diese Bücher in dem Schranke mit den grünen Scheiben in Papas Arbeitszimmer, und Törleß wußte, daß dieser nie geöffnet wurde, außer um ihn einem Besuch zu zeigen. Es war wie das Heiligtum einer Gottheit, der man nicht gerne nahet und die man nur verehrt, weil man froh ist, daß man sich dank ihrer Existenz um gewisse Dinge nicht mehr zu kümmern braucht.’ (VZT, 78-79)
This motif of the Janus-head is one that dominates Törleß’s problematic relation with reality throughout the novel, and it is a dilemma that remains unresolved at the conclusion of the text, although as we shall see, Törleß’s understanding of his problem does deepen.

Apart from the experience of Basini’s duplicity, Törleß is tormented from the beginning of the narrative by a sense of an ineffable dimension to nature. As a child Törleß was once left alone in a forest, an event which constitutes a traumatic experience of the otherness of the world: ‘als ich um mich blickte, war mir, als stünden die Bäume schweigend im Kreise und sähen mir zu. Ich weinte; ich fühlte mich so verlassen von den Großen, den leblosen Geschöpfen preisgegeben.... Was ist das? Ich fühle es oft wieder. Dieses plötzliche Schweigen, das wie eine Sprache ist, die wir nicht hören?’

This sudden silence, representing an aspect of experiential reality beyond mere facticity, is a recurrent motif in the text and the source of Törleß’s Verwirrungen. Törleß is acutely aware of the strange, schweigend reality which co-exists with normality. According to the narrator, ‘Törleß’ Vorliebe

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58 As I shall demonstrate, Törleß and Beineberg, although ultimately representing different world-views, share a dualistic view of reality. Törleß learns as much about about the nature of this dichotomy through Beineberg as he does by observing Basini. That he is aware of their common purpose is apparent from VZT, 61, where Törleß thinks: ‘Er kann doch nicht dasselbe suchen wie ich, und doch fand gerade er die richtige Bezeichnung dafür...’. I shall return to this point below.

59 The first line of the prefatory quotation from Maeterlinck can be seen as symbolic of this dichotomy: ‘Sobald wir etwas aussprechen, entwerten wir es seltsam.’ (VZT, 7) See above, note 52. Dualism is the condition of Törleß’s Verwirrungen as the text repeatedly makes clear. He senses that the bourgeois world of his parents might be a façade (see VZT, 41). The superficial respectability of his own bourgeois life is problematized by his contact with Božena and with Basini, both of whom reveal the reality of this other, darker mode of existence. For one view of this see Gert Mattenklott’s Marxist analysis, according to which the text is about historical rather than epistemological issues, namely the problematic status of the bourgeoisie at the fin de siècle in the Austro-Hungarian Empire (‘Der “subjektive Faktor” in Musils Törleß: Mit einer Vorbemerkung über die Historizität der sinnlichen Wahrnehmung’, Neue Hefte für Philosophie, 4 (1973): 47-73). Language and the abstract concepts of mathematics have, as I shall show, an important role to play in his understanding of this duality, as does the realm of sexual experience: the two areas of life seeming to express the seemingly irreconcilable dimensions of reason and instinct. For further references to Törleß’s dichotomous experience of reality, see VZT, 42, 46, 60, 63-64, 86, and 134-38.
Für gewisse Stimmungen war die erste Andeutung einer seelischen Entwicklung, die sich später als ein Talent des Staunens äußerte.’ (VZT, 25) As other narratorial comments indicate, Törléß is destined to become a creative writer, someone who will make use of his innate sense of ‘Möglichkeiten’ and ‘Staunen’ to communicate the strangeness of experiential reality.60 For Victor Shklovsky this act of making strange, or ostranenie in Russian, is fundamental to the aesthetic endeavour:

Art exists that one may recover the sensation of life; it exists to make one feel things, to make the stone stony. The purpose of art is to impart the sensation of things as they are perceived and not as they are known. The technique of art is to make objects ‘unfamiliar’, to make forms difficult, to increase the difficulty and length of perception because the process of perception is an aesthetic end in itself and must be prolonged.61

60 Törléß develops into ‘ein junger Mann von sehr feinem und empfindsamem Geiste’, an ‘ästhetisch-intellektuelle[] Natur[]’ (VZT, 111). Beineberg states that Törléß will one day become a ‘Hofrat […] oder Gedichte machen’ (VZT, 58). In his feverish state of heightened awareness, sitting silently amongst the other schoolboys, ‘er kam sich […] wie ein Auserwählter vor. Wie ein Heiliger, der himmlische Gesichte hat; — denn von der Intuition großer Künstler wußte er nichts.’ (VZT, 92; cf. 138) At one point he burns ‘seine poetischen Versuche’ (VZT, 79). The act of writing to his parents makes him feel ‘etwas Auszeichnendes, Exklusives in sich’ which the narrator says is like the ‘Quelle einer ersten höheren Seligkeit’ (VZT, 8-10). It is clear that the narrator suggests that Törléß is gifted and destined to express his experience of life creatively. Despite his clear gift for analysis, there is no suggestion that he will become a scientist. I shall return to this theme below.

61 Victor Shklovsky, ‘Art as Device’ (1917) (first publ. as ‘Iskusstvo kak priëm’, in Poëтика. Sborniki po teorii poëticheskogo jazyka (Petrograd, 1919), pp. 101-14); cited from Russian Formalist Criticism: Four Essays, ed. and trans. by Lee T. Lemon and Marion J. Reis (Lincoln: University of Nebraska Press, 1965), p. 12. On this idea Terry Eagleton comments: ‘Only in the aesthetic are we able to turn round upon ourselves, stand a little apart from our own vantage-point and begin to grasp the relation of our capacities to reality, in a moment of wondering self-estrangement on which the Russian Formalists will later found an entire poetics. In the routinized, automated processes of understanding, such wonder does not occur; in the aesthetic, by contrast, our faculties are suddenly foregrounded in ways which draw attention to their fittingness. But this is also to draw attention to their limitations. To be allowed a rare experience of our own peculiar point of view is, after all, to sense that it is only our point of view, and so one that might conceivably be transcended.’ (The Ideology of the Aesthetic (Oxford: Blackwell, 1990), p. 89.) See also Peter Steiner, Russian Formalism: A Metapoetics (London: Cornell, 1984 ), pp. 48-49. As far as I am aware, Claudia Monti is the only writer to have noted this quality in Musil’s writing (‘Musils “Ratioïd”’, pp. 174-96). She relates Musil to Brecht, claiming (in contrast to Eagleton) that both knew that ‘die Wissenschaft [ist] die größte Verfremderin’ (p. 177). Referring to Der Mann ohne Eigenschaften, she sees in Musil’s use of paradox and oxymoronic tropes an attempt to render the everyday world strange: ‘[Musils] experimentell-utopische Methode ist eine “verfremdende” Methode par excellence; sie löst das Element aus ihrer Bindung’ (pp. 177-78). As I shall show, Törléß does indeed embody the scientific approach to reality in his distanced, analytical view of the world, a situation exemplified by his treatment of Basini where defamiliarization becomes dehumanization; the role of the scientific observer is revealed to be ethically inadequate and a new approach to reality is shown to be necessary.
This awareness of the creative ability to defamiliarize one’s environment and to see things in an intense and revelatory light is a defining characteristic of Törleß. He is distinguished from the other figures by his awareness of the inadequacy of human descriptions and representations of reality. Törleß experiences people and phenomena intensely and he intuitively senses an underlying interconnectedness in the world. Despite this he is unable to put into words the silent language of forms which he senses around him: ‘Sie schienen ihm zum Greifen verständlich zu sein und sich doch nie restlos in Worte und Gedanken auflösen zu lassen.’ (VZT, 25) Törleß experiences the world in a way unlike his classmates: the world is wondrous, strange and full of possibilities. Yet Törleß is unable to communicate his experiences, a situation paralleled by the quotation from Maeterlinck, for whom the experience of someone diving into the ocean becomes a metaphor for the ineffable nature of being: ‘gleicht der Wassertropfen an unseren bleichen Fingerspitzen nicht mehr dem Meere, dem er entstammt’ (VZT, 7).

One episode in particular encapsulates Törleß’s sense of the inadequacy of human descriptions and leads to a deepening of his understanding of experiential reality. As Törleß lies in the ‘Spätherbstsonne’, he becomes acutely aware of the blue sky above him. The everyday experience is suddenly defamiliarized. It is a crucial moment for Törleß and deserves to be cited at length:

Und plötzlich bemerkte er, — und es war ihm, als geschähe dies zum ersten Male, — wie hoch eigentlich der Himmel sei.
Es war wie ein Erschrecken. Gerade über ihm leuchtete ein kleines, blaues, unsagbar tiefes Loch zwischen den Wolken.
Es war, als ob die aufs äußerste gespannte Sehkraft Blicke wie Pfeile zwischen die Wolken hineinschleuderte und als ob sie, je weiter sie auch zielte, immer um ein wenig zu kurz träfe. (VZT, 62)

Here and elsewhere in Törelß, extensive use is made of erlebte Rede. Törelß’s psychological problem, as he describes it (VZT, 61), is linked to his unique view of the world and demands a narrative form which represents this perspective. In this passage the repetition of the comparative form ‘es war ihm, als...’, and ‘ihm war, als...’ is striking. These are not statements about unambiguous facts, rather tentative

62 As Martin Swales has shown, at crucial points the text ‘oscillates between direct quotations of Törelß’s mind [...] and erlebte Rede’ causing the gap between narrator and character to be reduced (‘Narrator and Hero: Observations on Robert Musil’s Törelß’, in Huber and White, Musil in Focus (1982), p. 4). According to Swales: ‘The narrative perspective in Musil’s Törelß is [...] a complex and volatile one. But this is not gratuitous sophistication; rather, the narrative perspective is the aesthetic correlative of the complexity and volatility of the protagonist’s experience and development.’ (p. 5) Andrew Webber comments: ‘erlebte Rede typically arises precisely at times of confusion, where the steady articulation of the third-person narrative line is broken up into the diction of a less assured, more subjective voice.’ (‘Reality as Pretext: Robert Musil, Die Verwirrungen des Zöglings Törelß’, in The German Novel in the Twentieth Century: Beyond Realism, ed. by David Midgley (Edinburgh: Edinburgh University Press, 1993), p. 38.) At these points in the text, as Webber notes, broken lines ending in dashes or dotted lines indicate the inadequacy of rational language and the beginning of psychological complexity: ‘The punctuation of the narrative line with dots and dashes represents precisely its convergence with the resistant threshold. They mark typographically what the walls, nets and thresholds, which are encountered both on the physical and metaphysical level through the course of the novel, mark typographically: both the opening up and the closing off of subliminal experience.’ (p. 39) Elisabeth Stopp’s research into this aspect of the text, based on the first edition of Törelß, is particularly illuminating. She notes how Musil divides the text using twenty-nine unnumbered sections, which are themselves divided using a Gedankenstrichpause, or a complete line of dashes. In addition Musil employed Gedankenpunkte (three dots) and Gedankenpause (three dashes), as well as frequent single dashes used parenthetically. As Stopp says: ‘Punctuation was an important stylistic medium for Musil at this juncture, a way of making “fühlbar”, of helping to clarify, the central task he set himself in Törelß, the tangible formulation of what was “noch an der Schwelle des Unbewussten”.’ (pp. 112-16) See also Musil’s comments on punctuation, Tb I, 52-53.

63 Swales, commenting on Törelß’s interview with the teaching staff at the conclusion of the novel, notes that ‘Gleichnisse’ (VZT, 137) play an important part in the protagonist’s vocabulary: ‘metaphorical language, the language of the “as if”’ (‘Narrator and Hero’, p. 7). Stopp, too, comments on the key role of images and metaphors in the text, particularly the use of doors to emphasize Törelß’s progression to new levels of perception. In common with many writers, she sees metaphors as suggesting meta-rational knowledge: ‘this is the frontier at which the sign, or “Zeichen” comes into operation, absorbing the thought content, carrying on the argument and fusing it with the emotional tension which lies between what is logically expressible and what seems to lie beyond words’ (p. 108). Dorrit Cohn’s useful work on the representation of the mental life of figures in literature, emphasizes Musil’s use of similes (or ‘psycho-analogies’) to suggest a character’s state of mind without attempting a direct transcription of thoughts. This enhances the ‘vague and contradictory nature of thoughts and feelings’ whilst attempting to objectify mental processes (Transparent Minds: Narrative Models for Presenting Consciousness in Fiction (Princeton: Princeton University Press, 1978), pp. 41-42). She comments: ‘Musil’s
approximations to experiential reality. The text suggests that phenomenological reality cannot be represented directly but only through similes and metaphors, as if the experience exceeds the boundaries of rational language and exists in a liminal realm. Experiential reality resists direct representation: the complexity of the interaction of psychology and physicality is beyond conventional denotative language. Törleß’s experience of the infinitely receding depths of blue sky represents a crucial moment of insight into the disparity between the subjective experience of reality and our rational descriptions of the world. In particular the objectifying vocabularies of mathematics and science are identified as being incommensurate with experience.

As he stares at the sky, Törleß attempts to remain ‘ruhig und vernünftig’ (VZT, 62) and reminds himself that the mathematical term for what he has experienced is ‘das Unendliche’. This is a term with which he is familiar from mathematics but one to which he has never paid much attention before: ‘irgend jemand hatte es einst erfunden, und seither war es möglich, so sicher damit zu rechnen wie nur mit irgend etwas Festem’ (VZT, 63). This ‘Beschwörungsformel’ (VZT, 62) seems to be like a ‘gezähmter Begriff’, and is totally insufficient to describe his current sense of ‘etwas über den Verstand Gehendes, Wildes, Vernichtendes’ (VZT, 63). Once again Törleß is overwhelmed by a feeling of dualism, by a madness which makes him see everything ‘als etwas Doppelsinniges’: ‘Als etwas, das durch die Kraft irgendwelcher Erfinder an ein harmloses, erklärendes Wort gefesselt war, und als etwas ganz Fremdes, das jeden Augenblick sich davon loszureißen drohte.’ (VZT, 64) Törleß accepts that everything

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has ‘eine einfache, natürliche Erklärung’, but at these moments of intense experience he feels that this merely explains an external ‘Hülle’ without revealing ‘das Innere’, which he can see ‘wie mit unnatürlich gewordenen Augen’ (VZT, 64). The vocabularies of both Törleß and the narrator lack the words to denote the liminal nature of Törleß’s feelings and must resort to approximations: to similes and metaphors. The experience itself remains unnamed. This hiatus between ‘Erleben und Erfassen’ (VZT, 65) haunts Törleß throughout the novel, and rational language, which traditionally bridges this gap, is shown to be wholly inadequate.

In Törleß’s revelatory experience of the blue sky, the text confronts directly Mach’s sensationalism. In Törleß’s discussion of the abstract concept of infinity, we are justified in seeing the influence of Mach’s critique of concepts used in Newtonian physics, such as force and atoms, space and time (see above, note 25). As has been stated, Mach criticized their reification by science, and argued for a return to the basic constituents of knowledge, namely sense-data. The description of Törleß’s experience of the blue sky and das Unendliche defamiliarizes abstract concepts used to describe reality and reveals the strangeness of reality. The narrative suggests that a concept such as infinity has no ontological meaning to an individual until it has been experienced. The concept has a purely utilitarian function as a sign in a mental shorthand designed to facilitate rational thought: in Mach’s terminology it is part of a Denkökonomie. To this extent it can be said that Törleß’s experience accords with Mach’s philosophy of science. However in another respect Musil’s text distances itself from Machist assumptions. In a footnote to the Analyse, Mach writes of his indebtedness to Kant:

As he goes on to say, ‘Obgleich die eigentliche Reflexion sich erst später hinzugesellt, so ist doch dieser Moment für meine ganze Anschauung bestimmend geworden’ (ibid). For Mach, the Kantian notion of the Ding an sich is ‘ungeheuerlich’ (Analyse, p. 5). Reality and the world are entirely accessible through the media of the senses: ‘Das Ding, der Körper, die Materie ist nichts ausser dem Zusammenhang der Farben, Töne u.w.w. ausser den sogenannten Merkmalen.’ (Analyse, p. 5.) And like Hume, as a corollary of this Mach taught that the self only exists as the focal point of sense-data. However, it is clear from our present reading of Törleß that this is not a view shared by either protagonist or narrator. Törleß’s experience of the blue sky and the inadequacy of the mathematical concept of infinity asserts the importance of sense

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64 Mach’s enthusiastic (although ultimately critical) reception of Kant is to be contrasted with Törleß’s inability to grasp the Enlightenment philosopher’s thought. See VZT, 78, 80, 92, as well as the dream of Kant, p. 85. It will be noted that Törleß’s age is also approximately 16 (see Musil’s essay ‘Über Robert Musil’s Bücher’ (1913), GW VIII, 996). I shall return to Törleß’s reception of Kant later in this chapter.

65 See Hume’s *Treatise of Human Nature* (3 vols, 1739-40), where he states: ‘For my part, when I enter most intimately into what I call myself, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never can catch myself at any time without a perception, and never can observe anything but the perception.’ Hume attacked the idea of substance in psychology, rejecting the possibility of knowledge of the Self, which he described as no more than ‘a bundle or collection of different perceptions, which succeed each other with inconceivable rapidity, and are in a perpetual flux and movement’ (A Treatise of Human Nature: Being an Attempt to Introduce the Experimental Method of Reasoning into Moral Subjects, ed. by D. G. C. Macnabb, 2 vols (Glasgow: Fontana/Collins, 1962), I: Of the Understanding, Book I, Part iv, Section 6, pp. 301-02). See A. J. Ayer, *Hume*, 5th edn (Oxford: Oxford University Press, 1991), pp. 35-54, and Russell, *History of Western Philosophy*, pp. 634-38. On Mach and Hume’s philosophy, see Blackmore, *Ernst Mach* (1972), p. 166.
impressions for the individual both as the route to knowledge of the world and to an understanding of the psychologically complex self. The text suggests à la Mach that the concepts of rationality — mathematics and science — are strictly utilitarian. But for the monist Mach, Törleß’s Verwirrungen simply would not exist because reality is not governed by a problematic, dualistic relation between self and world (see above, note 28). Mach thought that there was no reality beneath the surface of appearances, no noumenal realm only glimpsed through ‘unnatürlich’ eyes (VZT, 64), neither was there a substantial self. For Törleß the Ich is a reality and not an illusion. Furthermore the narrator uses Törleß’s unique perceptions of his self and its experiential relation to the world, to explore fundamental epistemological and ontological issues.

As Törleß lies in the grounds of the school staring up at the sky, certain memories return to him: the traumatic experience of loneliness beneath the silent trees (see above), the visit to the prostitute Bożena on the evening of his parents’ departure, the silent garden of the Konditorei, thoughts of his friends Reiting and Beineberg, and of Basini (VZT, 63). He is acutely aware of the dichotomy between ‘vernünftig und

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66 That Törleß does not question the existence of a substantial self is clear from the text: ‘Zwischen den Ereignissen und seinem Ich, ja zwischen seinen eigenen Gefühlen und irgendeinem innersten Ich, das nach ihrem Verständnis begehrt, blieb immer eine Scheidelinie, die wie ein Horizont vor seinem Verlangen zurückwich, je näher er ihr kam.’ (VZT, 25) As Müller has said: ‘Mach bleibt also nach Meinung Musils die Antwort auf das eigentliche Problem schuldig. Das Ich, der Personenbegriff, ist nicht nur eine praktische Notwendigkeit, an die das abstrakte Erkenntnisprinzip gebunden ist, um handelnd wirksam zu werden [...], sondern im Gegenteil Voraussetzung und Bedingung des Erkenntnisvorganges’ (Dichtung und Wissenschaft, p. 73). Törleß’s detailed analysis of sense-impressions does not lead to a Machist view of reality but rather suggests that beneath the surface of things there is ‘ein bedrohliches “Souterrain” von verdeckten Regungen und Zusammenhängen’ (Müller, p. 70). Fick notes that Törleß does attain moments when a unified relation of subject and object comparable to Mach’s monism is present: ‘Doch es sind eben die Augenblicke der Versenkung, in denen sich die Grenzen der Körper und Dinge auflösen. Eine seelische Tiefen-Schicht kommt ins Spiel, deren Vorhandensein Mach negiert.’ (p. 273) Similarly, she notes the ‘Ichhaftigkeit des Erlebens’ (ibid.). Far from suggesting that ‘das Ich ist unrettbar’ (Analyse, p. 17), Törleß’s experiences emphasize the central role of the self in any understanding of reality. For Fick, this suggests the text is closer to Maeterlinck’s dualism than Mach’s materialistic monism (p. 273), although, as I shall show, it is Törleß’s attempt to overcome this dualism rather than the acceptance of it that defines the text. See above, notes 43 and 52.
alltäglich’ and ‘jenem bilderdurchzuckten Schweigen’ (VZT, 63). He remembers standing in front of a landscape painting with his father and exclaiming ‘o es ist schön’ and his ensuing embarrassment at his father’s pleasure (VZT, 65): ‘Denn er hätte ebenso gut sagen mögen: es ist schrecklich traurig. Es war ein Versagen der Worte, das ihn da quälte, ein halbes Bewußtsein, daß die Worte nur zufällige Ausflüchte für das Empfundene waren.’ (VZT, 65) He felt guilty at ‘jenenes Gefühles zu lügen’. Similarly Törleß is worried that each time he comes to ‘einer Brücke, einem Zusammenhange, einem Vergleich’ which serves to link the perceived silence with language and reason, he feels the accusation: ‘Du lügst’ (VZT, 65). He feels trapped in the labyrinth of his Verwirrungen, searching for an elusive doorway to understanding.

Törleß surrenders himself to his sense of ‘Einsamkeit’, of alienation

67 Kafka had a similar sense of the inherently paradoxical nature of being and the difficulty of representing reality: ‘Geständnis und Lüge ist das Gleiche. Um gestehen zu können, lügt man. Das was man ist kann man nicht ausdrücken, denn dieses ist man eben; mitteilen kann man nur das was man nicht ist, also die Lüge. Erst im Chor mag eine gewisse Wahrheit liegen.’ (Franz Kafka, Nachgelassene Schriften und Fragmenten in der Fassung der Handschriften, ed. by Jost Schillemeit, 2 vols (Frankfurt a. M.: Fischer, 1992), II, p. 348 (from 1920).) For Ulrich Gaier the essence of Kafka’s narrative style is the movement from deception to reality and the concomitant awareness of the dichotomy between communication and incommunicability (”Chorus of Lies”: On Interpreting Kafka’, GLL, 22 (1968-69), pp. 290-93). Similarly, Törleß’s confusions stem from an inability to communicate his sense of an underlying reality, which causes him to feel that to describe the world is also to lie about it.

68 Törleß describes his confusions as like being lost in a labyrinthine house: ‘Die Welt erschien ihm danach wie ein leeres, finsteres Haus, und in seiner Brust war ein Schauer, als sollte er nun von Zimmer zu Zimmer suchen, — dunkle Zimmer, von denen man nicht wußte, was ihre Ecken bargen, — tastend über die Schwel len schreiten, die keines Menschen Fuß außer dem seinen mehr betreten sollte, bis — in einem Zimmer sich die Türen plötzlich vor und hinter ihm schloß und er der Herrin selbst der schwarzen Scharen gegenüberstünde.’ (VZT, 24) On the labyrinth motif, see Erich Meuthen, ‘Törleß im Labyrinth’, DVLG, 59 (1985): 125-44. As many commentators have noted, the use of doors as a metaphor occurs frequently in the narrative. This may be seen to represent Törleß’s sense of occupying the threshold between rational and meta-rational understandings of reality. See for example the description of his letters home, where the thought of writing is like a ‘goldene[r] Schlüssel’ which will open ‘das Tor von wunderbaren Gärten’ (VZT, 9). As he tries to understand his mother in relation to Božena: ‘Die Nächte erschienen ihm wie dunkle Tore zu geheimnisvollen Feuern’ (VZT, 34). As he comes to terms with Basini’s duplicity, Törleß feels convinced ‘daß von der hellen, tätlichen Welt, die er bisher allein gekannt hatte, ein Tor zu einer anderen, dumpfen, brandenden, leidenschaftlichen, nackten, vernichtenden führe’ (VZT, 46). At first Törleß believes that the mathematics master will provide the ‘Schlüssel eines versperrten Gartens’ (VZT, 75). Similarly the narrator describes the act of reading Indian philosophy for Beineberg’s father as like stepping ‘durch eine heimliche Pforte in die Mitte auserlesener Erkenntnisse” (VZT, 19). Beineberg himself uses the image of the gateway in justifying his homosexual acts with Basini: ‘weil ich [...] des Glaubens war, daß die Sinnlichkeit
‘Der Himmel schwieg’, but unlike the time when he was alone in the woods as a child, ‘es schreckte ihn kaum mehr’ (VZT, 66). As he looks up at the wall of the school building, Törleß senses that his relation to reality has undergone a subtle transformation: ‘Sie schien sich über ihn gebeugt zu haben und ihn schweigend anzusehen. Von Zeit zu Zeit kam ein Rieseln herunter, und ein unheimliches Leben erwachte in der Wand.’ (VZT, 66) The silence of his surroundings is repeatedly emphasized: ‘das lebendige Schweigen umstand Törleß von allen Seiten’. Törleß surrenders himself to his experience of the world without attempting to rationalize his feelings. It is perhaps the closest Törleß comes to an integrated relation to his surroundings: ‘Törleß hörte das Schlagen seines Herzens. Dann kam wieder ein leises, flüstern des, versickerndes Rieseln..... Und diese Geräusche waren das einzig Lebendige in einer zeitlosen schweigenden Welt.....’ (VZT, 66) But as the sequence of dots indicates, the experience remains uncommunicated, beyond direct representation.

Törleß’s sense of silence as being endowed with an inexpressible form of life is a symptom of his dualistic view of reality. He feels that silence speaks a language which he cannot fathom: ‘Ich bin in der Aufregung eines Menschen, der einem Gelähmten die Worte von den Verzerrungen des Mundes ablesen soll und es nicht zuwege bringt.’ (VZT, 89) He believes that he has ‘einen Sinn mehr [...] als die anderen’, one which is not yet developed enough to describe his sensations, but which allows him to feel what others cannot: ‘Die Welt ist für mich voll lautloser Stimmen’

vielleicht das richtige Tor sein könnte’ (VZT, 116). Here as in other respects there is a superficial common purpose between Törleß and Beineberg. In these examples the sense of moving into another mode of understanding is apparent. On the notion that Törleß might mean ‘Türlos’, suggested by Lars Freij (‘Türlosigkeit’: Robert Musils ’Törleß’ in Mikroanalysen mit Ausblicken auf andere Texte des Dichters, Stockholmer germanistische Forschungen, 12 (Stockholm: Almquist & Wiksell, 1972)), see Lynda Hoffmann who claims it is merely a diminutive form of the name (‘Hinter verschlossenen Türen: Ist Törleß wirklich “Türlos”?’, Musil-Forum, 15 (1989): 5-17).
Törlöš’s confusion, which results from his attempt to integrate this dualistic perception of reality into his everyday life, seems confirmed by his understanding of mathematics. As the mathematics master later explains to his colleagues, Törlöš believes he has discovered ‘eine Lücke in der Kausalität unseres Denken’ (VZT, 135). Imaginary numbers in mathematics (the square root of minus one, for instance), figures which are logically impossible but which enable calculations to be made and which yield tangible results, ‘solide Zahlen’ (VZT, 74), offer support for Törlöš’s sense of a contiguous and occasionally overlapping realm of irrationality: ‘Ist das nicht wie eine Brücke, von der nur Anfangs- und Endpfeiler vorhanden sind und die man dennoch so sicher überschreitet, als ob sie ganz dastünde?’ (VZT, 74) There is ‘etwas Schwindliges’ about such calculations, as there is in incalculable values like pi or an unsolvable division sum, or the notion of parallel lines meeting at infinity (VZT, 73-74).


There is I believe a crucial ambiguity in the use of the phrase ‘etwas Schwindliges’, namely the play on the meanings dizziness and deceit. When Törlöš and Beineberg are in the Konditorei, Törlöš explains why he enjoys the lesson in religion: ‘Es gibt immer einen Punkt dabei, wo man dann nicht mehr weiß, ob man lügt oder ob das, was man erfunden hat, wahrer ist als man selber. [... ] Man weiß ja gewiß immer, daß man schwindelt; aber trotzdem erscheint einem selbst die Sache mitunter so glaubwürdig, daß man gewissermaßen, von seinen eigenen Gedanken gefangengenommen, stillsteht.’ (VZT, 22) He enjoys the frisson (‘Es geht einem so ein Ruck durch den Kopf, ein Schwindel, ein Erschrecken....’ (VZT, 23)) of Möglichkeit which theological arguments open up for him, the possibility of using wholly speculative arguments to prove metaphysical statements: ‘Ich glaube, wenn ich so recht im Zuge bin, könnte ich gerade so gut beweisen, daß zweimal zwei fünf ist, wie daß es nur einen Gott geben kann’ (VZT, 22). He no longer knows whether he is lying or merely dizzy with the twists of his rhetoric (‘eine Art, mit dem Gehirn zu turnen’ says Beineberg (VZT, 23)). Of course his friend does not understand Törlöš’s precocious delight in ambiguities and Möglichkeiten, just as he fails to understand Törlöš’s shock on realizing that the logical realm of mathematics is also underpinned by such schwindelig reasoning: ‘Für mich hat so eine Rechnung etwas Schwindliges; als ob es ein Stück des Weges weiß Gott wohin ginge.’ (VZT, 74). See also Törlöš’s use of the word to describe his
master with his problems, genuinely hoping for enlightenment, Törleß's objections are dismissed as transcendent factors (VZT, 76) which are of no significance to mathematics: 'Sie müssen sich damit zufrieden geben, daß solche mathematische Begriffe eben rein mathematische Denknotwendigkeiten sind.' (VZT, 77) He advises Törleß to 'glauben!' (VZT, 77). Here the mathematics master condemns metaphysics with one breath and justifies a priori concepts ('Denknotwendigkeiten') with the next. Later, in his Beitrag, Musil was to criticize Mach for exactly the same contradictory logic, namely the rejection of concepts such as force as being metaphysical and the subsequent introduction of a metaphysical epistemology based on the psychological imperative of Denkökonomie (see above). In their determination to offer wholly rational solutions, Mach and the mathematics master overlook the metaphysical implications of their own ideas. This paradox merely serves to confirm Törleß's belief in the underlying strangeness of reality and the insufficiency of rational solutions.

If the discipline of mathematics does not supply Törleß with the answers for which he is looking, then neither does philosophy. The mathematics master mentions Kant to Törleß as an example of the necessity of a priori 'Denknotwendigkeiten' in all modes of thought, indeed as a fundamental cognitive paradigm. He cautions the schoolboy Törleß against attempting to read the notoriously difficult works of the philosopher, a comment which only encourages the precocious Törleß to purchase a 'Reclamausgabe' of Kant (VZT, 80). But in spite of Kant's reputation 'als letztes

heightened state of awareness: 'das Gefühl seines Schwindels' (VZT, 90; cf. 'schwindelte' on same page). Contrast this with Beineberg's unambiguous use on p. 81. As with language, Törleß comes to understand that lying can be an integral part of descriptions of the world. Rational language can itself contain the seeds of a meta-rational explanation of reality. See also above, note 67.
Wort der Philosophie' (VZT, 78) the experience of reading his work is less than enlightening: ‘Aber vor lauter Klammern und Fußnoten verstand er kein Wort, und wenn er gewissenhaft mit den Augen den Sätzen folgte, war ihm, als drehe eine alte, knöcherne Hand ihm das Gehirn in Schraubenwindungen aus dem Kopfe.’ (VZT, 80) Indeed Törleß never manages to read the volume of Kant despite several attempts, at one point angrily throwing it to the ground (VZT, 95). It is clear that, unlike Mach, Törleß is unable to draw any creative stimulus from Kant's world-view (see above; cf. note 64). Indeed philosophy in general seems to be of little use to Törleß (VZT, 92) and instead he attempts his own empirical investigation of the problems of existence, entitled 'De natura hominum' (VZT, 88). But the little he is able to write concerning his sense of the strangeness of experiential reality seems to point to the fact that 'Ich muß krank sein, —, wahnsinnig!' (VZT, 88-89), and the words he writes on the page appear 'tot' like a row of 'Fragezeichen' (VZT, 93). The attempts which Törleß makes to find rational explanations seem doomed to failure, and yet he doggedly pursues the answer to his problem with the analytical fervour of a scientist. This impression is confirmed by the fact that Törleß is not tempted to accept Beineberg's irrational explanations of the world, although as I shall show, he does find inspiration in his friend's comments.

In Beineberg's description of his father, who was once an officer with the British army in India, the narrative presents a wholly negative image of a mystical, that is non-rational, world-view. Beineberg's father is imbued with the spirit of 'esoterischen Buddhismus' (VZT, 19). He reads books of Indian philosophy, regarding

71 Similarly the mathematics master sees Törleß's apparent discovery of a gap in the causality of mathematics as evidence that 'er hat Anlage zum Hysteriker' (VZT, 138). This, together with Törleß's own sense of his own mental instability, contributes to the theme of Törleß extending the limits of rational discourse.
them as supplying 'überirdische Offenbarungen': 'Wenn er las, wollte er nicht über Meinungen und Streitfragen nachdenken, sondern schon beim Aufschlagen der Bücher wie durch eine heimliche Pforte in die Mitte auserlesener Erkenntnisse treten.' (VZT, 19) His reading is uncritical and his books form a world of experience more tangible than reality itself, a hermetic world where texts are 'Offenbarungen, Wirkliches, — Schlüsselwerke wie die alchimistischen und Zauberbücher des Mittelalters' (VZT, 19). His sacred texts breed in him a scorn of Europeans (VZT, 19) and a sense of his superiority for serving 'einer unverstandenen Gottheit' (VZT, 20). Beineberg has inherited his father's mystical world-view and he is convinced of the ultimate supremacy of mind over matter, 'sich mittels ungewöhnlicher seelischer Kräfte eine Herrschaft sichern zu können' (VZT, 20). Like Törleß, Beineberg is a dualist, believing in an unseen realm of 'Seele' (VZT, 24) conterminous with the physical world. However, Beineberg fails to grasp the significance of the perspectivism which is the hallmark of Törleß's psychological understanding of the world, his sense of the unique viewpoint which reveals a reality which exists in parallel with rationality. Instead Beineberg's metaphysical ideas deny the importance of the material world and valorize the invisible, cosmic force of the 'Weltseele' (VZT, 56): 'Die wahren Menschen sind nur die, welche in sich selbst eindringen können, kosmische Menschen, welche imstande sind, sich bis zu ihrem Zusammenhange mit dem großen Weltprozesse zu versenken. Diese verrichten Wunder mit geschlossenen Augen, weil sie die gesamte Kraft der Welt zu gebrauchen verstehen' (VZT, 59). Like a medieval religious ascetic, he believes in the necessity of denying physical desires 'welche, ob sie nun Eitelkeit oder Hunger, Freude oder

72 See above, note 16, on Nietzsche's perspectivism.
Mitleid seien, nur von dem Feuer abziehen, das jeder in sich zu erwecken vermag' (VZT, 59). This rejection of sense-data as the foundation of knowledge is anathema to Törleß who is not seduced by his friend’s irrational, pathetische Sprache: ‘Beinebergs spekulative Auffassung behagte ihm nicht.’ (VZT, 24) In particular it is Beineberg’s attempt to dismiss natural and rational explanations of the world that annoy Törleß. Following Törleß’s fruitless visit to the mathematics master, Beineberg comments: ‘Alles geht natürlich zu, sagen sie [die Wissenschaftler]; — wenn ein Stein fällt, so sei das die Schwerkraft, warum soll es aber nicht ein Wille Gottes sein, und warum soll derjenige, der ihm wohlgefällig ist, nicht einmal davon entbunden sein, das Los des Steines zu teilen?’ (VZT, 82) Although Törleß, like Mach, questions the universal validity of mathematical concepts, this should not be equated with an anti-scientific world-view. Indeed such sceptical views of accepted scientific paradigms encouraged Einstein in his challenge to the Newtonian concept of gravity in 1915 (see above, note 27). Törleß is not however willing to consider wholly irrational explanations for his problematic relation to reality. In the context of German Geistesgeschichte, Beineberg personifies the speculative idealism of Romantic

73 Beineberg’s image of ‘schauerlichen Bußopfern erleuchteter Mönche’ (VZT, 59) has its correlative in the narrator’s descriptions of Törleß’s own feelings. Törleß’s homesickness is transmuted into an ‘egoistische[s] Leiden’, ‘das ihn in seinen wollüstigen Stolz einschloß wie in die Abgeschiedenheit einer Kapelle, in der von hundert flammenden Kerzen und von hundert Augen heiliger Bilder Weihrauch zwischen die Schmerzen der sich selbst Geißelnden gestreut wird’ (VZT, 9). Törleß’s attachment to the religious prince occasions in him feelings ‘etwa wie in einer abseits des Weges liegenden Kapelle’ (VZT, 11). The strange combination of religious and masochistic imagery seems embodied initially in Bozna who appears to the adolescent like ‘ein Geschöpf von ungeheuerlichen Niedrigkeit’, and the feelings he experiences with her like ‘ein grausamer Kultus der Selbstaufopferung’ (VZT, 30). As I shall show, these feelings are transferred by Törleß onto Basini, as are Beineberg’s sado-masochistic fantasies.

74 The narrator informs us concerning Beineberg: ‘Seine Gelassenheit und seine philosophische Salbung floßen fast allen Mißtrauen ein. Man vermutete garstige Exzesse irgendwelcher Art am Grunde seines Wesens.’ (VZT, 41) Basini describes Beineberg’s ideas as ‘Hokusokus’ (VZT, 102) and Reiting laughs openly at his classmate’s ideas, describing them as ‘verrückt’ and Beineberg as ‘angegriffen’ (VZT, 115-18). It is clear that Törleß shares these views, although Beineberg senses that he is receptive to his ideas, a fact indicated by his frequent attempts to convert Törleß to his way of thinking.
science, what has been described as Germany's Sonderweg in the history of ideas. Significantly, Törleß rejects this approach to epistemology: 'wenn mich die Mathematik quält, so suche ich dahinter ganz etwas anderes als du, gar nichts Übernatürliches, gerade das Natürliche suche ich' (VZT, 83). Törleß even affirms his faith in the logic of mathematics, in spite of the unsatisfactory explanations of the mathematics master: 'Ich habe nie bezweifelt, daß die Mathematik recht hat' (VZT, 81). It is precisely because Törleß is not tempted to reject the ideal of rationalism and the possibility of naturalistic explanations that he feels the urgent need to account for those lacunae in scientific discourse which his perceptual experience tells him are vital for a complete understanding of reality. Unlike Beineberg, Törleß seeks an explanation of the world which incorporates the unique perspective of the self within the realm of material being.

Although Törleß does not accept his friend's idealist explanation of his Verwirrungen, he does not wholly reject Beineberg's analysis. In spite of his rationalism, Törleß is drawn to metaphysical interpretations of reality. In his 'Heimweh' the narrator detects the stirrings of a 'seelische Kraft' (VZT, 9) something evinced by his first letters to his parents from the 'Konvikte zu W.' Similarly it is the 'Seele' of the prince, his association with silence and religion, which initially fascinate the young Törleß. And in Beineberg's attack on the dominant mechanistic

75 On Törleß's letters home as opening a door to a secret garden of experience (VZT, 9), see above, notes 60 and 68.
76 'Der junge Fürst H.' (VZT, 10) embodies some of the strange qualities which Törleß finds increasingly significant for his understanding of reality. His company was initially a 'Quelle eines feinen psychologischen Genusses' for Törleß as he attempts to describe the prince’s character and to understand what it is to be 'etwas Seelisch-Menschliches': a whole person (VZT, 11). In this dualistic formulation lies the key to Törleß's confusions. Initially he seems more concerned with the prince’s Seele than his physical characteristics. The 'Timbre seines Schweigens', the description of the prince as 'weibisch', the air of Frömmigkeit and 'Religiosität' that clings to the young aristocrat, these are the characteristics that contribute to his Seele. The narrator describes this process of understanding: 'als ob er, ohne sich Gedanken darüber machen zu können, mit dem Finger eine schöne, aber nach seltsamen Gesetzen verschlungene Arabeske nachzöge' (VZT, 11).
paradigms of science, it is the suggestion of an underlying reality conterminous to the
language of science that strikes a cord in Törleß:

Siehst du, man behauptet, die Welt bestünde aus mechanischen Gesetzen, an
denen sich nicht rütteln lasse. Das ist ganz falsch, das steht nur in den
Schulbüchern! Die Außenwelt ist wohl hartnäckig, und ihre sogenannten
Gesetze lassen sich bis zu einem gewissen Grade nicht beeinflussen, aber es hat
doch Menschen gegeben, denen das gelang. [...] Denn wem es ganz gelingt,
seine Seele zu schauen, für den löst sich sein körperliches Leben, das nur ein
zufälliges ist; es steht in den Büchern, daß solche direkt in ein höheres Reich
der Seelen eingingen. (VZT, 60)

As I have already suggested, Beineberg’s dualistic description of Basini encourages
Törleß to see Basini as an embodiment of the dichotomy inherent in the world: ‘All
das war nun in einem Menschen verkörpert, wirklich geworden.’ (VZT, 61; above,
ote 58.) For both Beineberg and Törleß, Basini is destined to play an important role
in the elucidation of this dichotomy and the role of Seele in life. It is a common cause
which Törleß finds shocking:

Dazwischen schüttelte er verwundert den Kopf, wenn er an Beinebergs Worte
dachte. Auch der...?
Er kann doch nicht dasselbe suchen wie ich, und doch fand gerade er die
richtige Bezeichnung dafür...
Törleß träumte mehr als er dachte. Er war nicht mehr imstande, sein
psychologisches Problem von Beinebergs Phantastereien zu unterscheiden.
(VZT, 61)

Outwardly Törleß criticizes Beineberg’s grotesque attempts to use Basini to prove
that Seele can break the ‘Fesseln der Naturgesetze’ (VZT, 122) but he also admits to a
grudging respect, feeling ‘daß Beinebergs Vorhaben zwar nur ein lächerlicher

The prince’s Seele is like an intricate pattern, in the language of contemporary psychology a
Gestalt (see above, note 43). But it is Törleß’s rationalistic nature that destroys this early
friendship: ‘Er überschüttete ihn mit dem Spote des Vernünftigen, zerstörte barbarisch das
filigrane Gebäude, in dem dessen Seele heimisch war’ (VZT, 12). As a result of this Törleß moves
towards the ‘wild und ungebändig’ friendship of Beineberg and Reiting (VZT, 12).
Hokus pokus sei, aber doch wenigstens etwas Festes und Überlegtes, während in ihm alles in undurchsichtiger Verwirrung lag.' (VZT, 119) In his epistemological and psychological confusions Törleß is willing to accept that even Beineberg’s fantasies might contain the key to the invisible order. This is a disturbing admission for it acknowledges Törleß’s complicity in the brutalization of Basini.

The exploitation and abuse of Basini by Reiting and Beineberg, and indirectly by Törleß himself, raises fundamental ethical concerns. The very uncertainty and ambiguity that is the essence of Törleß’s character sits uncomfortably beside the unambiguously inhuman behaviour described in the novel. However, before rushing to moral judgement, it behoves the critic to ask how a text situates the moral issue. As

77 Similarly Törleß senses a common cause before his intense experience of the depth of the blue sky and of infinity. As he lies staring up at the sky he is thinking of Beineberg, of how ‘sonderbar’ he is and of how his ‘Worte’ would be more at home in ‘einem zerbrockelnden indischen Tempel’ than ‘im modernen Europa’: ‘und doch schienen diese Worte, nachdem sie sich ewig lange, wie ein Weg ohne Ende und Übersicht in tausend Windungen hingezogen hatten, plötzlich vor einem greifbaren Ziel gestanden zu sein...’ (VZT, 62). Then he becomes aware of the blue sky which is constantly receding before his eyes, as if the ‘greifbare[s] Ziel’ is destined to remain eternally elusive. It will also be noted that Beineberg is present with Törleß in the Konditorei when Törleß experiences his recurring sense of ‘Schweigen, das wie eine Sprache ist, die wir nicht hören’ (VZT, 24), a key moment which is thematically linked with the experience in the school gardens.

78 On the controversy regarding the ethical status of Törleß, see Raleigh Whitinger’s excellent article ‘Törleß’ Moral Development: Reflections on a Problem of Musil-Criticism’ (MAL, 22 (1989): 19-34) which also includes a useful bibliography on this subject. More recently J. P. Stern has criticized the novel’s putatively uncritical stance towards the abuse of Basini: ‘The outward events of the story are used as a pretext for its psychological and philosophical purport’, an authorial ‘plan’ to ‘justify the main events of the novel’: ‘Not that young Törless’s actions, or those of his companions, receive any moral condemnation.’ For Stern the novel seeks to demonstrate the ‘spuriousness of all “scientific” knowledge’ and show that ‘true reality’ is to be found in the little secret torture room (The Dear Purchase: A Theme in German Modernism (Cambridge: Cambridge University Press, 1995), p. 76). I think it is apparent from my reading of the text that this is not the only possible interpretation of Törleß. Such remarks ignore the fact that Törleß explicitly does not reject mathematical or scientific knowledge, but rather he sees in it one aspect of a reality that must encompass the irrationality of the ‘Versteck’ if it is to be an adequate description of the world. As I shall show, Törleß is implicated in the abuse of Basini, but his involvement need not be seen as condoned by the narrative as some commentators imply. See also Martin Swales: ‘Even though the title refers to “confusions”, it is difficult to feel that the book makes any serious attempt to confront the moral issues which it raises.’ (Studies of German Prose Fiction in the Age of European Realism, Studies in German Language and Literature, 16 (Lewiston: Mellen, 1995), p. 165.) On this issue see Mattenklott, op. cit., Frederick G. Peters, Robert Musil: Master of the Hovering Life. A Study of the Major Fiction (New York: Columbia University Press, 1978), and David Turner, ‘The Evasions of the Aesthete Törleß’, FMLS, 10 (1974): 19-44.
I shall demonstrate, I believe the text does not condone Törleß’s ambivalence towards Basini’s suffering. Rather his lack of empathy is a symptom of the Verwirrungen in which Törleß is trapped, confusions which are, as the text suggests, at least partly due to the unbalanced educational environment in which he develops. The debate conducted in Törleß concerning epistemological uncertainty necessarily entails problems regarding ethics for, like science, this is an area which — unless a system of absolutes is posited — presumes the existence of a phenomenal world about which we can have reliable and shared knowledge.\(^79\) The notion that reality may be inherently indeterminate and our knowledge of the world relative and temporary presents a profound challenge to both science and ethics. Törleß’s sense of the innate Möglichkeiten in reality preclude him from making quick decisions, as has already been mentioned. His education at the ‘Institute’ has fostered in him a crucial ambiguity towards the world, ‘etwas Unbestimmtes’ (VZT, 14) in his character. Throughout the initial sections of the text, his relation to events and people is described in terms of a ‘tief innerlichen Gleichgültigkeit’ (VZT, 14).\(^80\) In a real sense Törleß has no character, no developed sense of himself as an individual, and the text describes his attempt to understand both reality and his response to it in terms of a continual organic development.\(^81\) It is my contention that Törleß is presented by the

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\(^80\) On the first page we read of the scene by the railway station: ‘Gegenstände und Menschen hatten etwas Gleichgültiges, Lebloses, Mechanisches an sich’ (VZT, 7). This is enforced later as Törleß walks back to the school: a ‘furchtbare Gleichgültigkeit’ seems to bring the mist with it across the fields (VZT, 16). Clearly this Gleichgültigkeit is at least partly a reflection of Törleß’s mood — it is his consciousness through which the narrator evokes the locale — an interpretation supported by the description of Törleß as ‘gleichgültig’ on p. 41. Here the Gleichgültigkeit seems to be a function of his sense of the inherent Möglichkeiten in all events.

\(^81\) Törleß’s development is frequently likened to that of a young tree. After he has overcome his homesickness, we read: ‘Er selbst fühlte sich dabei verarmt und kahl, wie ein Bäumchen, das nach der noch fruchlosen Blüte den ersten Winter erlebt.’ (VZT, 10) The confusions of adolescence are, it is suggested by the narrator, worse for ‘Jünglinge mit großer Zukunft’: ‘als ob sich ihre
text as the personification of a world rendered epistemologically uncertain and relative. Yet for both text and character, this is the point of departure and not the final destination. Törleß is attempting, with very little help from his educational environment, to understand the nature of existence at the beginning of the twentieth century. Intensely aware of both external reality and the experiential self, Törleß struggles to overcome dualism through a coherent approach to reality that seeks to integrate rational language with the subjective perspective. Ultimately however it is an attempt that fails, as I shall show, due to Törleß’s inability to escape the rationalistic approach to reality which his educational environment has inculcated in him.

It is through the example of Basini’s duplicity that Törleß learns most about the possibilities of human nature. Both Beineberg and Törleß view Basini as the involuntary subject in a quasi-scientific experiment. As soon as Basini’s crime is known to the three friends, he is symbolically placed under observation, ‘unter Kuratel gesetzt’ (VZT, 50). He is no longer a classmate but merely an object over which they have complete power. As has been said, Basini embodies (‘verkörpert’, VZT, 61) for Törleß his Verwirrungen. Törleß attempts a rational analysis of his feelings and his reactions to the perceived dichotomy in reality and human nature, but finds that this endeavour is thwarted by a feeling of uncertainty:

Sobald dieses unklare Gefühl sich geltend machte, verlor seine Aufmerksamkeit das Behagliche, mit dem man der Entwicklung eines wissenschaftlichen Experimentes zusieht. Ein körperlicher Einfluß schien dann von Basini auszugehen, ein Reiz, wie wenn man in der Nähe eines Wurzeln erst suchend senken und den Boden zerwühlen müßten, den sie nachher zu stützen bestimmt sind’ (VZT, 25). At the conclusion of the novel, we are told: ‘Eine Entwicklung war abgeschlossen, die Seele hatte einen neuen Jahresring angesetzt wie ein junger Baum’ (VZT, 131). These organic metaphors and similes are wholly in keeping with the era of Jugendstil (see above) and also serve to enforce the idea that the self has substance and is something that grows and develops like a body.
Weibes schlâft, von dem man jeden Augenblick die Decke wegziehen kann. Ein Kitzel im Gehirn, der von dem Bewußtsein ausgeht, daß man nur die Hand auszustrecken brauche. (VZT, 93)

With the failure of this overtly scientific attempt at analysing his problem, Törleß talks to Basini in the ‘Versteck’ in order to find out what he is doing in secret with Reiting and Beineberg. Basini refers to ‘ein Experiment’ which Beineberg conducts on him in order that he can ‘mit meiner Seele selbst verkehren’ (VZT, 101). Törleß is fascinated by the way Basini accepts Reiting’s and Beineberg’s abuse: ‘Aber du hast es auf Befehl getan. Du hast dich erniedrigt.’ (VZT, 103) Törleß cannot understand how Basini can appear outwardly as if nothing had happened. In order to understand this, he conducts his own experiment with Basini, ordering him to lie naked on the bare boards, tormenting him: ‘Ja, ich quäle dich.’ (VZT, 104) Törleß describes to Basini how he could degrade him, attempting to see for himself the strange reality beneath the familiar, normal appearance of things:

Wenn ich all das wie Messer in dich hineinstoße, was ist in dir? Was vollzieht sich in dir? Zerspringt etwas in dir? Sag! Jäh wie ein Glas, das plötzlich in tausend Splitter geht, bevor sich noch ein Sprung gezeigt hat? Das Bild, das du dir von dir gemacht hast, verlöscht es nicht mit einem Hauche; springt nicht ein anderes an seine Stelle, wie die Bilder der Zauberlaternen aus dem Dunkel springen? (VZT, 104)

By making Basini lie naked on the bare boards, Törleß is acting out his own autoerotic fantasy which he first imagines whilst listening to the sound of Reiting and Beineberg beating (and possibly raping) Basini: ‘Es trieb ihn, seinen Leib gegen die Dielen zu pressen; er fühlte, wie seine Augen groß werden würden wie die eines Fisches, er fühlte durch den nackten Leib hindurch sein Herz gegen das Holz schlagen.’ (VZT, 70) As a result of this fantasy ‘erkannte Törleß, daß er sich in einem
Zustande geschlechtlicher Erregung befand' (VZT, 70). Thus in the later episode in the 'Versteck', Basini acts as a surrogate self for Törleß, suffering the humiliations which Törleß has imagined himself enduring. Basini becomes in effect the dehumanized object of an experiment into the possibilities of human character and Seele (see above, note 61). The result of this experiment, and the answer to the question which Törleß asks of Basini, is: 'Wenn du in meiner Situation wärest, würdest du geradeso handeln' (VZT, 104). This seems to offer Törleß objective confirmation of the inherently dualistic basis of reality and human nature: like the Janus-head, people and phenomena have (at least) two aspects.

This exploitation of a human being as a subject in a quasi-scientific experiment is clearly disturbing. Todd Kontje has alluded to Törleß's alienation from concepts and language and also his role as a 'detached but extremely interested observer' during the mistreatment of Basini.82 For Kontje, 'Törleß's conflict is not one between mystical experience and thought, but an attempt to escape from the all-encompassing world of language through language to some other, dreamed of, but never present reality.' (p. 249) In this post-structuralist interpretation, the attempt to 'escape from the prison of language, consciousness, and convention' is doomed to failure (ibid.). I would suggest however that such interpretations merely reflect the dilemma of which Törleß is painfully aware. For Kontje, Törleß's 'epistemological crisis' is an illusion because 'the dualism of experience vs. consciousness is misleading to the extent that reality or experience simply do not exist as concepts for us outside of our conventional means of apprehending them' (p. 249). Kontje proposes a Derridean interpretation of the text, according to which the myth of

metaphysical presence becomes the real source of Törleß's *Verwirrungen*. Similarly, Mach's monistic world-view denies the validity of all questions which posit a noumenal realm beyond sense-impressions. One view discounts Törleß's confusions on the grounds that the self is an illusion and that all understanding is reducible to sense-data. The other rejects his *Verwirrungen* because experience is always already language and the self is merely a function of discourse. I would argue that the text does engage with the Machist view especially as regards the role of concepts and sense-impressions in ontology. But the post-structuralist view, by discounting the context of assumptions and anxieties within which the text is rooted, fails to do justice to the crucial concerns of the narrative. That Törleß is aware of the role of language in conditioning and limiting psychological responses is clear from his realization of the limits of mathematical terms such as infinity (see above). It is equally clear that Törleß is keenly aware of the importance of sense-impressions, as his intense experience of physical phenomena proves. But it is his inexpressible feeling that these two aspects of reality are not by themselves sufficient to describe the experience of being in the world that motivates Törleß and gives rise to his *Verwirrungen*. To isolate one aspect as ontologically definitive is to negate the liminality which is the underlying aesthetic and thematic principle of the text. Törleß is searching for an understanding of life which includes scientific, philosophical and psychological views, a monistic explanation that does not deny the perspectivism of the psychological subject but which is pluralistic rather than partial in its account of reality. As I have suggested, the text challenges the validity of both sensationalist and

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83 As examples of this, one could cite the experience of silence in the garden of the Konditorei (*VZT*, 9-10), the experience of the depth of the sky and the subsequent heightened awareness of the wall and garden (*VZT*, 62-66), his fascination with the dust in the lamp-light (*VZT*, 70), and his sense of the 'tierisch' presence of the students in the classroom (*VZT*, 90-91), amongst others.
language-based approaches to the problems of epistemology and ontology. Törleß’s fundamental conviction of the reality of the Ich and the problematic moral dilemmas raised by his Verwirrungen highlight the insufficiency of such reductionist interpretations. In view of this it is necessary to try to account for Törleß’s role in the abuse of Basini.

As Hiebert and others have shown, science at the beginning of the twentieth-century was engaged in a progressive disciplinary fragmentation. This is a process which has continued throughout the twentieth century and is an institutional reflection of an approach to reality which is analytical and mechanistic rather than holistic.\(^8^4\) Törleß sees himself, as has been shown, as fundamentally rationalistic, actively countering both the prince’s beliefs and Beineberg’s mysticism, despite his own difficulty in accounting for these aspects of reality. At the beginning of the twentieth century there was also a revival of irrationalist approaches to life (see above; cf. Blasberg, pp. 100-26). The return to Romantic idealism at this time can be seen as indicative of the wide-spread perception of the limitations of nineteenth-century mechanistic science.\(^8^5\) Kontje rightly criticizes the inadequate treatment in secondary literature of the ethical dilemmas raised by the text, and sees the brutality of the novel as revealing the dark forces beneath the veneer of society (p. 251). Whereas Reiting and Beineberg are interested primarily in controlling others, Törleß ‘observes

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\(^8^4\) On the specialization that has come to typify modern science, see Schwartz, *The Creative Moment*, especially pp. 175-200. Similarly, see Hiebert, pp. 238-40. See also Chapter 1 of this thesis.

\(^8^5\) According to Luft, the generation of 1905 including Proust, Jung, Thomas Mann and Hesse, inherited a ‘more modest and specialized vision of science and reason’ (p. 14). According to Emter: ‘Begriffe wie Unstetigkeit, Wahrscheinlichkeit und Wechselwirkung mit den Meßinstrumenten, die aufgrund der Erkenntnisse der Quantenmechanik in die physikalische Betrachtung eingeführt werden mußten, lassen erkennen, daß der Optimismus, der die Naturforscher im 18. und 19. Jahrhundert noch zum Traum vom Laplaceschen Dämon animierte, merklich gebremst wurde, auch wenn er nicht ganz erloschen ist.’ (p. 59) See also Fick, pp. 11-13, and the beginning of this Chapter.
violence in the hope that it will free him from the constraints of human consciousness', a futile hope, according to Kontje, which merely serves to confirm the violence inherent in the social order (p. 252). Violence is indeed implicit in the school and its individual classes, which as the text tells us are smaller versions of states (VZT, 41). As I shall demonstrate, the narrator suggests that Törleß's behaviour regarding Basini can be explained by the limited educational environment in which he develops (VZT, 12-13). It is a school which concentrates on rational and physical subjects such as mathematics and sports rather than literature. The very paucity of humane and cultured forms of life clearly contribute to Törleß's lack of empathy or ethical direction. Indeed in the very fragmentation of Törleß's response to reality, one can see a reflection of the limited and one-sided view of reality offered by a science still dominated by a mechanistic world-view. Thus Törleß is himself part of the problem: he is a symptom of a wider cultural malaise apparent to the narrator but invisible to the protagonist.

Although Törleß opposes irrationalism, he is instinctively drawn to Beineberg's way of expressing his view of reality. In Törleß and Beineberg we see the expression of epistemological problems which lie at the heart of the philosophy of science, problems which Mach attempted to resolve but to which he himself fell victim. As Mary Jo Nye has said:

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86 I would also suggest that Törleß feels a sexual attraction to Beineberg, albeit one that he suppresses. In the Konditorei Törleß observes his friend: 'Diese schmalen dunklen Hände [...] waren doch eigentlich schön'. His 'magere Finger' and dark-brown eyes have 'eine gewisse Vornehmheit', and although his features resemble a bat, it is the 'vorzüglicher' characteristics which he finds strangely unsettling (VZT, 20). Törleß imagines his friend without clothes and sees a body contorted 'wie man es in allen Darstellungen des Martyriums [...] finden kann'. He feels that his hands ('das schönste an Beineberg') 'hatten etwas Unzüchtiges an sich' and he senses 'das Vorgefühl einer Berührung' (VZT, 21). Törleß is shocked at his own imagination: it is the second time that day that 'etwas Geschlechtliches' has entered his thoughts, the first being the confused sexual feelings provoked by the walk through the village.
Some matters of epistemological discussion and debate have been perennial issues since the seventeenth century: whether the basis of knowledge lies in sensation or ideas, in facts or theories, in a correspondence between concepts and the world or in successive theories leading to a coherent picture of the world. (Introduction to Nye, Richards and Stuewer, *The Invention of Physical Science* (1992), p. xxv.)

These problems are, as Nye says, perennial and are not resolved adequately by resorting to reductionist arguments that approach epistemology through either sensationalism or linguistics. Törleß is caught in the *Verwirrungen* created by an unbalanced environment: a rationalistic and militaristic educational system. His confusions represent the interrelation of responses to reality in early twentieth-century society: he acknowledges Beineberg's irrational and mystical responses while also espousing rational and scientific values. Törleß's rationalistic approach to life takes as its role-model the ideal of the objective and distanced observer, the notion of the scientist as Spectator, something we have considered in relation to previous texts, most notably Büchner's *Woyzeck*. Throughout the text, Törleß rigorously obeys this Cartesian paradigm of scientific methodology, observing his own reactions, thought processes and memories for clues to the origin of his confusion.\(^7\) This meta-

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\(^7\) In Musil's early literary sketch *monsieur le vivisecteur* (see above, note 51) the first person narrator describes his pleasure in being 'mein eigener Historiker', a situation he compares to that of a 'Gelehrte' 'der seinen eigenen Organismus unter das Mikroskop setzt und sich freut sobald er etwas neues findet' (*Tb* i, 3). As has already been noted, *monsieur le vivisecteur* was clearly written in the shadow of Nietzsche, amongst others (see Webber, 'Reality as Pretext', p. 33). In *Die fröhliche Wissenschaft* (Book IV, no. 319), Nietzsche states: 'Aber wir, wir Anderen, Vernunft-Durstigen, wollen unseren Erlebnissen so streng in's Auge sehen, wie einem wissenschaftlichen Versuche, Stunde für Stunde, Tag um Tag! Wir selber wollen unsere Expérimente und Versuchs-Thiere sein.' (Colli and Montinari, eds, *Werke* (1967- ), v.2: *Idyllen aus Messina, Die fröhliche Wissenschaft, Nachgelassene Fragmente, Frühjahr 1881 bis Sommer 1882* (1973), p. 231. See also Le Rider, p. 300.) See Musil's first references to *Die fröhliche Wissenschaft*: *Tb* i, 19. As part of his project to describe his own experiences, for which purpose he begins to write his book 'De natura hominum', Törleß decides 'so oft als möglich, immer und immer wieder die Situationen zu suchen, welche für ihn so eigentümlichen Gehalt in sich trugen' in order to observe his own psychological and physical responses. This attempt is described as 'ein[] wissenschaftliche[s] Experiment[]' (VZT, 93). On Musil and Nietzsche, see also Deutsch, p. 34 and above, note 16.
perspective which TörléB adopts is embodied in his relationship with Basini. For TörléB, Basini represents a parallel self, the embodiment of his own half-understood sexual fantasies. Ultimately TörléB’s role as Spectator is repeated by the unnamed narrator, who can be seen as the adult TörléB, a Dichter who retrospectively analyses and dissects the adolescent’s thoughts. By depicting TörléB’s exploitation of a fellow human being for the purposes of self-understanding in a way that emphasizes the callousness of his so-called rationality, I believe the text thematizes the failure of nineteenth-century scientific approaches to the world.

According to James Hawes, TörléB represents a misunderstanding of the Nietzschean concept of the role of suffering in aesthetic self-knowledge. For Nietzsche it is the individual that must endure the suffering in order to attain the understanding of self that leads to true artistic perfection. What makes TörléB’s distanced view of Basini morally objectionable is precisely the fact that he observes someone else suffering rather than enduring it himself (Hawes, *Nietzsche and the End of Freedom*, pp. 70-71). 88 Within the context of the reception of Nietzschean ideas, this is a valid point. However, it is my contention that TörléB’s status as Spectator is integral to his role as the personification of the scientific logos, an attitude that is based on a lack of empathy and a fundamental separation of the observer from the immediacy of the life-world. TörléB’s voyeuristic observation of Basini’s abuse is symptomatic of his Verwirrungen. That there is a sexual element in TörléB’s relationship to Basini is undeniable and it is the sexuality of the onlooker — voyeurism. The text confronts an area crucial to any adolescent’s definition of

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88 Hawes comments: ‘TörléB is allowed to maintain a safe distance from the highly physical reality of the vileness in which he co-operates (his contribution to the torture, which delights his accomplices, is mental) — yet we are clearly supposed to accept that TörléB has genuinely experienced something.’ (p. 66) See also above, note 15.
selfhood in a way which highlights Törleß’s particular problematic relationship to reality.

At the beginning of the narrative we read concerning Törleß that ‘die beginnende Geschlechtsreife fing an, sich dunkel und allmählich in ihm emporzuheben’ (VZT, 12). The narrator then contrasts the experience of puberty within a Gymnasium with that of a pupil at the Institute: ‘In seinem Alter hat man am Gymnasium Goethe, Schiller, Shakespeare, vielleicht sogar schon die Modernen gelesen. Das schreibt sich dann halbverdaut aus den Fingerspitzen wieder heraus.’ (VZT, 12-13) According to the narrator this process of expressing the confusions of adolescence through ‘von außen kommenden Assoziationen und erborgten Gefühle’ helps young people across ‘den gefährlich weichen seelischen Boden dieser Jahre’ (VZT, 13). Even if the books they read have little lasting effect on their lives, they can be profoundly helpful at this stage of their development: ‘die Gefahr besteht nur in dem Alter des Überganges’. However ‘diese Illusion, dieser Trick zugunsten der Entwicklung’ is absent from the Institute (VZT, 13). For although its library probably had the classics, they were viewed as boring and apart from these only ‘sentimentale Novellenbände und witzlose Militärhumoresken’ were available to Törleß (VZT,

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89 See Sibylle Mulot’s discussion of the types of school in the period when Musil was at the Militär-Realschule at Mährisch-Weißenkirchen (pp. 16-40). According to Mulot, during Musil’s time at Eisenstadt and Mährisch-Weißenkirchen no ‘Zivillehrer’ was appointed (p. 34). Literature and art played an extremely limited role, serving to emphasize ‘patriotisch-militärisch[]’ qualities: ‘glühenden Patriotismus’ and ‘Kaisertreue’ (p. 35). Mulot notes: ‘Die mangelnde wissenschaftliche und pädagogische Qualifikation der Lehrer und die Einseitigkeit des Literaturunterrichts bekamen durch den Internatsbetrieb besonderes Gewicht. Zehn Monate im Jahr wurden die Zöglinge im Internat unterrichtet. Alle kulturellen Anregungen, die eine größere Stadt den externen Zivilschülern bieten konnte (Zeitschriften, Buchhandlungen, Ausstellungen, Theater, Museen, Bibliotheken etc.), fehlten.’ (p. 35) Johannes von Allesch saw his friend Musil’s rationalism as stemming principally from his education at the Militär-Realschule (see Allesch, ‘Robert Musil in der geistigen Bewegung seiner Zeit’, in Dinklage, Robert Musil (1960), pp. 133-42; cf. Mulot, p. 37). It is ironic in view of the events described in the novel that the narrator should describe the isolated situation of the school as ‘wohl um die aufwachsende Jugend vor den verderblichen Einflüssen einer Großstadt zu bewahren’ (VZT, 8).
His desire for a form which enables him to comprehend the confused emotions within himself leads Törleß to befriend Beineberg and Reiting who, together with Moté and Hofmeier, are ‘die übelsten seines Jahrganges’ (VZT, 12). They are ‘bis zur Roheit wild und ungebärdig’. His ‘eigene. Unselbständigkeit’ and ‘Angst vor allzu subtilen Empfindeleien’ lead him to seek the company of these boys who, the narrator describes ironically, seem ‘gesund, kernig und lebensgerecht’ (VZT, 12).

At this stage, Törleß’s immaturity is emphasized: ‘Es schien damals, daß er überhaupt keinen Charakter habe.’ (VZT, 13) In contrast to his older friends, he is shy in sexual matters. As they walk past the village-girls, Törleß does not engage in the ‘übermütigen, frühreifen Männlichkeit seiner Freunde’:

Der Grund hiezu lag wohl teilweise in einer gewissen Schüchternheit in geschlechtlichen Sachen, wie sie fast allen einzigen Kindern eigentümlich ist, zum größeren Teile jedoch in der ihm besonderen Art der sinnlichen Veranlagung, welche verborgener, mächtiger und dunkler gefärbt war als die seiner Freunde und sich schwerer äußerte. (VZT, 17)

It is not that he is unaware of sexual impulses but rather that he does not understand his own sexuality. In fact he is intensely aware of sensual experience and as they walk

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90 Törleß’s parents view literature as a bourgeois status symbol to be displayed behind ‘grünen Scheiben’ but never read (VZT, p. 78; cf. above, note 57). The text relates this negative attitude towards literature and philosophy directly to Törleß’s confusions: he is disoriented, ‘seines Ziels beraubt’ and his attempt to orientate himself occurs ‘unter dembrutalen und entschlossenen Einfluß seiner Gefährten’ (VZT, 79). It is significant that the prince, who with his femininity and association with Seele clearly represents qualities opposed to the atmosphere in the Institute, dislikes the school and soon leaves (VZT, 12; see above, note 76).

91 Similarly: ‘In seinen Kameraden war es die Freude am Sport, das Animalische, welches sie eines solchen gar nicht bedürfen ließ, so wie am Gymnasium das Spiel mit der Literatur dafür sorgt.’ (VZT, 14) Törleß is however ‘zu geistig angelegt’ for sport, yet ‘das Leben im Institute’ with its ‘Streitigkeiten und Faustkämpfen’ breeds in him a scorn of literature. This produces in him an uncertainty and helplessness ‘die ihn nicht zu sich selbst finden ließ’ (VZT, 14).

92 On Törleß’s Gleichgültigkeit, see above, note 80. The text states that: ‘Im Institute endlich hatte man noch keine Kenntnis vom Leben und keine Ahnung von allen jenen Abstufungen von Gemeinheit und Wüstheit’ of which the external adult world is aware. Törleß is ‘förmlich naiv’, lacking ‘die ethische Widerstandskraft’ which was later a feature of his character. His actions result ‘nicht aus Perversität, sondern infolge einer augenblicklich ziellosen geistigen Situation.’ (VZT, 114) Similarly Törleß’s life at the school is described as a ‘Larvenexistenz’ (VZT, 41). See also the use of organic metaphors, above note 81.
through the village, although he is silent, his ‘Seele’ is ‘aufgewühlt und von wirklicher Schamlosigkeit gepeitscht’ (VZT, 17). He stares ‘mit so brennenden Augen’ into the peasants’ homes. He sees how ‘die fast nackte Kinder wälzten sich in dem Kot der Höfe’, how ‘die Kniekehlen’ of a woman at work are exposed and the way ‘eine schwere Brust [drückte sich] straff in die Falten der Leinwand’. Törleß perceives a ‘tierische drückende Atmosphäre’ and he inhales ‘begierig’ the ‘träge, schwere Luft’ emanating from the homes of the villagers (VZT, 17). He senses an imminent experience of ‘furchterlicher, tierischer Sinnlichkeit; das ihn wie mit Krallen packe und von den Augen aus zerreißt’, an experience that is connected ‘mit den schmutzigen Kitteln der Weiber, mit ihren rauhen Händen, mit der Niedrigkeit ihrer Stuben, mit ... mit einer Beschmutzung an dem Kot der Höfe’ (VZT, 17-18). This description of Törleß’s feelings as he passes the homes of the peasants is a symptom of his Verwirrungen, revealing the confusion of sexuality with animality, with dirt and with the baseness (‘niedrig’, VZT, 17) of the peasant women.

Törleß’s feelings towards Basini are similarly confused. When, after bidding farewell to his parents, he visits the prostitute Božena with Beineberg, the narrator describes Törleß as feeling ‘wie ein kleines unsauberes Tier’ (VZT, 32).93 Similarly, when he informs his parents of Basini’s crime, ‘er erwartete von ihnen eine strenge, angewiderte Beurteilung Basinis, eine Art, denselben mit den Fingerspitzen wegzuschneiden wie ein unsauberes Insekt, das man in der Nähe ihres Sohnes nicht

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93 As in Törleß’s experiences in the village, the theme of animality is invoked repeatedly throughout the text. His parents love Törleß with a ‘gedankenlosen, tierischen Zärtlichkeit’ (VZT, 10). As he lies awake at night tormented by his Verwirrungen, Törleß listens to the ‘gesunden, tierischen Schlaf’ of his classmates in the dormitory (VZT, 84). Then, as he sits in the classroom he becomes aware of the ‘tierischen Wärme’ emanating from the other students (VZT, 88; repeated on p. 91). In connection with the ‘viehische Lust’ he feels towards Basini (VZT, 69) it seems undeniable that animality and physicality — qualities which he attributes to others but not himself (see above, note 93) — express the attempt to understand his sexual feelings and to himself experience this animality. On this theme, see Hawes, pp. 59-61.
Here I believe is direct evidence of Törleß’s identification with Basini through the narrator’s use of similar tropes relating to a sense of animality and shame. Indeed Basini is repeatedly associated with animality to emphasize his perceived Niedrigkeit. When Törleß suggests Basini be made to say aloud that he is a thief, the other two force Basini to say: ‘Ich bin ein Tier, ein diebisches Tier, euer diebisches, schweinisches Tier!’ (VZT, 72) As he listens to the sound of Beineberg and Reiting whipping Basini, Törleß feels ‘eine viehische Lust mit hinzuspringen und zuzuschlagen’ (VZT, 69). When he is left alone at the school during the holiday with Basini, Törleß ‘hätte [...] beinahe Basini überfallen’ and he feels ‘eine mörderische Sinnlichkeit’ towards the older boy (VZT, 96). When they meet in the ‘Versteck’ at night for the first time alone, the language which Törleß uses to describe Basini is significant: ‘Du hast dich erniedrigt. So, wie wenn du in den Kot kriechen würdest, weil es ein anderer will’ (VZT, 103). And, as has already been pointed out above, Törleß makes Basini perform his own sexual fantasy of lying naked on the floor boards: ‘Siehst du, jetzt liegst du nackt vor mir auf der Erde. [...] Ich könnte dich bellen lassen, wie es Beineberg getan hat, den Staub auffressen lassen wie ein Schwein’ (VZT, 104). This represents the culmination of Törleß’s experiment into the limits of his own personality, an experiment which Törleß hopes will solve both his epistemological and psychological confusions.

That Törleß consciously exploits Basini as an alter ego is clear from the moment he learns of Basini’s crime. Immediately Törleß sees a relation between his

94 Similarly Basini is associated with the image of a worm: see Beineberg’s description VZT, 56, and the description of the blood on Basini’s face as like a worm (VZT, 72). On the worm as a ‘phallic fetish’ see Webber, Sexuality and the Sense of Self, pp. 125-31.
95 Compare the use of ‘peitschen’ here and VZT, 17, to describe Törleß’s confused sensuality.
96 Webber has also described Basini as Törleß’s ‘Doppelgänger’ (Sexuality and the Sense of Self, p. 121).
own imaginings and Basini’s behaviour, in particular as regards the confused emotions both boys feel towards Božena:


As Törleß is himself aware, his relation to Božena is permeated with complex and confused emotions, as are his feelings for the peasants. The sense of Erniedrigung occasioned on his weekly visits to Božena, the fear of being humiliated by the local youths, seems to outweigh the desire to meet a member of the opposite sex: ‘Aber das war es! Nur das! Nichts anderes! Diese Angst, dieses Sichaufgeben lockte ihn jedesmal von neuem. Dieses Heraustreten aus seiner bevorzugten Stellung unter die gemeinen Leute; unter sie, — tiefer als sie!’ (VZT, 30) His visits to Božena combine those masochistic elements — the possibility of Erniedrigung, the confusion of sexuality with dirt and animality — which so attract Törleß to the peasants:97

Božena erschien ihm als ein Geschöpf von ungeheuerlicher Niedrigkeit und sein Verhältnis zu ihr, die Empfindungen, die er dabei zu durchlaufen hatte, als ein grausamer Kultus der Selbstopferung. Es reizte ihn, alles zurückzustellen, worin er sonst eingeschlossen war, seine bevorzugte Stellung, die Gedanken und Gefühle, die man ihm einimpfte, all das, was ihm nichts gab und ihn erdrückte. Es reizte ihn, nackt, von allem entblößt, in rasendem Laufe zu diesem Weibe zu flüchten. (VZT, 30)

Basini replaces Božena in Törleß’s adolescent fantasies and becomes for Törleß the personification of his own desire for self-humiliation and for ‘Schweinereien’ (VZT, 97

97 In keeping with the tropes of animality, Božena’s attractiveness to the bourgeois men in the city is enhanced by the ‘Parfum’ of the ‘Kuhstallduft’ (VZT, 28-29).
Basini becomes for Törleß the embodiment of one of the many Möglichkeiten which he senses in reality.

That Törleß behaves as a spectator, as a voyeur, during the abuse of Basini cannot be denied. The function of this within the narrative is, as I have suggested, to represent the problematic notion of the distanced, scientific observer. Törleß, the representative of rationalism — albeit a rationalism that is critically aware of its own limits — is as much implicated in the abuse of Basini as is the manipulative Reiting, or Beineberg with his pseudo-religious metaphysics. Törleß’s Verwirrungen are symbolic of a scientific world-view which has become untenable in a world beginning to uncover the complexities of the human subconscious and of subatomic physics. The abuse of Basini is a manifestation of the old world-view, one from which Törleß is attempting to liberate himself. It is in this context that the epistemological and psychological confusions of Törleß must be viewed. The text posits a view of selfhood opposed to the notion of the individual as a rational, stable self, whose knowledge of the world and role in it can be taken for granted. The self is presented as inherently malleable and fluid, responsive to its environment and early sensual influences, but a real self nonetheless which develops through time. It is a psychological view of humankind which conflicts with somatic views, such as phrenology (see Chapter 3 of this thesis), which saw people as fixed entities wholly.

98 This is the term used by Beineberg to describe the previous incident of homosexuality at the school. It will be remembered that Beineberg also makes Basini ‘grunzen wie ein Schwein und wiederholt mir in einem fort, ich habe etwas von diesem Tiere in mir’ (VZT, 102).

99 Webber describes Törleß as a voyeur, commenting that in the scene of Basini’s brutalization by Beineberg and Reiting, ‘Törleß is literally beside himself, split by self-scrutiny into the double personae of voyeur and exhibitionist. As his own image is substituted for that of Basini, he assumes the postures of the victim’s role. [...] He is then drawn down to the floor in imitation of the prostrate victim [...]. Törleß enacts in parallel the scene of Basini’s torment as both actor and spectator, submitting to a desire which is his own, but which, in accordance with his split, comes with the look “von der Seite her”’. (Sexuality and the Sense of Self, p. 113; citing from VZT, 70.) It is, however, important to emphasize that Törleß does not in fact ‘enact’ anything at this point but, as I have shown, he imagines himself into the role of Basini.
determined by material nature. In Törleß the protagonist is mercurial, even insubstantial, and yet powerfully aware of sensual stimuli: an uneasy combination of the psychological and physical. Törleß, as the text repeatedly emphasizes, is in a transitional state, caught in a liminal realm between psychological and physical understandings of the world. The two orders of being appear mutually exclusive to Törleß, but the implied reconciliation between these modalities is clear. The text envisages a bringing together of Seele and Vernunft, subject and object, which is not restricted by artificial barriers between discourses: an idealist and even utopian union of physical and mental realms. It is an objective wholly in keeping with the climate of opinion at this time, which, as I have said, was organicist and interdisciplinary in character.

Törleß’s account of his behaviour regarding Basini which he is called upon to give before the headmaster, represents a summary of his Verwirrungen and his understanding of them. The teaching staff are however unaware of the abuse of Basini. As a justification of his actions, Törleß’s statement is ultimately

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100 Warner Berthoff comments: ‘Metaphors of “boundary situations,” “borderline experiences,” “invisible frontiers” of understanding, openings into the incommensurable, unbridgeable gaps within what is nevertheless a perpetually moving series, are a constant in Musil’s writing.’ (Literature and the Continuances of Virtue (Princeton, NJ: Princeton University Press, 1986), pp. 181-82.)

101 Even the usually fixed biological categories of sex are broken down within the context of epistemological uncertainty created by the narrative. As has been said, the prince is described as ‘weibisch’ (VZT, 11). Similarly, Basini is repeatedly described as being ‘weibisch’ (VZT, 50, 100), his body like the ‘von allem Geschlechtlichen noch fernen Formen eines ganz jungen Mädchens’ (VZT, 109). Törleß, too, represents a liminal sexuality, recalling a ‘ganz unaussprechliche Sehnsucht [...] ein Mäderl zu sein’. He cannot understand why he must remain a boy but is unable to express this transsexual sense of self (VZT, 86). For Törleß, girls carry within themselves the answer to the confusions he experiences: they can ‘jeden Augenblick in irgendein furchtbar tiefes Versteck in dem kleinen Körper zurückziehen’ (VZT, 86). By challenging divisions between male and female, rationality and irrationality, the text opens the way for a new approach to reality. See also Meuthen, p. 142. For Aurnhammer the theme of Geschwisterliebe in Der Mann ohne Eigenschaften is part of an attempt to find a reintegrated notion of self (microcosm) and world (macrocosm): ‘Robert Musils Roman Der Mann ohne Eigenschaften stellt den anspruchsvollsten Versuch der Moderne dar, das Androgynie-Ideal im Geschwistermythos zu erneuern.’ (pp. 285-97; here 283.) See also above, note 59.
unsatisfactory. Indeed, during the interview Törłeß is unable to offer an explanation for his failure to report Basini. For the reader who is aware of the extent of Törłeß’s complicity in Beineberg and Reiting’s brutalization of Basini, Törłeß’s actions, although abhorrent, have to be understood within the context of the literary text created by the narrator. In his account Törłeß emphasizes the dichotomy between rational thought or language and an inner realm of experience which is beyond the former category. He describes this duality in terms of living and dead thoughts:

es gibt tote und lebendige Gedanken. Das Denken, das sich an der beschierten Oberfläche bewegt, das jederzeit an dem Faden der Kausalität nachgezählt werden kann, braucht noch nicht das lebendige zu sein. [...] Eine große Erkenntnis vollzieht sich nur zur Hälfte im Lichtkreis des Gehirns, zur andern Hälfte in dem dunklen Boden des Innersten, und sie ist vor allem ein Seelenzustand, auf dessen äußerster Spitze der Gedanke nur wie eine Blüte sitzt. (VZr, 136-37)

This way of viewing reality undermines the notion of the unchallengeable validity of rationality. Although Törłeß is careful not to question the logic of mathematics concerning imaginary numbers (‘ich weiß zu wenig von ihnen’, VZT, 137), suggesting that mathematics has an internal necessity that justifies their use, he is clear that rationality is distinctly limited in the world that he experiences: ‘Ich irrte aber nicht bei Basini, ich irrte nicht, als ich mein Ohr nicht von dem leisen Rieseln in der hohen Mauer [...] abwenden konnte. Nein, ich irrte mich nicht, wenn ich von einem zweiten, geheimen, unbeachteten Leben der Dinge sprach!’ (VZT, 137) It is not, he adds, that things have two lives, but that the Janus-head is within himself, ‘daß etwas in mir beim Anblicke der Dinge lebt, wenn die Gedanken schweigen. Es ist etwas Dunkles in mir, unter allen Gedanken, das ich mit den Gedanken nicht ausmessen kann, ein Leben, das sich nicht in Worten ausdrückt und das doch mein Leben ist....’ (VZT, 137)
This realization that the duality of which he was aware, the duality of inner and outer reality, of dead and alive thoughts, of a ‘schweigend’ reality behind the outer appearance of things, the realization that this is a problem of perception and of psychology, is an advance for Törleß in his understanding of his Verwirrungen. It also serves to distance his world-view from that of Beineberg, who in his idealist belief in the Weltseele as an invisible metaphysical force inherent in matter is a true dualist. Törleß does see ‘die Dinge in zweierlei Gestalt’ (VZT, 137), but the emphasis is on the physiological and psychological act of perception rather than as a statement about the nature of matter. Nevertheless, the fact remains that in order to reach this understanding, Törleß, a product of a one-sidedly rationalistic environment, has exploited and abused a fellow human being. His critique of rationality is therefore part of the rationalist world-view from which he seeks to escape, a paradox of which Törleß is unaware but which the narrative exposes.

During Törleß’s statement, both the ‘Religionslehrer’ and the ‘Mathematiker’ are able to feel that Törleß has an affinity with their subjects. For the chaplain, Törleß’s talk of duality accords with Christian teaching of the worlds of the spirit and the flesh, although Törleß denies that he is interested in a religious interpretation of life (VZT, 135). At the end of the interview, the narrator comments: ‘[der Religionslehrer] hatte aus den Reden Törleß’ so oft das Wort Seele aufgefangen und hätte sich gerne des jungen Menschen angenommen’ (VZT, 138). This is presumably an ironic comment as Törleß mentions the word Seele only once in his statement.

102 Pick rightly comments: 'Musil lehnt die Beseelung der Natur, die Projektionen der “Seele” in die Materie, wie sie Bölsche, Wille oder auch Richard Dehmel vollziehen, als einen Verrat am Intellekt des Menschen ab; und doch vertritt er in der Zielvision, die leib-seelische Einheit neu zu erleben, einen monistischen Standpunkt.' (p. 277) Similarly Pick emphasizes Musil’s assertion of rationalistic methods (p. 298).
It is clear that the word *Seele* (as the nominalist Mauthner would have noted) is fundamentally metaphorical and thus ambiguous. Indeed, the narrator notes concerning the chaplain: ‘Aber er wußte doch nicht recht, wie es gemeint war.’ (VZT, 138) The mathematics master has complimented Törleß on his ‘Scharfsinn’ (VZT, 135) and compliments him again once the ‘Zögling’ has left the room, noting however that Törleß relies too much ‘auf den subjektiven Faktor’ in experience (VZT, 138). It is clear that by the time this interview with the teaching staff occurs, Törleß has consciously occupied the middle ground between the rational, scientific worldview and speculative, subjective thought. As in his description of the way a sentence or a thought can have logical structure and meaning but remain ‘tot’ (VZT, 136), Törleß suggests that both modalities are necessary to express the human experience of reality. In this way, Törleß’s *Verwirrungen* can be seen as representing a critique both of a one-sidedly rationalistic approach and one that is merely speculative and metaphysical. Törleß thus accepts implicitly that his own rational approach to reality is insufficient and must be broadened to include a new view of reality, a meta-rational perspective:


For some critics this statement represents a retreat from the brink of a new monistic understanding of reality. I would contend however that it reveals an intuitive intimation of the inherent dualism in all knowledge of reality, if not in the phenomenal world itself. Törleß now accepts the physicality of the material world, the
undeniable *thereness* of phenomenal reality, without denying the role of subjectivity, the transformational power of language and of perspective in constituting our worldview. It is this complex and dualistic vision that drives Ulrich’s utopian quest to find a way of being in the world that unifies ‘Mathematik und Mystik’ (*MoE*, 770), a creative participation in reality that incorporates mundane facticity (‘Seinesgleichen geschieht’, *MoE*, 81) without denying the meta-rational dimension of human consciousness.\(^\text{103}\)

As he struggles to communicate this half-understood feeling to the headmaster and his staff, Törleß is caught ‘in einem Augenblicke beinahe dichterischer Inspiration’ (*VZT*, 138). Indeed Törleß has been viewed as a nascent *Dichter* (see above, note 60). Törleß’s sensitivity to the potential of the creative arts is suggested by an experience he recalls when he is in that liminal state of heightened awareness,

balanced between the physical and the psychological perception of reality: 'eines mehr seelischen als körperlichen Fiebers' (VZT, 91). It is the memory of listening to an opera whilst on holiday with his parents in Italy. The same opera is performed nightly and although he cannot understand the language he is enthralled by the voice of one of the singers without ever seeing her (VZT, 91). It is an abstract, ideal love he feels towards the disembodied voice: 'Es waren keine menschlichen Leidenschaften mehr, die er hörte, nein, es waren Leidenschaften, die aus den Menschen entflohen, wie aus zu engen und zu alltäglichen Käfigen.' (VZT, 91-92) He is in love with the feeling that the woman's voice produces in himself (VZT, 92). Even the text of the opera is unimportant, and was probably 'ein fader, sentimental Liebesroman' (VZT, 92). Törleß wonders — and here as often in the text, Törleß and the narrator are inseparable —: 'Hatte sein Schöpfer gefühlt, daß er unter den Tönen zu etwas anderem wurde?' (VZT, 92) Törleß senses the full potential of artistic endeavour, in which the artwork can be described as possessing emergent properties, that is having qualities beyond the sum of those that constitute the object or event. In the creative interaction of viewer and artwork the narrative posits a metaphor for the relationship between self and reality, a relationship which it is suggested yields understanding beyond mere material facticity. It is the same indefinable quality that in Kafka's story transforms Josefíne's ordinary 'Pfeifen' into a transcendent experience for the

104 Compare this incident with Karl Corino's research into Musil's infatuation with the young actress Pauline Ulmann during his time studying engineering at Brünn in 1898 ('Zwischen Mystik und Theaterleidenschaft: Robert Musils Brünner Jahre (1898-1902)', in Strutz and Strutz, Robert Musil (1983), pp. 11-28). Musil's 'große Jugendliebe' (p. 14) is called Valerie in his diary: Ulmann played the role of Valerie in Victor Leon's play Die lieben Kinder in Brünn at this time.

105 Clearly this idea is reminiscent of Gestalt psychology. See Hannah Hickman, 'Musils Essay "Literat und Literatur": Form und Gestalt in Wissenschaft und Kunst', in Strutz, Kunst, Wissenschaft (1986), especially pp. 44-47. See also above, note 43, and the description of the prince's Seele, note 76.
‘Volk der Mäuse’. For Törleß it is part of the unseen dimension to the world: ‘Ist es ein allgemeines Gesetz, daß etwas in uns ist, das stärker, größer, schöner, leidenschaftlicher, dunkler ist als wir?’ (VZT, 92) It is this vision of a positive and creative dimension to human existence that the narrative suggests will, in spite of the crude influences to which the young Törleß is exposed, lead to a balanced and enlightened individual. As I have shown, Törleß is clearly implicated in the abuse of Basini. But as I have argued, this is contextualized within the logic of the narrative by the text’s critique of rationality. Törleß has a wonderfully creative sense of the strangeness of reality that liberates things from their enervated concepts and names, from the reductionism of language. However this sense of estrangement from reality combines with a rationalistic and scientific view of the world to permit the dehumanization of a fellow student. The narrator is unable to exonerate Törleß and the complicity of the distanced observer (Törleß) in the brutalization of Basini can be


107 On the Enlightenment, Musil wrote in 1913: ‘Wir andern haben nach der Aufklärungszeit den Mut sinken lassen. Ein kleines Mißlingen genügte, uns vom Verstand abzubringen, und wir gestatten jedem öden Schwärmer, das Wollen eines d’Alembert oder Diderot etilen Rationalismus zu schelten. Wir plärren für das Gefühl gegen den Intellekt und vergessen, daß Gefühl ohne diesen — abgesehen von Ausnahmesfällen — eine Sache so dick wie ein Mops ist. Wir haben damit unsere Dichtkunst schon so weit ruinirt, daß man nach je zwei hintereinander gelesenen deutschen Romanen ein Integral auflösen muß, um abzumagn.’ (‘Der mathematische Mensch’, GW VIII, 1007.) Luft, commenting on Musil’s Essayismus, writes: ‘While his contemporaries saw only the burnt-out remains of a demolished past, Musil looked to the sixteenth and seventeenth centuries as a fruitful beginning. He saw the achievements of Copernicus, Kepler, Galileo, Newton, and Leibniz as the spiritual watershed of the modern world.’ (Robert Musil, p. 112.) This is not to say however that Musil was scientific: ‘Musil was convinced that modern man had lost track of the capacity to think and act regarding his ego and had settled instead for the bonds of objectivity. [...] Bourgeois culture and morality, the preoccupation with the ratioid inspired by modern science, and the need for security had virtually cut modern man off from access to religion, ethics, and mysticism.’ (Luft, p. 162.) It was in bringing together objectivity and the individual relation to reality that Musil sought to challenge the scientific world-view of the nineteenth century and to revivify intellectual life.
seen as supplying impetus for Musil’s subsequent search for a new approach to reality. Out of Törleß’s epistemological, psychological and ethical Verwirrungen, the narrator suggests the existence of a world-view that exceeds the limits of Mach’s positivism. A complex view of reality is suggested which is both materialistic in its acceptance of the purely physical nature of the world, but also phenomenological in that it seeks to account for the perspectivist and psychological experience of the individual. In its positing of art and literature as a model for expressing a unified sense of being in the world, Törleß does not seek to undermine the logos of science but rather to supplement it with an holistic interpretation that includes both subject and object in a complex and evolving relationship.

Chapter 6

Pure Science — Lethal Technology:

Brecht's *Leben des Galilei*
On 16 December 1938 Otto Hahn and Fritz Straßmann, working at the Institute of Chemistry in Berlin-Dahlem, began a series of experiments with uranium in an attempt to understand the structure of the atomic nucleus. In the 1930s research in physics involved the bombardment of a substance with particles from a radioactive element.¹ There were many theories to explain the physicists' results but much remained unknown concerning the atomic structure of matter. According to Spencer R. Weart:

Nuclear theory in the 1930s was an inchoate, agitated blob of ideas that inched forward by grasping here and there onto an experimental result or a plausible...

¹ In 1919 Rutherford announced that he had changed the nucleus of a nitrogen atom by bombarding it with alpha particles. According to Richard Rhodes, Rutherford had not split the atom (as newspapers stated at the time) but it was the 'first artificial transmutation ever achieved' (*The Making of the Atomic Bomb* (Harmondsworth: Penguin, 1988), p. 137; description of Rutherford's experiment, pp. 135-38). In 1932 James Chadwick, continuing Rutherford's investigation of the effects of alpha particles on atomic nuclei, discovered the neutron (William R. Shea, 'Introduction: From Rutherford to Hahn', in *Otto Hahn and the Rise of Nuclear Physics*, ed. by W. R. Shea, The University of Western Ontario Series in Philosophy of Science, 22 (Dordrecht: Reidel, 1983), p. 15; on Hahn and Rutherford, see Thaddeus J. Trenn, 'Why Hahn's Radiothorium Surprised Rutherford in Montreal', in Shea, *Otto Hahn* (1983), pp. 201-12). Chadwick later worked on the Manhattan Project to develop the atomic bomb. During 1933-34 Enrico Fermi in Rome bombarded stable elements with slow neutrons to yield new, radioactive elements. In 1938 Fermi was awarded the Nobel prize for producing new radioactive, transuranic elements by this process (Spencer R. Weart, 'The Discovery of Fission and a Nuclear Physics Paradigm', in Shea, *Otto Hahn* (1983), p. 101; Rhodes, pp. 204-21). At the same time as Hahn and Straßmann, Irène Joliot-Curie and P. Savitch were also attempting to explain the apparent creation of new isotopes of radium (what they believed to be actinium) from uranium when bombarded with slow neutrons. Hahn disagreed with their findings (see Rhodes, pp. 234-35, Shea, 'Introduction', p. 14, Weart, pp. 107-09).
Earlier experiments had suggested that radium would be the product of Hahn and Strassmann's experiment. Instead the irradiation of uranium 239 followed by a fractional crystallization using the carrier chemical barium chloride and the radium isotope, mesothorium, appeared to yield barium. On 19 December, Hahn wrote to his former colleague, the physicist Lise Meitner (1878-1968), and informed her of their results. He was loath to accept these findings which seemed to contradict the whole trend of past research in nuclear physics: how could it be that uranium gave rise to barium, an element which was just over half as heavy and which carried a little over half the charge of uranium? However, Meitner replied that although his results were astonishing it was not inconceivable that the heavy and unstable uranium atom had actually split in two. Hahn and Strassmann's paper describing their experiment and extraordinary results was rushed into print by Paul Roschaud, the editor of *Die Naturwissenschaften*, who withdrew a less important article. The edition appeared in Berlin on 6 January 1939. Meitner's nephew, Otto Frisch, who was working in Copenhagen at Niels Bohr's Institute for Theoretical Physics, received the journal the next day and used a cloud chamber to confirm whether the uranium atom had indeed split in two. Frisch's results seemed to corroborate those of Hahn and Strassmann. It

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3 For Hahn's correspondence with Meitner at this time see Otto Hahn, *Erlebnisse und Erkenntnisse*, ed. by D. Hahn (Düsseldorf: Econ, 1975); here p. 79. See also Rhodes, p. 253 and Weart, p. 113.

4 *Naturwissenschaften*, 27 (1939): 11-15 (see Rhodes, p. 262, and Weart, p. 113).
was Frisch who first described the splitting of the atom with the term from biology for
the division of a bacterium: fission. As Richard Rhodes has written, 'thereby the name
for a multiplication of life became the name for a violent process of destruction' (p.
263). Once Hahn and Straßmann's paper was published, fission was soon accepted by
the scientific community and seemed to confirm Niels Bohr's hypothesis that the
atomic nucleus was like a 'liquid-drop'.

Like Lise Meitner and many other talented German scientists and intellectuals,
Bertolt Brecht was living in exile from Germany at this time. Immediately after the

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5 According to Weart, when Frisch first explained Hahn and Straßmann's discovery of fission to
Bohr, 'Bohr interrupted, striking his head with his fist and exclaiming, "Oh, what idiots we have
been that we haven't seen that before."' (p. 113) On Bohr, whose 'contributions to twentieth-
century physics [...] rank second only to Einstein's', see Rhodes, pp. 53-77; here 54. According to
John Fuegi, Brecht's original inspiration for Leben des Galilei came from 'Nils Bohr's [sic]
advances in atomic theory'. Fuegi asserts that Galilei was 'a forerunner of Bohr' and that after the
dropping of the atomic bombs on Japan, 'Brecht saw the work of Galileo and Nils Bohr in a new
and awful light' (Bertolt Brecht: Chaos, According to Plan (Cambridge: Cambridge University
Press, 1987), p. 91). Although Brecht had close contacts with Bohr's Institute in Copenhagen,
Fuegi's theory is unsatisfactory, as I shall demonstrate, not least because Bohr was unusual
amongst atomic physicists for his ethical implications of atomic fission and his
active opposition to the arms race, both during and after the Second World War (see Rhodes, p.
528).

6 Lise Meitner, who was Jewish, was an Austrian citizen and after the Anschluß in 1938, fearing
arrest, she left Germany. Meitner lived for a while with Bohr and his family and then moved to
Hitler's rise to power in 1933 a policy of Gleichschaltung was implemented throughout German
society and culture, including science. From 1933 to 1937 German universities were purged of
their Jewish and politically suspect staff. According to Alan Beyerchen, a leading authority on the
role of science and scientists under the Nazi regime, over 25 percent of academics who held posts
in 1933 were dismissed. In the natural sciences an average of 15 percent lost their posts ('What
We Now Know About Nazism and Science', Social Research, 59 (1992), p. 621; see also his
work: Scientists under Hitler: Politics and the Physics Community in the Third Reich (New
Haven: Yale University Press, 1977)). Foremost amongst those scientists who attacked
'Jüdische[ ]Physik' was Philipp Lenard (1862-1947), who had won the Nobel prize for physics in
1905. In his Deutsche Physik in vier Bänden (Munich: [n. pub.], 1936), Lenard attacked Einstein's
theory of relativity as an attempt to undermine the certainties of physics: 'seine Relativitätstheorien
wollten die ganze Physik umgestalten und beherrschen; gegenüber der Wirklichkeit
haben sie aber nun schon vollständig ausgespielt' (Deutsche Physik, I, 'Einleitung und Mechanik',
p. ix). Nazi scientists such as Lenard saw themselves as the true inheritors of the spirit of the
Scientific Revolution and of the Enlightenment. In February 1939 the Nazis held a Kant-
Copernicus-Woche [sic] in Königsberg. In an article linked to the event, the Völkischer
Beobachter (20 February 1939) reported: 'Abschließend erklärte der Reichsleiter, daß sich der
Nationalsozialismus als der legitime Bewahrer und Fortsetzer des Kampfes einer großen
Vergangenheit fühlte. Wie die copernikanische Idee ein altes Weltbild in Trümmer gelegt habe,
so, wie die Erkenntnistheorie Immanuel Kants das kritiklose Geschwätz und die hemmungslose
Schwärmerei überwunden habe, so habe heute das rassegebundene Denken ebenfalls einen
weiteren Ballast artfremder Gedankengebilde von sich geschüttelt und schicke sich an, was einmal
burning of the Reichstag in 1933, he had left for Prague. By the end of 1933, having
been invited to Denmark by the writer Karin Michaëlis, Brecht was living in a
converted farmhouse on the Danish island of Fyn together with his wife Helene
Weigel and their two children. It was there in the sixth year of his exile that Brecht
wrote the first version of the play that was to become Leben des Galilei. According
to Brecht’s Arbeitsjournal it was completed on 23 November 1938 and was entitled
Die Erde bewegt sich, a reference to the saying attributed to Galileo after his
appearance before the Inquisition: ‘E pur si muove.’ According to Margarete Steffin,
Brecht’s ‘full-time secretary/mistress/collaborator’ in Denmark (Fuegi, p. 81), the play took him just three weeks to complete. On 27 February 1939, Brecht heard a broadcast on Danish radio concerning the discovery of nuclear fission which had occurred little more than two months previously:


extensive critical notes will be given as Werke followed by volume and page number). A further historical connection has also been suggested: ‘1933, als sich der Tag der Verurteilung Galileis durch die römische Inquisition zum 300. Male jähr, greift Georgi Dimitroff, Hauptangeklagter und eigener Verteidiger im Reichstagsbrandprozeß, den historischen Fall als Parallèle zum akuellen Geschehen auf. In seinem Schlußplädoyer wendet er sich mit dem [...] Ausspruch “Und sie bewegt sich doch!” anklagend an seine Richter, denen es wie den einstigen Inquisitoren nicht gelingen werde, den Sieg der Wahrheit aufzuhalten.’ Brecht followed the trial closely and in his poem Dimitroff written at this time, he compared the Bulgarian workers’ leader with the great figures of the Renaissance (Werke V, pp. 332-33).

10 Steffin’s letter is dated 17 November 1938 (Schumacher, p. 16). Together with Steffin, Brecht began work on revising the play almost immediately, a process which continued until February 1939 when a final version of the play was finished bearing the title Leben des Galilei (Knopf, pp. 159-60). In March 1939 Steffin and Helene Weigel prepared a large number of copies of this version to send to Brecht’s contacts around the world. Albert Einstein was one of the recipients of this first version (Werke V, 336). For a detailed discussion of the Ur-Galilei text, see Schumacher, pp. 18-38.

11 Werner Hecht, ed., Brechts ‘Leben des Galilei’ (Frankfurt a. M.: Suhrkamp, 1981), p. 53. The interviewer was Dr Paul Bergsøe, who provided a description of Hahn’s splitting of the uranium nucleus. Included in the radio discussion were Otto Frisch as well as other scientists from Bohr’s Institute in Copenhagen. In the course of the broadcast it was stated that the energy produced in the splitting of the atom was ‘sechsmilliardenmal größer als die Energie, die benötigt wird, um den Prozeß in Gang zu bringen’ (Schumacher, p. 115, citing Dr Christian Møller of the Bohr Institute). Dr Møller added however that there remained many problems before humankind could exploit this energy source. To which Dr Bergsøe commented: ‘Ihre Aussage freut mich sehr [...] Wenn die Menschen lernen, unbegrenzte Energie zu gewinnen, sozusagen aus nichts, so wäre das, glaube ich, ein unberechenbares Unglück für alle Menschen. Für ein solches Naturgeschenk sind wir noch lange nicht reif genug.’ (Schumacher, pp. 114-15.) Dr Møller, an assistant of the Danish physicist and Nobel prize-winner Niels Bohr, advised Brecht ‘über astronomische und physikalische Probleme’ during the writing of the first version of Galilei (Werke V, 340). In the Introduction to the American edition, Brecht later wrote: ‘Als ich in den ersten Jahren des Exils in Dänemark das Stück Leben des Galilei schrieb, halfen mir bei der Rekonstruktion des ptolämischen Weltbilds Assistenten Niels Bohrs, arbeitend an dem Problem der Zertrümmerung des Atoms.’ (‘Ungeschminktes Bild einer neuen Zeit’, in Hecht, Brechts ‘Leben des Galilei’ (1981), p. 55.)
This is taken from a speech, first given by Brecht in Sweden in 1939, entitled ‘Über experimentelles Theater’. The passage cited was incorporated into the text only in November 1940 after the outbreak of war (Knopf, p. 159). A third revision of the first version of Galilei was made in spring 1939 after hearing the radio interview, but significantly the alteration to the penultimate scene portrays the scientific discovery in a wholly positive light:

Während an einigen Orten die größten Entdeckungen gemacht werden, welche die Glücksgüter der Menschen unermäßiglich vermehren müssen, liegen sehr große Teile dieser Welt ganz im Dunkel. Die Finsternis hat dort sogar noch zugenommen! Nimm dich in acht, wenn du durch Deutschland fährst und die Wahrheit unter dem Rock trägst! (13. 106)\(^{12}\)

Indeed the idea that science offers humankind hope in an age of darkness is typical of the whole tenor of the first version of Galilei. Written before the outbreak of the Second World War, the play clearly represents science as an ideal embodiment of Vernunft, the intellectual resistance to the irrationalism of fascism. Similarly, as I shall show, Galilei,\(^{13}\) as the archetypal scientist, represents the plight of the intellectual attempting to survive beneath the Nazi regime.\(^{14}\)

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12 Schumacher comments: 'Dieser Passus wurde dem bereits abgeschlossenen Manuskript der Fassung Die Erde bewegt sich als Ergänzung hinzugefügt. Er stellte die Antwort Brechts auf die neue Entdeckung und ihre absehbaren und unabsehbaren Auswirkungen dar. Das Bemerkenswerte ist, daß Brecht die Konsequenzen der Entdeckung in einem durchaus optimistischen Sinne interpretierte.' (p. 116)

13 In the following discussion I shall refer to the historical figure as ‘Galileo’ and Brecht’s figure as ‘Galilei’.

14 According to Ernst Schumacher, Brecht intended ‘sein historisches Schauspiel als Modell für negatives und positives Verhalten der Intellektuellen, vor allem der Wissenschaftler und Techniker unter dem Faschismus’ (p. 92). Schumacher continues: ‘Indem Brecht aus Galilei einen listigen Kämpfer gegen die Inquisition machte — wobei er nur der Geschichte zu folgen brauchte — baute er den in Deutschland verbliebenen, an der Entwicklung mitschuldig gewordenen Intellektuellen, besonders den Wissenschaftlern und Technikern die “goldene Brücke”, auf der sie den Sumpf verlassen konnten, in den sie geraten waren.’ (p. 98) In common with other Marxist critics, Schumacher saw Brecht’s original play as offering scientists who worked under the Third Reich an excuse, namely that they were working for a better future that would be realized through their scientific discoveries. It is a view which downplays the significance of the individual in history: individual weakness such as Galilei’s fear of death, is less important than the ultimate contribution to scientific understanding (see also Charbon, pp. 118-19). Knopf comments: ‘Die 1.
However, in the unrevised 1939 text of ‘Über experimentelles Theater’, Brecht was already moving towards a position that, whilst not challenging the value of reason, cast doubt on the contribution of science to the ultimate triumph of Vernunft:


Nevertheless the amended version of Die Erde bewegt sich, which still presented a positive view of science, was performed in Zurich in September 1943. By this time Brecht had been living in America for over two years. In March 1944 Brecht met the English actor Charles Laughton. Laughton was impressed with the first version of Galilei and in December the two men began work on a translation. Brecht had already started revising the play earlier in the year, focusing more on the negative implications for society of Galilei’s Widerruf. The American stage version, which

Fassung ist noch ganz von der Überzeugung getragen, daß die wissenschaftlichen Entdeckungen vor allem und zuerst der Befreiung der Menschen dienen würden und zur allmählichen Unterhöhung des Kapitalismus führten. Insofern ist das 1. Galilei-Drama ein Drama der Wissenschaft, nicht des Wissenschaftlers.’ (p. 167) I believe Engberg is wrong to suggest that as a result of hearing the radio programme about the discovery of fission, Brecht wanted in the first version of Galilei to question the role of scientists and to show ‘das versagen des intellektuellen Individualisten gegenüber der Masse’ (p. 215). As I shall demonstrate, this was a view that only becomes significant in later versions.

The play was performed under the title Galileo Galilei. On this see Schumacher, pp. 120-29; also Werke v, 338.

For biographical details of Brecht’s move to America (he arrived in Los Angeles on 21 July 1941), see Schumacher, p. 133.


In his Arbeitsjournal (6 April 1944) Brecht wrote: ‘nun höre ich mit unwillen, ich hätte es für richtig gehalten, daß er öffentlich widerrufen hat, um insgeheim seine Arbeit fortzusetzen zu können, das ist zu flach und zu billig. [galilei] zerstörte schließlich nicht nur sich als person, sondern auch den wertvollsten teil seiner wissenschaftlichen Arbeit. […] [galilei] gab den eigentlichen fortschritt preis, als er widerrief, er ließ das volk im stich, die astronomie wurde wieder ein fach, domäne der
Brecht provisionally titled *Leben des Physikers Galilei*, was to be considerably reduced in length and was to emphasize Galilei's personal 'Verrat und Versagen' in respect of the ordinary people (*Werke* v, 344). Significantly, the responsibility of the scientist for his discoveries was to be highlighted. Work on the English language version continued intermittently through the first half of 1945 until it was finally complete in late summer. Then on 6 and 9 August the first atomic bombs were dropped on Hiroshima and Nagasaki respectively. A new scientific era had dawned, a fact immediately apparent to Brecht and Laughton:


As Brecht went on to say in this Introduction to the American version, they made few changes to the text of *Galilei* following the devastation of the two Japanese cities by the atomic bombs. But the world itself had changed and, as Knopf points out, the play '[gewann] plötzlich ungeheure Aktualität' (p. 168).19

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As Rémy Charbon amongst others has noted, science played a crucial role throughout the Second World War and not just in the Manhattan Project. On all sides ‘Naturwissenschaftler spürten den Naturgesetzen nach, um sie für die Vernichtung einzuspannen’, and Brecht like many people was shocked by ‘die Vision einer Armee hochqualifizierter Wissenschaftler, die als bloße Fachgehirne unter der Kontrolle fremder Instanzen wissenschaftsfeindliche Zwecke verfolgten’ (Charbon, p. 141). For Brecht, the dropping of the atomic bombs on Japan represented the culmination of a trend in science which allowed scientists to abstract themselves from

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20 On the ethical and political context to the building of the atomic bomb, see R. W. Reid, *Tongues of Conscience: War and the Scientist’s Dilemma* (London: Constable, 1969). On the dropping of the atomic bombs on Japan, see Gar Alperovitz, *The Decision to Use the Atomic Bomb* (London: HarperCollins, 1995). Reid describes the generally excited atmosphere amongst scientists such as Richard Feynman at Los Alamos, at the news of the dropping of the atomic bomb; others like Otto Frisch were ‘sick at heart’ (pp. 212-17). Hahn, interned along with ten other leading German scientists at Farm Hall near Cambridge, was similarly shocked by the news of the bomb at Hiroshima: ‘The news completely shattered him, for he felt that his discovery of fission had made construction of the atomic bomb possible, and that he was thus personally responsible for the thousands of deaths in Japan. Long before, he had contemplated suicide, when he first recognized the possible military use of fission; now, with the blame of its realization drawn squarely upon his shoulders, suicide again seemed a way to escape his desolation. Fearing this, Max von Laue remained with him until he passed this personal crisis. Never has social responsibility hit a scientist with such impact.’ (Lawrence Badash, ‘Otto Hahn, Science, and Social Responsibility’, in Shea, *Otto Hahn* (1983), p. 175.) According to Reid, the scientists who worked directly on the atomic bombs — some three hundred physicists according to Joseph Schwartz (*The Creative Moment*, p. 73) — were surprised at the reaction of the public to the use of the atomic bomb and the subsequent criticism of science in general: ‘To the world at large, physics, by its very ability to provide the means of creating the nuclear weapon, was seen by some eyes as being as responsible as the political machine, or the war machine, which caused it to be put to use.’ (*Tongues of Conscience*, p. 217.)

21 Reid examines the role of the scientist in international power politics from Alfred Nobel’s invention of dynamite in 1867, through the invention of gas, chemical, and atomic weapons, and finally to biological agents. As his research makes clear, the involvement of science in war is not a recent phenomenon. Badash considers Hahn’s active involvement in gas warfare in World War One and contrasts this with his refusal to work on ‘military applications of fission’ (p. 174, referring to Otto Frisch, ‘Scientist who Opened the Way to Atom Bomb’, *Observer*, 4 August 1968). According to Badash, Hahn’s experiences during World War One made him realize that it was not always right for a scientist to work with his or her country’s government in time of war. Badash suggests that Hahn came to understand that ‘science was susceptible to interference by the state. Science was a social activity that could be manipulated or controlled through the government’s power of legislation, funding, appointment, and intimidation.’ (p. 173) As a result Hahn became ‘a spokesman for social responsibility’ in science after the last war and was actively involved in campaigning against the misuse of atomic energy. In the late 1950s Hahn opposed the decision of West Germany’s defence minister, Franz Josef Strauß, to allow nuclear weapons on German soil (Badash, p. 176).
the ethical and political implications of their research. Galileo’s recantation before the Inquisition began to appear to Brecht as the beginning of science’s retreat from its rightful place in the sociohistorical world and the creation of the myth of pure science, an activity separate from the concerns of society, politics, and philosophy.

For Brecht, Galileo’s Widerruf came to represent the Fall of science:

Galileis Verbrechen kann als die ‘Erbsünde’ der modernen Naturwissenschaften betrachtet werden. Aus der neuen Astronomie, die eine neue Klasse, das Bürgertum, zutiefst interessierte, da sie den revolutionären sozialen Strömungen der Zeit Vorschub leistete, machte er eine scharf

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22 Schumacher writes: ‘Die Tendenz des Galilei war in letzter Instanz durch den Eindruck bestimmt, den der Mißbrauch der Wissenschaft zur Vernichtung von Menschen und menschlichen Werten, kulminierend in der Zerstörung von Hiroshima und Nagasaki durch Atombomben, auf Brecht gemacht hatte. Ihre Relevanz sollte darin bestehen, auf diese Dehumanisierung der Wissenschaft aufmerksam zu machen und ihr entgegenzuwirken.’ (p. 231) In his discussion of the atomic age and the possibility of ‘der totale Krieg’ (pp. 14-25), Charbon comments that the use of atomic weapons on Japan ‘hat die Völker und Individuen stärker bewegt als alle Leiden und Greuel zweier Weltkriege zusammengenommen’ (p. 14). One of the reasons for this he suggests is that the causes penetrate to the heart of modern Western culture: ‘Für die Nazigreuel waren Verantwortliche namhaft zu machen, Propagandisten und Buchhalter, Führer und Verführbare. Die Atombombe hingegen ist das Produkt jenes Glaubens an Wissenschaft und Technik, der die letzten hundert Jahre unauslöslich geprägt hat.’ (Charbon, p. 14.)

23 From the seventeenth century the trend in science was towards the creation of a pure discipline which aimed at distancing itself from cultural bias and even from the technological application of scientific knowledge. Robert Hooke (1635-1703) who is credited with transforming the Royal Society into a professional scientific institution, encouraged his fellow scientists in 1663 to ‘improve the knowledge of all natural things [...] by Experiment (not meddling with Divinity, Metaphysics, Moralls, Politicks, Grammar, Rhetoric, or Logick)’ (Reid, p. 324). Barry Barnes has emphasized the implications of this ideological standpoint for the whole methodology of science: ‘Members of the Royal Society appealed to the facts of nature as phenomena which all men alike might perceive and about which all men alike could be certain. They reckoned that if science could establish itself purely on the basis of fact it could achieve the credibility it was in need of. Hence when they performed experiments they went to great lengths to isolate and identify the visible facts and to separate them (as they thought) from theory and hypothesis. Experiments were performed in front of witnesses and the testimony of witnesses recorded. Agreement amongst witnesses was taken as a sign that what was agreed to was indeed a genuine fact, and not the spurious product of individual bias or individual incompetence. That every man in a group of witnesses would testify to having observed a phenomenon was taken to show that any man could observe the phenomenon, that the phenomenon was really there, a fact of nature.’ (About Science, p. 51.) This empirical and inductive approach depended upon ‘credible witnesses’, which for the Royal Society was something determined by social rank: the word of a gentleman could be trusted (Barnes, p. 52). Thus an ideology and a social hierarchy was embodied in the foremost institution of science, which ironically prided itself on its freedom from theoretical assumptions. This ideal of the purity of science lasted until the beginning of the twentieth century: ‘Das aristokratische Wissenschaftsideal erreichte seinen Höhepunkt gegen Ende des 19. Jahrhunderts. Wissenschaft galt als zweckfreie, werte neutrale Tätigkeit, als aus den täglichen Verwirrungen ausgegrenzter Sonderbezirk, fern jeder praktischen Verwertung und jeder über die Suche nach Wahrheit hinausgehenden Verantwortlichkeit.’ (Charbon, p. 34.) As I will show, Leben des Galilei suggests that this view of science is untenable in the late twentieth century.
begrenzte Spezialwissenschaft, die sich freilich gerade durch ihre 'Reinheit', d.h. ihre Indifferenz zu der Produktionsweise, verhältnismäßig ungestört entwickeln konnte.


As I shall show, this new emphasis in the American version of *Galilei* remained the defining concept behind the final version. What had been a play about science as a discipline with the potential to liberate people from an irrational and metaphysical world-view, is recast into one which illustrates the refusal of scientists to accept their responsibility to humankind. Indeed the most famous scientist of the time, Albert Einstein, whom Brecht had heard lecture in the early 1930s, came to symbolize for Brecht the failure of science in its duty to humanity.24 The use of science by both the

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24 Brecht heard Einstein lecture in 1930 at the Marxist Arbeiter schule in North Berlin. The scene entitled 'Die Physiker' in *Furcht und Elend des III. Reiches* (1938, Werke, IV: Stücke (1988)) concerns two physicists in post-Gleichschaltung Germany who are afraid to refer to the name of the famous Jewish scientist. At this time Brecht viewed Einstein in a positive light (see also above, note 10). On 2 August 1939 Einstein sent his now famous letter to Roosevelt warning of the threat to the Allies should Germany develop an atomic bomb and, despite his pacifism (see Reid, pp. 51 and 57-64), advising research into the possibilities of uranium fission (full text of letter in Reid, pp. 72-73; see also Rhodes, pp. 306-17, and Badash, p. 171). In October 1945, Brecht criticized Einstein's opposition to sharing information about atomic weapons with other nations, specifically the Soviet Union. For Brecht, this was typical of the scientist's naivety in politics (Werke V, 346; Schumacher, pp. 321-22). Indeed, Einstein's position contrasts sharply with the political foresight demonstrated by Niels Bohr, who already in 1944 was pressing Roosevelt and Churchill to meet with Stalin and exchange information concerning atomic weapons in order to avert a postwar arms race (see Reid, pp. 190-94; Rhodes, pp. 525-38). His actions led Churchill to write: 'It seems to me Bohr ought to be confined or at any rate made to see that he is very near the edge of mortal crimes.' (Letter to Cherwell, 20 September 1944; cited from Rhodes, p. 538.) The Allies' unsuccessful attempt to keep secret their research into atomic weapons can be compared to the attempt of the Church in *Galilei* to suppress the Copernican theory in order to maintain their political powerbase. Both attempts at suppressing knowledge were ultimately unsuccessful. The physicist and Nobel prizewinner Joseph Rotblat, in a recent letter to the *Times* (12 October 1996), writes that 'sharing nuclear information could have had a tremendous effect on the political climate in the postwar world'. Unlike Einstein, Bohr possessed a breadth of vision which incorporated both an understanding of the physical and the political realms (cf. above, note 5). In a plan for a foreword to the American edition of *Galilei*, Brecht clearly links Einstein with the notion of pure science: 'Das Ziel des Forschers ist "reine" Forschung, das Produkt der Forschung ist weniger rein. Die Formel E = mc² ist ewig gedacht, an nichts gebunden. So können andere die Bindungen vornehmen: die Stadt Hiroshima ist plötzlich sehr kurzlebig geworden. Die Wissenschaftler nehmen für sich in Anspruch die Unverantwortlichkeit der Maschinen.' (Hecht, Brechts 'Leben des Galilei' (1981), p. 57.) The link between pure science, as practised by scientists such as Einstein, and the technology and
Nazis and the Allies in the War lent credence to Brecht's view that by claiming to be merely interested in the laws of nature, science was being exploited in the cause of international power politics. In the Cold War period, the atomic bomb and the medical experiments of the Nazi scientists such as Joseph Mengele in the concentration camps appeared to be, at least partly, symptoms of science's historical commitment to notions of value neutrality. Such thinking, Brecht's play suggests, is untenable in the nuclear age when the destruction of life itself had become a real possibility. Indeed, Brecht's own considerable knowledge of modern physics suggested that epistemologically the separation of subject and object — a fundamental tenet of scientific methodology — was now challenged by science...
itself. The world-view of the New Physics seemed to offer Brecht physical evidence for his Marxist beliefs.

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26 According to the *Arbeitsjournal* Brecht bought a selection of books for his son Stefan on the 'weltbild der neuen physik', books which Brecht himself read (see pp. 218 and 222). For *Galilei* it is known that Brecht used Sir James Jeans, *The Mysterious Universe* (Cambridge: [n. pub.], 1930) and A. S. Eddington, *Das Weltbild der Physik und ein Versuch seiner philosophischen Deutung* (Braunschweig: [n. pub.], 1931), which had been published in English as *The Nature of the Physical World* (1928) (Schumacher, p. 39). In particular Brecht was interested in the ideas of quantum theory, such as those of Bohr, Erwin Schrödinger, Werner Heisenberg and Max Planck (see Brecht’s notes on the latter’s essay *Determinismus oder Indeterminismus* (Leipzig, 1938), in *Arbeitsjournal* for 26 March 1942, p. 397), which suggested that at the subatomic level causality breaks down and effects can only be calculated on the basis of statistical probability. Heisenberg’s now famous notion of the ‘Unschärfe-’ or ‘Unbestimmtheitsrelation’ expresses this indeterminism of nuclear particles, whereby they can be either particles or waves depending upon the experimental context. Indeed the nature of subatomic phenomena appears to be a function of the act of observation itself: ‘Damit aber erhält das neue Objekt der Naturwissenschaften Qualitäten, welche die Geisteswissenschaften ihren Objekten bereits beigemessen hatten: das Objekt wird überhaupt erst durch das erkennende Subjekt konstituiert, es wird, wie es ist, erst durch die Beobachtung geschaffen; unmittelbare Objektivität, unabhängige Realitätsdarstellung sind so nicht mehr möglich. Das Subjekt stützt dem Objekt seine Kategorien über, und es findet sich also in den Dingen selbst wieder.’ (Jan Knopf, ‘Bertolt Brecht und die Naturwissenschaften: Reflexionen über den Zusammenhang von Natur- und Geisteswissenschaften’, in Hecht, *Brecht’s *Leben des Galilei*’ (1981), p. 168; first publ. in *Brecht Jahrbuch* 1978, ed. by John Fuegi (Frankfurt a. M.: [n. pub.], 1978), pp. 13-38.) Knopf has looked at the possibility that Brecht’s enthusiastic reception of the New Physics aligns him epistemologically with idealism (‘Bertolt Brecht und die Naturwissenschaften’, pp. 169-70; cf. Mittenzwei, pp. 157-59). Nevertheless as Elisabeth Emter has pointed out, in his writings Brecht consistently rejected the possibility of a subjectivist or mystical world-view being supported by quantum physics (Literatur und Quantentheorie, p. 170). What is certain is that he found the world-view of a science which did not exclude the creative interaction of subject and object more congenial to his belief in eingreifendes Denken, something which the strict determinism of the nineteenth century seemed to work against (Emter, pp. 168-75; cf. Knopf, ‘Bertolt Brecht und die Naturwissenschaften’, pp. 169-70).

In September 1949 the Americans learnt that the Soviet Union had exploded its first atomic bomb, an almost exact copy of the American bomb. In order to maintain their lead in nuclear weapons technology, in January 1950 President Truman initiated the hydrogen bomb programme. On 1 November 1952 Edward Teller exploded the first hydrogen bomb on the Eniwetok atoll in the Pacific ocean. But by summer 1953 the Soviets had their own H-bomb, and the arms race between the East and West continued apace. On 5 April 1951 an American court had condemned Ethel and Julius Rosenberg to death for atomic espionage. In January 1953 Brecht sent telegrams to Einstein, Hemingway and Arthur Miller in an unsuccessful attempt to prevent the execution of the Rosenbergs. In the same year President Eisenhower ended the security clearance of J. Robert Oppenheimer (1904-67), the brilliant physicist who had co-ordinated the scientific work at Los Alamos, New Mexico, on the atomic bombs that were used to devastate Hiroshima and Nagasaki. On 12 April 1954 Oppenheimer was called before the Personnel Security Board of the Atomic Energy Commission who were to judge whether his known Communist sympathies constituted a threat to national security. These events and the contemporaneous

miss the significance of the New Physics for Brecht’s world-view (see previous note). The scientific understanding of reality was very different in the mid-twentieth century from that which prevailed in Marx’s day, a fact of which Brecht was keenly aware. On Brecht and Marxism, see also Heinz Brüggemann, *Literarische Technik und soziale Revolution: Versuche über das Verhältnis von Kunstproduktion, Marxismus und literarischer Tradition in den theoretischen Schriften Bertolt Brechts* (Reinbek b. H.: Rowohlt, 1973), Ralph Ley, *Brecht as Thinker: Studies in Literary Marxism and Existentialism*, Illinois Language and Culture Series, 6 ([n. p.]: Applied Literature Press, 1979), Klaus-Detlef Müller, ed., *Bertolt Brecht: Epoche—Werk—Wirkung* (Munich; Beck, 1985), especially pp. 208-11 (see the bibliography on Brecht and Marxism, pp. 202-04).


29 See *Neues Deutschland*, 7 January 1953; cf. Schumacher, p. 234. They were executed in June 1953.

30 The three-man board heard evidence until 6 May 1954. There were two main accusations against Oppenheimer: i) that because of his connections with communist groups he was a security risk, and ii) that he had tried to undermine Edward Teller’s programme to develop the hydrogen bomb.
Joseph McCarthy hearings convinced Brecht that science was becoming the servant of national politics and that scientists themselves were being used as tools of war.\textsuperscript{31} Brecht saw a direct parallel between the trial of Oppenheimer and Galileo’s ordeal before the Inquisition.\textsuperscript{32} In 1953 together with Elisabeth Hauptmann and Benno Besson, he began translating the American version back into German. The new version, entitled \textit{Leben des Galilei}, was first published in 1955 and premièred the same year in Cologne.\textsuperscript{33} This final version continued the thematic evolution of the

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\textsuperscript{31} Schumacher cites the Princeton physicist Henry DeWolf Smyth as saying that every scientist should see himself as a ‘tool of war’ (p. 234, citing from ‘The Stockpiling and Rationing of Scientific Manpower’, \textit{Bulletin of the Atomic Scientists} (1951): 38-42). According to Reid however, Smyth was the one person on the Atomic Energy Commission who voted against ending Oppenheimer’s security clearance (p. 298).

\textsuperscript{32} According to Schumacher, Oppenheimer was actually more like the historical Galileo than was Brecht’s fictional Galilei. Oppenheimer was a reformer and sought to change things from within: ‘Er wünschte die politische Struktur seines Landes nicht verändert, wohl aber seine Politik, besonders seine Militärpolitik.’ (Schumacher, p. 235.) Like the historical Galileo, Oppenheimer failed in the task he set himself and America dedicated itself to the nuclear arms race. Brecht followed the Oppenheimer case with interest. He owned many books on and by Oppenheimer and kept cuttings from the \textit{New York Times} during June and July 1954 (see Schumacher, p. 448, note 12). Just as the harnessing of the power of the atomic nucleus was widely portrayed in contemporary films and articles as the culmination of the scientific revolution begun in the seventeenth century, so some commentators saw parallels between Oppenheimer and Galileo (see for example Giorgio de Santillana’s study, \textit{The Crime of Galileo} (1955), and also the implied comparison in Bush’s remark to the Personnel Security Board: above, note 30). See also Schumacher, 234-39, Knopf, pp. 169-70, Charbon, p. 143.

\textsuperscript{33} It was first performed on 16 April 1955. \textit{Galilei} broke the ban on performing Brecht’s plays in the Federal Republic of Germany which had been in place since 17 June 1953 (see Schumacher, p. 276; on its reception, pp. 278-80). It was first published in \textit{Versuche}, 14 (Frankfurt a. M.: Suhrkamp; Berlin/GDR: Aufbau, 1955). The version used in the \textit{Werke} edition is the 1955 version to which minor alterations were made following the 1956 rehearsals for the Berliner Ensemble production with which Brecht was involved. Brecht died before the première, which
play from the Danish and American texts and focused even more sharply on the responsibility of the scientist to ordinary people for the use that is made of his discoveries. As well as reincorporating the plague scene (5. 224ff), which was dropped from the American version, the penultimate scene in Galilei’s villa at Arcetri, near Florence, was rewritten to reflect Brecht’s new-found pessimism about the course of modern science. Brecht had once viewed science with the optimistic eyes of nineteenth-century positivism, believing that it offered a model for a more rational and just social order. It was an attitude which held particular attraction when the tide of fascism threatened to engulf Europe and herald a new dark age of irrationalism. But ten years after the end of the war, with the world in the grip of a new Cold War, science itself seemed now to be implicated in the irrational logic of ‘mutually assured destruction’:

[Brechts] ganzes dichterisches Werk lebt aus dem Glauben an das produktive Potential des Denkens, an seine emanzipative, regulierende Funktion für einen neuen, sozialistischen Humanismus. Wie es nun stand, drohte die vernünftige Weltordnung, auf die er seine Existenz gestellt hatte, in die reine Absurdität umzuschlagen; die Veränderbarkeit der Welt, unabdingbares Axiom von Brechts Dichtung, war in Frage gestellt und mit ihr nicht nur die Hoffnung auf eine Veränderung zum Wohle der Menschen, sondern jegliche rational erfaßbare Weltordnung schlechthin. (Charbon, p. 145.)

As I shall suggest, the final version of Galilei represents an indictment of those scientists who place their faith in notions of a pure science and wash their hands of responsibility for their discoveries, regardless of their destructive implications. It is also a passionate plea for a science which genuinely empowers the majority rather than merely reinforcing the power of a minority by allowing governments to dictate

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took place on 15 January 1957. This version was also used in Stücke (Frankfurt a. M.: Suhrkamp; Berlin/GDR: Aufbau, 1957), viii: Leben des Galilei (see Werke V, 332 and 368; Knopf, p. 170).
the research of scientists. As such it is a text which, more than any we have so far considered, is actively reformist in its approach to science.

In one sense Brecht's *Leben des Galilei* is a history-play firmly rooted in the events of the seventeenth century. Brecht's historical research into the period was thorough, a fact demonstrated by the complimentary references to his play in recent
works on the history of science of the period. As Maurice A. Finocchiaro amongst others has said, Galileo Galilei was in many ways the ‘Father of Modern Science’ (p. 1), and in all three versions of his play, Brecht was keen to establish parallels between a crucial formative event at the beginning of modern science — the suppression of revolutionary ideas about the nature of the world — and events in the twentieth-century world. However, unlike Heinar Kipphardt’s documentary play In der Sache J. Robert Oppenheimer (1964), which also examines the relationship between scientist and state, Brecht’s play does not pretend to act as a mirror on reality, scrupulously documenting history. Instead I believe Brecht’s play demonstrates that the relationship between playwright and his material should reflect the relationship between scientist and reality: namely that just as the modern physicist could no longer

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37 On Brecht’s play as a parable for modern times, see Charbon, p. 122.

38 According to Charbon, Kipphardt’s play takes Galilei’s ‘mörderische Analyse’ (14. 285) in the penultimate scene as his point of departure for his play: ‘Kipphardts Stück soll nach Anlage und Aussage ganz offensichtlich über drei Jahrhunderte hinweg die Brücke von der Prophezeiung zur Erfüllung, vom Versagen zum Verhängnis schlagen.’ (p. 224) Charbon directly compares Oppenheimer’s closing speech and that of Galilei (see pp. 222-23). The tone of Oppenheimer’s speech is indeed very similar: ‘Indem ich über mich, einen Physiker in unserer Zeit, nachdachte, begann ich mich zu fragen, ob nicht tatsächlich so etwas stattgefunden hat wie Gedankenverrat [...]. Wenn ich denke, daß es uns eine geläufige Tatsache geworden ist, daß auch die Grundlagenforschung in der Kernphysik heute die höchste Geheimnissstufe hat, daß unsere Laboratorien von den militärischen Instanzen bezahlt und wie Kriegsobjekte bewacht werden, wenn ich denke, was im gleichen Fall aus den Ideen Kopernikus oder den Entdeckungen Newtons geworden wäre, dann frage ich mich, ob wir den Geist der Wissenschaft nicht wirklich verraten haben, als wir unsere Forschungsarbeiten den Militärs überließen, ohne an die Folgen zu denken.’ (Heinar Kipphardt, In der Sache J. Robert Oppenheimer (Frankfurt a. M.: Suhrkamp, [n. d.]), pp. 145-46.) It is interesting to note that in the original text, based on the 1964 television production, the name of Galileo was used instead of Copernicus, an alteration which appeared in the 1977 version from which this is cited. As Kopperschmidt amongst others has noted, the notion that
rely on an undifferentiated notion of objectivity to reveal the truth about subatomic reality, so the artist needed to approach historical reality not according to some naive concept of historical realism, but through an hypothesis, or in Kuhnian terms, a paradigm. Clearly for Brecht this meant a dialectical materialist understanding of history, a monistic view of human experience that entailed amongst other things a reintegration of the scientific world-view into literary practice: a scientific theatre for a scientific age. As I shall demonstrate, Brecht’s play reveals that Galilei’s inductive

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39 On this, see Chapter 1 of this thesis and Chapter 5, note 24 on the hypothetico-deductive approach of science. According to Charbon, ‘Brechts dialektisch-funktionelles Denken stimmt in der Struktur mit fundamentalen erkenntnistheoretischen Grundsätzen der modernen Naturwissenschaften überein.’ (p. 158) As we have seen (above, note 26), this suggests that the question posed by the scientist to nature (i.e. the hypothesis he seeks to prove) determines the result obtained at a subatomic level. As Heisenberg has said: ‘Erst die Theorie entscheidet darüber, was man beobachten kann.’ (Der Teil und das Ganze: Gespräche im Umkreis der Atomphysik (Zurich: [n. pub.], 1971), p. 103; cited from Charbon, p. 159.) Charbon suggests — I think rightly — that Brecht in the final version of Galilei criticizes a scientific approach to reality which assumes that truth is a given, a quality of the world that can be readily observed. Rather, reality requires a complex interaction of observer and observed: ‘[Galilei] irrt, solange er nach “reiner” Erkenntnis strebt, weil Erkenntnis immer nur Erkenntnis für jemanden, und das heißt, aufs Soziale übertragen: Erkenntnis entweder für die Herrschenden oder für die Beherrschten sein kann. Dies rechtfertigt eine parteiliche Interpretation der Geschichte, oder besser: jede Interpretation der Geschichte erweist sich letzten Endes als parteilich.’ (Charbon, p. 159.)

40 According to Mittenzwei, Brecht ‘wollte nicht etwa naturwissenschaftliche Kategorien in die Kunst einführen, noch sah er eine Notwendigkeit, die Kunst den Fortschritten der Naturwissenschaften in irgendeiner Weise “anzupassen”. Der Erkenntniszuwachs diente ihm zur Methodenverbesserung, denn die Kunst kann ihre Anregungen nicht nur aus sich selbst beziehen. Ausgehend von der Einheit des Marxismus war Brecht bestrebt, die vielfältigsten Anregungen aus den unterschiedlichsten Wissensgebieten für seine eigene Arbeit fruchtbar zu machen.’ (p. 156) According to Knopf, Brecht more than any modernist writer restored ‘die Einheit der Wissenschaften’ (‘Brecht und die Naturwissenschaften’, p. 165). In his theoretical work Kleines Organon für das Theater (1948) Brecht sets out to define a theatre for ‘die Kinder eines wissenschaftlichen Zeitalters’ (Werke XXII: Schriften 3 (1993), p. 70). Both ‘Wissenschaft’ and ‘Kunst’ share the common purpose ‘daß beide das Leben der Menschen zu erleichtern da sind’ (ibid, p. 73). Both art and science must encourage a ‘kritische’ attitude towards the realms of nature and society (p. 73). According to Arrigo Subiotto, ‘a major intention of the Short Organum is to indicate ways in which Brecht’s “scientific” theatre can be harnessed to change the consciousness of the audience and hence facilitate the altering of the reality that is reflected on the stage.’ (‘Epic Theatre: A Theatre for the Scientific Age’, in Mews, Critical Essays (1989), pp. 205-06; first publ. in Brecht in Perspective, ed. by Graham Bartram and Anthony White (London: Longman, 1982), pp. 30-44.) This then is the ‘kritische’ attitude which Brecht sees as crucial to science and which also defined his literary aesthetic. Brecht did not aim at historical authenticity and realism: he wanted ‘a productive, “scientifically” analytical attitude towards reality rather than a recognizable imitation of the world’ (Subiotto, p. 207). See also Robert Heinz Velliusig, Dramatik im Zeitalter der Wissenschaft: Die Fiktionen des Bertolt Brecht, Erlanger Studien, 80 (Erlangen: Palm & Enke, 1989), especially pp. 47-51. On Brecht’s Marxism, see above, note 27.
and empirical approach to reality is ultimately naive and merely plays into the hands of the reactionary authorities. This view of the Galileo affair is undeniably political in its inspiration, but I believe that it is also influenced by the world-view of the New Physics which challenged the traditional dualistic separation between the Spectator-scientist and objective reality. In this sense, Brecht's *Leben des Galilei* is a play which draws on the epistemological assumptions of the twentieth century rather than those of Galileo's own age.

As befits a play about Galileo, the central motif of *Leben des Galilei* concerns the act of seeing and, more surprisingly perhaps, its antithesis, blindness. Indeed the play opens with Galilei teaching the son of his housekeeper to see: 'Ich lehre ihn sehen' (1. 193). Galilei has been telling Andrea about the Copernican heliocentric theory, something which is as yet (in 1609) merely an unproved hypothesis. Andrea argues that common sense seems to prove the geocentric explanation: 'Aber ich sehe doch, daß die Sonne abends woanders hält als morgens. Da kann sie doch nicht

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41 For Brecht the New Physics seemed to offer confirmation of the dialectical materialist understanding of history (see Emter, p. 175, and above notes 26 and 39). Just as the nuclear particle was a function of a statistical probability, so individuals were only understandable statistically on the basis of mass movements: the behaviour of the individual was a function of sociohistorical developments. 'Die bürgerliche Geschichtsschreibung macht das Zufällige zur Voraussetzung, indem sie "große Individuen", Könige, Feldherren und dergleichen, als bestimmende Kräfte historischer Prozesse ausmacht. Der Vorteil der marxistischen Geschichtsbetrachtung scheint für Brecht darin zu liegen, daß sie der Fehllnahnme eines strengen Determinismus entgeht, indem sie sich auf die Bewegung der Massen konzentriert. Sie wendet damit ein Verfahren an, das dem des Physikers gleicht, der die Bestimmung des einzelnen Teilchens zugunsten einer statistischen Aussage aufgibt. Das Verhalten des "großen Individuums" ist nur verstehbar, wenn es in die Bewegung großer Massen eingebettet wird.' (Emter, p. 166; cf. Knopf, 'Bertolt Brecht und die Naturwissenschaften', pp. 180-81.) Thus the New Physics provided Brecht with evidence of a new interpretation of causality that supported the Marxist position which viewed history as being the result of mass movements. On Brecht's Marxist view of history, see above, note 14. For a critical view of Brecht's reception of the New Physics (and particularly Knopf's essay), see Vellusig, p. 40.

Galilei’s reply is significant: ‘Du siehst gar nichts. Du glotzt nur.’ (1. 192) Galilei suggests that seeing is not just about passive looking but about active perception and understanding. Galilei demonstrates this by physically moving the ten-year-old whilst he is seated on a stool, in order to show how a fixed object can appear to move when in reality it is the percipient who is in motion. Later Galilei will use a similar example in discussion with the Cardinals Barberini and Bellarmin, saying that when he was a child: ‘stand ich auf einem Schiff, und ich rief: Das Ufer bewegt sich fort. — Heute weiß ich, das Ufer stand fest, und das Schiff bewegte sich fort’ (7. 236). What deceives the senses of the child is understood by the more experienced adult. The idea that our senses can deceive us is disconcerting and Andrea is not convinced, saying that it is a ‘Fakt’ that if the earth revolves then he would fall off into space, just as he would fall from the stool if Galilei tried to turn that over (1. 194). When Galilei tries to demonstrate using an apple how it is possible for the earth to rotate without the inhabitants being aware of the motion, Andrea complains: ‘Mit Beispielen kann man es immer schaffen, wenn man schlau ist.’ (1.

43 Similarly, Ludovico’s comment as he asks Galilei to take him on as a paying student: ‘Sie werden Geduld mit mir haben müssen. Hauptsächlich weil es in den Wissenschaften immer anders ist, als der gesunde Menschenverstand einem sagt.’ (1. 195)

44 This analogy is taken from an historical source; see the manuscript essay, dated c. 1615, entitled ‘Galileo’s Considerations on the Copernican Opinion’, in Finocchiaro, p. 86 (see also Koyré, From the Closed World, p. 17, where he cites a strikingly similar analogy from Nicholas of Cusa (De docta ignorantia)). One of the strongest arguments in the seventeenth century against the Copernican hypothesis was that it contravened the previously accepted assumption that human senses could not lie. It was not thought possible that the senses could deceive us about something as fundamental as the motion or stability of the earth. However, Galilei pointed out that such deceptions were common, as the example of the person on the moving ship illustrates, or the illusion that a stick placed in water is bent (Finocchiaro, p. 17). For Patricia R. Paulsell the analogy of the ship and the shore illustrates ‘the importance of the concept of relativity in a scientist’s use of observation in scientific inquiry’ (‘Brecht’s Treatment of the Scientific Method in his Leben des Galilei’, German Studies Review, 11 (1988), p. 279). Paulsell’s thesis is that the play investigates what constitutes scientific truth in the light of Einstein’s theory of relativity. As I shall show, I agree with her view of the centrality of the dialectic of empirical and hypothetical knowledge in the play. However, I disagree that Galilei achieves in Scene 9 a modern approach to science, which for Paulsell is based on the notion of falsification (p. 281). Rather I suggest that it is not until the penultimate scene that Galilei has achieved a true understanding of science, one which incorporates both the observer and the observed, and theory as well as empirical fact.
This discussion sets up an important dialectic which echoes throughout the play, namely that between sense-data and theory. As Galilei admits later in scene one to Andrea, Copernicus's heliocentric system is not 'Wahrheit', but merely theory: 'Wir Physiker können immer noch nicht beweisen, was wir für richtig halten. Selbst die Lehre des großen Kopernikus ist noch nicht bewiesen. Sie ist nur eine Hypothese.' (1. 200) As Galilei explains, both the Ptolemaic and the Copernican systems are hypotheses, both require proof in order to be accepted as 'truth'. In the Danish version of the play, Galilei says that mathematically the Copernican hypothesis is more probable than the Ptolemaic system (1. 14), but in the final version there is no explanation as to why Galilei, who has taught the Ptolemaic system for many years, should believe in the heliocentric model before the invention of the telescope.

In the final version Galilei is unambiguously associated with the discipline of physics, as opposed to mathematics, which was preferred in the first version. The lines cited in the main text from 1. 200 refer to 'Wir Physiker'. In the Danish version we read: 'Aber es ist der riesige Fehler des neuen Systems, daß nur die Mathematiker verstehen können, warum es wahrcheinlich so ist.' To which Andrea replies: 'Kann ich nicht Mathematiker werden?' (1. 14) In the final version the boy says: 'Ich müchte auch Physiker werden, Herr Galilei.' (1. 201) Similarly in the first version, in the conversation with 'der kleine Mönch', Galilei responds to his comment that he is only a priest by saying: 'Aber Sie sind auch Mathematiker, Astronom [...]’ (7. 66). The response in the Berlin version is: ‘Sie sind auch Physiker.’ (8. 245; cf. the American version: ‘You are also a physicist’, 7. 149.) It is clear that by the final version, Galilei is a play about 'der größten lebenden Autorität in der Physik' (9. 250; an epiphon absent from the Danish version), a description that clearly links Galilei to contemporary physicists of the 1940s and 50s, such as Einstein and Oppenheimer.

The truth of the Copernican hypothesis was by no means obvious in the seventeenth century: 'The earth's motion seemed epistemologically absurd because it flatly contradicted direct sensory experience and thus undermined the normal procedure in the search for truth; it seemed empirically untrue because it had astronomical consequences that were not seen to happen; it seemed a physical impossibility because it seemed to have consequences that contradicted the most incontrovertible mechanical phenomena, and because it directly violated many of the most basic principles of the available physics; and it seemed a religious heresy because it conflicted with the words of the Bible and the biblical interpretations of the Church Fathers.' (Finocchiaro, pp. 24-25.) On the contemporary objections raised against the Copernican system, see Finocchiaro, pp. 15-25.

Sagredo says: 'Siebzehn Jahre in Padua und drei Jahre in Pisa hast du Hunderte von Schülern geduldig das ptolemaische System gelehrt' (3. 211). According to Finocchiaro, Galileo's areas of research included physics, mechanics and mathematics but not astronomy. He began teaching at university in 1589, almost fifty years after the death of Copernicus. He had to teach astronomy but he did not cover the Copernican hypothesis and he was not 'directly pursuing the geokinetic theory in his research' (Finocchiaro, p. 25). It was only the invention of the telescope in 1609 which allowed the astronomical anomalies to be resolved in Copernicus's favour, that meant that the geokinetic theory was empirically superior to the Ptolemaic hypothesis.
A thematic tension is thus established between a version of reality that relies on sense-impressions and one which relies on the mathematical or logical consistency of an hypothesis: inductivist and deductivist epistemologies. At the beginning of the play Galilei is a believer in an hypothesis which he thinks is mathematically consistent and thus chooses to reject the common-sense truth of his senses, which suggest that the sun actually rises in the morning sky.\(^{48}\) However, from Scene 2 onwards, once the telescope has delivered what he regards as proof for his theory,\(^{49}\) Galilei extols the virtues of believing one’s eyes, of which his ‘Beweisstein’ is the recurrent symbol.\(^{50}\) In Scene 3, Galilei uses the telescope to show his friend Sagredo

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\(^{48}\) According to A. C. Crombie, ‘Galileo held that the physical world actually consisted of the mathematical primary qualities and their laws, and that these laws were discoverable in detail with absolute certainty.’ Galileo was a mathematical essentialist who envisaged ‘a mathematical science of universal dynamics’ (‘Galileo’s Conception of Scientific Truth’, in *Literature and Science* (1955), pp. 132-38). More recently see his *Styles of Scientific Thinking in the European Tradition*, 3 vols (London: Duckworth, 1994).

\(^{49}\) On the invention of the telescope and the theme of whether an instrument can ever supply a more truthful picture of reality than our own senses, see Engelhard Weigl, *Instrumente der Neuzeit: Die Entdeckung der modernen Wirklichkeit* (Stuttgart: Metzler, 1990), particularly pp. 20-52. According to Weigl: ‘Erst das Fernrohr machte schlagartig deutlich, daß die Welt nicht das aufgeschlagen daliegende Buch ist, das, da es allen immer in gleicher Weise zugänglich war, zudem bereits von der Antike ausgelesen wurde.’ (p. 10) The Aristotelian world-view of Galileo’s age was opposed to the use of instruments to gain knowledge of the world: ‘Hinter dem Widerstand der Aristoteliker gegen die Einführung des Teleskops in die Astronomie durch Galilei steht nicht die Borniertheit von Fortschrittsfeinden, wie es das 19. Jahrhundert annahm, sondern ein bis heute wirksamer Zweifel an der Legitimität der Technik.’ (p. 11. Compare this view with Goethe’s opposition to the use of instruments in science, discussed in Chapter 2 of this thesis.) To Galileo’s contemporaries the idea that an artificial instrument such as the telescope could reveal truth about the world and the universe that the human eye could not, was unsettling; it suggested that rather than being created for humankind, the world was oblivious of its existence. ‘Buch und Natur, Gelehrsamkeit, “Auszwendiglernen” und die Evidenz der sinnlichen Wahrnehmung werden von Galilei in einen schroffen Gegensatz gebracht. Aus ihm gewinnt seine Rhetorik Glanz und Schärfe. Doch er verdeckt damit die Tatsache, daß er mit dem Fernrohr die natürliche Basis der Sichtbarkeit verlassen hat und eine schwankende, von Gerät zu Gerät umzudefinierende relative Sichtbarkeit einführt. [...] [D]as Sichtbare wird abhängig vom Stand der technischen Entwicklung.’ (Weigl, p. 34.) Thus although Brecht’s Galilei repeatedly asserts the importance of empirical evidence, the necessity of the telescope to prove the Copernican hypothesis points to the fact that ‘es ist die Unvollkommenheit des Auges, die uns die Wahrheit des kopernikanischen Systems vorenthält’ (Weigl, p. 35). See also Gillies, *Philosophy of Science*, p. 134.

\(^{50}\) Galilei’s repeated request is that people trust their eyes (4. 222). His ‘Beweisstein’ is the symbol of this empiricism: ‘Kein Mensch kann lange zusehen, wie ich (er läßt aus der Hand einen Stein auf den Boden fallen) einen Stein fallen lasse und dazu sagen: er fällt nicht. Dazu ist kein Mensch imstande.’ (3. 211) And yet, as he waits in the Vatican for the decision of Clavius on the validity of his discovery of the moons of Jupiter, Galilei lets his ‘Beweisstein’ drop and says to the clerics and academics who have just been attacking his ideas: ‘Hinauf, Monsignore, es ist mir hinaufgefallen.’ (6. 232) For Paulsell this contradictory statement reveals Brecht’s belief in the
that the moon has mountains and valleys, and that it glows not with its own light but with reflected light from the earth (3.205). Similarly he announces the important discovery that Jupiter has moons, a fact that renders obsolete the Aristotelian notion of crystalline spheres in the sky (3.208). He also states that he intends to leave the Republic of Venice for Florence where he hopes to become court mathematician to the Grand Duke, a position he hopes will allow him the freedom to conduct his research without money worries or the need to invent commercial products: he wants in effect to become a pure scientist. Sagredo immediately sees the danger that lies ahead for Galilei if he continues to promote the Copernican theory in a part of Italy under the control of the Pope. However, Galilei does not see this danger:

Auch die Mönche sind Menschen, Sagredo. Auch sie erliegen der Verführung der Beweise. Der Kopernikus, vergiß das nicht, hat verlangt, daß sie seinen Zahlen glauben, aber ich verlange nur, daß sie ihren Augen glauben. Wenn die Wahrheit zu schwach ist, sich zu verteidigen, muß sie zum Angriff übergehen. Ich werde sie bei den Köpfen nehmen und sie zwingen, durch dieses Rohr zu schauen. (3.214)

Sagredo counters Galilei’s optimism with words of pessimistic realism: ‘Das ist eine Nacht des Unglücks, wo der Mensch die Wahrheit sieht. Und eine Stunde der

relativity of observations: ‘what is observed may not represent the whole truth’ (Paulsell, p. 279, cf. p. 282; see above, note 44). I think this is a somewhat too literal reading of the text at this point. Galilei does indeed believe the truth of what he observes and here in a moment of supreme irony he scorns the clerics with their Ptolemaic world-view. According to Galilei, their world-view tries to deny the truth of the senses and maintain against empirical evidence that the earth is stationary, a position that is tantamount to saying that a falling stone rises. In Scene 1, as Andrea describes the geocentric model of the planetary system, he refers to the earth as ‘ein kleiner Stein’ (1.189). A few lines later, as Galilei describes the new age that he thinks is dawning, he speaks of the spirit of scientific enquiry which longs to know ‘die Ursachen aller Dinge […] warum der Stein fällt, den man losläßt’ (1.190). The identification of the earth with a pebble, and then the desire to understand the laws that control the motions of that pebble-planet, adds associative depth to the symbol of the ‘Beweisstein’. It is no coincidence that in the penultimate scene, the Discorsi, which details the laws of motion, is concealed in the globe of the planet earth. But, as I shall show, it is perhaps significant that it is concealed within, and not readily visible, suggesting that truth is not always written on the surface of things. Truth is not revealed by glotzen, but is complex and must be interpreted.
Verblendung, wo er an die Vernunft des Menschengeschlechts glaubt.' (3. 214)\textsuperscript{51} His words have an almost fatal power in the play. This moment does indeed represent Galilei’s ‘hour of blindness’, the moment when he disregards caution and voluntarily enters the sphere of influence of the Catholic Church and the Inquisition.

Although in Scene 1 he has demonstrated to Andrea that science is not a simple activity dependent solely on sense-data, Galilei stakes his life and the future of science on a naive faith in people’s inability to deny the evidence of their eyes. Indeed the text enforces Galilei’s metaphorical blindness by depicting a man whose physical sight becomes weaker as the play progresses, until in the penultimate scene he is ‘halbblind’ and in need of an ‘Augendoktor’ (14. 275-76).\textsuperscript{52} Galilei’s obsession with ‘Beweise’ (3. 213) blinds him to the role of theory in our understanding of the world, something which, as I have already suggested, Brecht saw as a fundamental epistemological standpoint (see above, note 26). Despite the fact that Galilei first accepts the Copernican paradigm when it was merely an unproved theory, his belief in the self-evident truth of the heliocentric system degenerates into a naive, inductivist sensationalism.\textsuperscript{53} It is a theme which is clearly linked to the notion that science is a

\textsuperscript{51} Similarly the ‘Kurator’ warns Galilei not to leave Padua for a town under the authority of the Vatican: ‘Aus alten Lederfolianten hat man dort Peitschen geschnitten. Man muß dort nicht wissen, wie der Stein fällt, sondern was der Aristoteles darüber schreibt. Die Augen hat man nur zum Lesen. Wozu neue Fallgesetze, wenn nur die Gesetze des Fußfalls wichtig sind?’ (1. 199) These fears are realized in the scene with the Florentine scholars. Galilei’s pleas fall on deaf ears: ‘der Glaube an die Autorität des Aristoteles ist eine Sache, Fakten, die mit Händen zu greifen sind, eine andere. [...] Meine Herren, ich ersuche Sie in aller Demut, Ihren Augen zu trauen.’ (4. 222) It is not so much that Galilei has placed his trust in Vernunft, as Sagredo suggests, but rather that he appeals to their common sense, and this, as Ludovico says, is not a vital constituent of science (see above, note 43).

\textsuperscript{52} In the Danish version, an ‘Arzt’ is actually summoned to examine Galilei’s eyes. Although his eyesight is poor he can see ‘besser als er vorgibt’ according to the stage directions (13. 96). Also in this first version he can no longer see the ‘Beweisstein’ fall although he can still hear it (13. 100).

\textsuperscript{53} Galilei refuses to enter into a ‘Disput’ with the Scholastics despite the fact that their position is wholly reasonable: ‘Das Weltbild des göttlichen Aristoteles’ forms for them a cosmology ‘von solcher Ordnung und Schönheit, daß wir wohl zögern sollten, diese Harmonie zu stören’ (4. 220). Why should they trust the evidence provided by an artificial and untested instrument? Indeed the evidence of their own eyes, as Andrea points out in Scene 1, suggests that the geocentric system is right. Galilei refuses to acknowledge this epistemological problem and ignores their requests for
pure discipline, separate from the complexity of social, economic and historical forces that permeate all other human activities. Galilei’s retreat into a naive empiricism represents a denial of the fundamental role of theory in science and the assertion that the knowledge of science is written in a universal language of objectivity. The play shows how science attempts to secure for itself a privileged vantage point from which to observe the world unaffected by external influences. It is an idea which the play reveals to be untenable in a world where all knowledge has political implications and power rests with those who control that knowledge. There is a supreme irony in the fact that the figure who asks throughout the play: ‘Meine Herren, ich ersuche Sie in aller Demut, Ihren Augen zu trauen’ (4. 222), should finally be unable to trust his own eyes. Indeed the irony is emphasized in the Danish version of the penultimate scene where Galilei says to Andrea, pretending not to see his former student’s outstretched hand: ‘Mein Augenlicht ist schlecht, Andrea. Ich...

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54 In Scene 9, Galilei fails to recognize Ludovico (9. 252, line 37) from which ‘der kleine Mönch’ deduces that he has been secretly observing sunspots (9. 259, line 3). In Scene 11, Galilei’s eyesight has deteriorated and he does not notice that he and Virginia are being followed (11. 263, line 17). Also Galilei cannot see Herr Gaffone as he avoids the scientist (11. 263, line 29). Again, as the ‘der kleine Mönch’ has earlier observed, it is due at least in part to his astronomical observations, as Cosmo also says: ‘Der Zustand Ihrer Augen [...] zeigt mir, daß Sie Ihr vortreffliches Rohr vielleicht ein wenig zu eifrig benützen, nicht?’ (11. 266) Clearly, this apparent concern for Galilei’s health and well-being conceals a veiled warning about the political implications of his scientific research, something Galilei fails to understand. As Scene 11 demonstrates, Galilei’s worsening eyesight is symbolic of his blindness to political and ideological considerations. He refuses to take up Vanni’s advice and return to Venice, asserting instead his loyalty to the Grand Duke. Vanni’s comment is peculiarly apt: ‘Sie scheinen Ihre Freunde nicht von Ihren Feinden auseinanderzukennen, Herr Galilei.’ (11. 265) Galilei, who used to pride himself on his closeness to the artisans of Venice in the workshops of the Arsenal, a relationship based on his trust in their unbiased senses (that is, their ignorance of theory), now shows how out of touch he is with the real world by rejecting the advice of the foundryman.

55 As I have suggested, the Danish version creates an image of Galilei as a ‘listige[r] Kämpfer’ (Schumacher, p. 98; above, note 14). The penultimate scene shows him secretly plotting with the
Here, at the end of the great scientist's life, in a wonderfully moving moment that was removed from subsequent versions, Brecht uses the verb *glotzen* to refer back to the beginning of the play where Galilei teaches the young Andrea to see the world as it really is. In spite of his undoubted insight into the forces of nature, Galilei acknowledges that his judgement as a human being was wrong. Unlike in the first scene, it is now Andrea who truly sees.

Just as the dialectic of seeing and theory is established in the play to undermine the possibility of a pure science, so too is the related dialectic of knowledge drawn from books as opposed to that from physical experience, from the body. In the first scene the audience sees Galilei 'sich den Oberkörper waschend, prustend und fröhlich' (1. 189). As he dries himself, Galilei gives his longest speech before the penultimate scene, which significantly is also with Andrea, the stove-fitter to smuggle out his *Discorsi* to the free world (13. 95). He sees 'besser als er vorgibt' (13. 96). As Käthe Rüllicke writes, 'Galilei [ist] ein listiger alter Mann, der die Erblindung übertriebt, um seine Wissenschaft weiterführen zu können' ('Bemerkungen zur Schlusszene', in *Materialien zu Brechts Leben des Galilei*, ed. by Werner Hecht (Frankfurt a. M.: Suhrkamp, 1963), p. 99; see also her excellent discussion of the textual variations of the first and final versions of this scene, ibid., pp. 100-106). This is part of the typically Brechtian theme of *Schlauheit*. Sagredo says that he knows Galilei as 'einen schlauen Mann' (3. 210). *Schlauheit* is the quality one needs to survive in a society where the odds are stacked against you (3. 210-11). Galilei demonstrates his *Schlauheit* by pretending that he has invented the telescope in order to obtain his salary increase. In the Danish version, Galilei's recantation is ultimately justified by the crucial parable of the Cretan philosopher Keunos (8. 72-73). Keunos submits to the authorities and allows their representative to live in his house for seven years until he dies. Only then does Keunos voice his opposition: 'nein' (8. 73). Clearly this story justifies Galilei's subsequent *Widerruf* in order that he may continue with his secret research, work which is not intended for the regime under which he lives but for the free world and for the future, a point emphasized by his attempts to smuggle out his work. This theme of *Schlauheit* disappears from the Berlin version and is replaced by a scientist who is characterized by his naivety rather than cunning.

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56 Fuegi has noted the 'classical roundness and organic structure' of the play, something at odds with Brecht's earlier tendency towards open dramatic structure (p. 177). Brecht expressed himself dissatisfied with the play (see *Arbeitsjournal*, 25 February 1939, p. 41, and 16 January 1945, p. 719; see also Schumacher, p. 284). According to Fuegi: 'In formal terms the play has much more in common with Shakespeare than it does with the theoretical models envisaged by Brecht in the late twenties.' (p. 92)

57 As I shall show, the real differences that exist between the three versions mean that there is a crucial ambiguity as to how we should read the figure of Andrea at the end of the play.
personification of future science. It is a speech which expresses the idea that a new age is dawning, one epitomized by the spirit of scientific discovery. Galilei describes how he has watched some builders deciding between themselves on the best way to move a granite block: the traditions of a thousand years were rejected ‘nach einem Disput von fünf Minuten’ (1. 191). Galilei tells Andrea: ‘die alte Zeit ist herum, und es ist eine neue Zeit. [...] Alle Welt sagt: ja, das steht in den Büchern, aber laßt uns jetzt selbst sehn.’ (1. 191) It is an age of discovery, where ships reach new continents and a new scientific world-view has arisen which asserts that ‘das Weltall [...] hat über Nacht seinen Mittelpunkt verloren, und am Morgen hatte es deren unzähliche’ (1. 191). In this speech we learn of the positive effects of an empirical approach, the value of trusting one’s senses rather than tradition. It is significant that even in the first scene, Galilei realizes that the new scientific world-view will have far-reaching implications for society and for the authority of the Church:

Dadurch ist eine Zugluft entstanden, welche sogar den Fürsten und Prälaten die goldbestickten Röcke lüftet, so daß fette und dünne Beine darunter sichtbar werden, Beine wie unsere Beine. Die Himmel, hat es sich herausgestellt, sind leer. Darüber ist ein fröhliches Gelächter entstanden. (1. 191)

Federzoni like Vanni (see above, note 54) is also an artisan, used to trusting only his senses, as Galilei says in defence of his lens-grinder to the Scholastics: ‘Mein Werk in dem Großen Arsenal von Venedig brachte mich täglich zusammen mit Zeichnern, Bauleuten und Instrumentenmachern. Diese Leute haben mich manchen neuen Weg gelehr. Unbelesen, verlassen sie sich auf das Zeugnis ihrer fünf Sinne, furchtlos zumeist, wohin die Zeugnis sie führen wird’ (4. 223). That they are unbelesen is significant. Federzoni cannot understand Latin, the language of academe and of the authorities: the Catholic Church. For Frau Sarti, the Church understands the world because it studies books: ‘Ich war vier Jahre bei Monsignore Filippo im Dienst und habe seine Bibliothek nie ganz abstauben können. Lederbände bis zur Decke, und keine Gedichtchen! [...] Und ein solcher Mann soll nicht Bescheid wissen?’ (4. 215) Here in the same scene the two approaches to the world are juxtaposed. On the historical context in Italy that led to a fruitful ‘Verbindung von Theorie, Technologie und Empirie’ in the sixteenth and seventeenth centuries, see Weigl, who notes that Galileo’s Discorsi begins with a discussion in the Venice arsenal (Weigl, pp. 20-23).
This is an important passage which, with its image of the sensing body beneath official robes, anticipates an equally central scene in which the new Pope Urban VIII (formerly Cardinal Barberini) is being dressed in his ceremonial robes. As his servants clothe him, the Head of the Inquisition attempts to convince Urban VIII to condemn Galilei and ban the new Copernican stearcharts. The Pope, under international political pressure as a result of his lack of success in the Thirty Years War and fearful of appearing weak in the face of apparently heretical statements from within his own lands, is shown to be in a vulnerable position.\(^59\) He is easy prey to the words of the Inquisitor who plays on all his fears, as do the sound of footsteps outside suggesting the intrigue that surrounds the weak Pope. The more he is enclosed in his robes, the less of an autonomous individual he becomes, until he is merely a function of the institution of which he is the figurehead. He personifies not just the Church but political power \textit{per se}. This scene contrasts splendidly with the free-thinking Galilei at the beginning of the play, naked to the waist and his desk full of open books. A man who is vibrantly alive to the realms both of thought and sensation: a union of physicality and physics. As the Inquistor says to justify using torture on Galilei: ‘Er ist ein Mann des Fleisches. Er würde sofort nachgeben.’ (12. 269) The Pope, who knows Galilei well and was once sympathetic to his views, agrees: ‘Er kennt mehr Genüsse als irgendein Mann, den ich getroffen habe. Er denkt aus Sinnlichkeit. Zu einem alten Wein oder einem neuen Gedanken könnte er nicht nein sagen.’ (12. 269) Although he begins the scene exclaiming ‘Nein!’ (12. 267), he ends it having agreed to the

\(^{59}\) In this the play is historically accurate and avoids the easy option of portraying the Galileo affair as being merely a conflict of religion and science. According to Finocchiaro, Urban VIII had originally been ‘an admirer and supporter of Galileo’ but was forced to use him as a scapegoat to demonstrate his authority. By 1632 they were losing the war and ‘there were rumors of convening a council to depose him’ (Finocchiaro, p. 12-13; on the events of 1632-33, see pp. 33-38).
Inquisitor's request, his body now fully clothed in heavy ceremonial robes. The Church, whose knowledge of the world was based on the texts of Aristotle and the Bible, is shown to be distanced from the physical world of experience. In contrast, Galilei’s approach to reality is empirical and materialist, representing a direct challenge to the metaphysics of the ruling ideology. Thus Brecht’s play establishes that the possibility of progress — in both society and science — is genuinely present at this time and that Galilei is the one man best placed to promote it.

Despite the undeniably positive representation of Galilei in contrast to the Church, the figure of Galilei is complex and ambiguous. This is due in part to the fact that the play was revised several times over many years, during which time Brecht’s own view of the character changed radically. What was a fundamentally positive figure in the Danish version becomes the scientist who instigates the trend towards pure science and who thus becomes the forefather of the atomic bomb. I believe however, that even in the final Berlin version, the first scene still depicts the ideal figure of the scientist-intellectual, someone profoundly in touch with both his body and his mind. Galilei is someone for whom research is a vital and dynamic activity, not an ossified abstract exercise restricted to the printed page. Unlike the Pope he does not conceal his experience of reality in order to remain true to his role in society.

This impression is underlined in the scene where Galilei learns, after eight years of silence on scientific matters, that Cardinal Barberini is to be Pope: ‘Ein Wissenschaftler auf dem Heiligen Stuhl!’ (9. 253) Galilei has just opened a bottle of his favourite, old Sicilian wine as Ludovico passes on this information, and characteristically Galilei’s enthusiasm for wine and science merge:

Again the play presents Galilei as a figure in whom physics and physicality are one:

'Das Wissen wird eine Leidenschaft sein und die Forschung eine Wollust.' (9. 254)

Science is both an ontic and an ontological enterprise; it is about both materiality and the nature of existence. Unlike Aristotle, Galilei's science is not just about deductions made from speculative first principles with no basis in experiential reality. Neither does he rely solely on ancient books to provide knowledge of reality, as does the Church. And yet despite this there is a crucial sense in which this vital figure, who embodies the scientific quality of Zweifel towards reality, is ultimately shown to be profoundly mistaken in his understanding of the world. This blindness, which forms the antithesis to Galilei's insight into the laws of nature, principally concerns

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60 Similarly, Galilei describes the enthusiasm of 'der kleine Mönch' for his manuscript on the movement of the tides using an analogy from the Old Testament: 'Ein Apfel vom Baum der Erkenntnis! Er stopft ihn schon hinein. Er ist ewig verdammt, aber er muß ihn hineinstopfen, ein unglücklicher Fresser!' (8. 247) Here the acquisition of knowledge is symbolized by the sensual act of eating. On this see Suvin, who compares the metaphorical apple in this scene with the apple Galilei gives to Andrea in Scene 1 ('Heavenly Food Denied', p. 147).

61 Although in the 'Fastnacht' scene Galilei is labelled the 'Bibelzertrümmerer' (10. 262), he knows the Bible as well as the cardinals in Scene 7. Indeed Galilei is very much associated with books: at the beginning his table is covered with open books and at the end his wisdom is communicated to the free world via a book. Indeed there is a cruel irony in the fact that in the penultimate scene, Galilei is required to dictate a regular commentary on passages from the Bible to demonstrate his acquiescence to the authorities (14. 275-76). See Suvin, pp. 145-46.

62 In the penultimate scene Galilei identifies 'Zweifel' as the defining element of science: 'Wissen versachfend über alles für alle, trachtet sie, Zweifler zu machen aus allen.' (14. 283) Zweifel combats the superstition which prevents ordinary people from controlling their destiny. Zweifel is rightly perceived by the Inquisitor as a threat to the Church: 'Sollen wir die menschliche Gesellschaft auf den Zweifel begründen und nicht mehr auf den Glauben?' (12. 267-68) Significantly for the sociohistorical context of the play, Zweifel is also a precondition of social change. It is lack of Zweifel which prevents the 'Campagnabauern' from questioning the harsh conditions in which they live and work (8. 244). As 'der kleine Mönch' says: 'Da ist Glückseligkeit im Zweifeln' (9. 250). And yet, as Sagredo points out, Galilei is not consistent in his Zweifel: 'So mißtrauisch in deiner Wissenschaft, bist du leichtgläubig wie ein Kind in allem, was dir ihr Betreiben zu erleichtern scheint.' (3. 214)
Galilei's understanding of the mechanisms of society and the relationship of science to society.

Galilei's refusal to acknowledge the importance of societal influences on the practice of science is fundamental to the Berlin version of the play. Like many Brechtian characters, Galilei exhibits the quality of Schlauheit in his dealings with authority (see above, note 55). But he exhibits a profound and indeed fatal indifference to sociohistorical principles, preferring instead to concentrate on the laws of nature. The use of the motif of Milch in the play exemplifies this theme. Leben des Galilei begins with Andrea bringing the great scientist a glass of milk:

GALILEI (sich den Oberkörper waschend, prustend und fröhlich) Stell die Milch auf den Tisch, aber klapp kein Buch zu.
ANDREA Mutter sagt, wir müssen den Milchmann bezahlen. Sonst macht er bald einen Kreis um unser Haus, Herr Galilei.
GALILEI Es heißt: er beschreibt einen Kreis, Andrea.
ANDREA Wie Sie wollen. Wenn wir nicht bezahlen, dann beschreibt er einen Kreis um uns, Herr Galilei. (1. 189)

These opening lines, which Brecht restored to the Berlin version after having removed them from the American version, communicate wonderfully the presence of a restrictive economic order surrounding the individual. Yet equally they reveal the scientist-intellectual's ability to see beyond these temporary conditions: a necessary precondition for social change according to Brecht's political ideas. Although Galilei

63 Frau Sarti is more schlau than Galilei when it comes to understanding the operation of laws in society. To Galilei's question as to whether the larger body orbits the smaller, or vice versa, Frau Sarti replies: 'Stelle ich Ihnen das Essen hin, oder stellen Sie es mir hin? [...] Sie sind es nämlich, der studiert hat und der bezahlen kann.' (3. 212) She also advises Galilei to wine and dine the Scholastics before asking them to look through the telescope (4. 215-16). She knows that Galilei has little understanding of the laws which enable one to survive in a society, and that this contrasts sharply with his approach to the laws of nature: 'Fünfzigmal wiegt der Mann seine Eistückchen ab, aber wenn es zu etwas kommt, was in seinen Kram paßt, glaubt er es blind!' (9. 255)
is, as we have seen, a sensual being who loves food and wine,\textsuperscript{64} he fails to recognize the significance for science of the social and economic forces which govern the production of these items and ultimately even the paradigms of science. He underestimates the connectedness of \textit{Milch} and \textit{Buch}, the interrelation of the material and intellectual realms. For Galilei the ‘Milchstraße’ is more important than paying the milkman (2. 203).\textsuperscript{65} He is wholly committed to his search for ‘Beweise’ and resists Frau Sarti’s attempts to make him take paying students. Galilei responds to the comments of the ‘Kurator’ on the interrelation of learning and market economics (‘Mathematik ist eine brotlose Kunst’, 1. 197, ‘Skudi wert ist nur, was Skudi bringt’, 1. 198) by fraudulently claiming the telescope to be his own invention in order to gain a salary increase. But Galilei is dismissive towards the people who pay him; he is \textit{schlau} enough to play the market but he does not acknowledge its influence on his

\textsuperscript{64} The verse at the beginning of Scene 2 states: ‘Groß ist nicht alles, was ein großer Mann tut / Und Galilei aß gern gut’ (2. 201). Galilei is both a great scientist and a physically large man: \textit{groß} in both senses. He says: ‘ich kaufe gern Bücher, nicht nur über Physik, und ich esse gern anständig. Bei gutem Essen fällt mir am meisten ein.’ (3. 208) Similarly: ‘ich brauche Muße. Ich brauche Beweise. Und ich will die Fleischtopfe.’ (3. 213) According to Galilei he despises people ‘deren Gehirn nicht fähig ist, ihren Magen zu füllen’ (3. 213). It is a revealing and not very flattering comment on his own character. He is prepared to work for anyone providing they give him time to research and food for his stomach. This unpleasant aspect to Galilei is confirmed by the transcripts of the Berlin rehearsals. Brecht describes Galilei thus: ‘er ist ein unverbesserlicher Völker. Er ist verfressen und irdisch und sündig und fleischlich. Sie müssen alles entschuldigen, verbieten, niederkämpfen. Bösartig ist er auch — und keinen Moment weiß man, wann er endgültig ausbricht.’ (Rülicke, p. 121; cf. p. 114.) To Vanni, Galilei says that he will not flee from the Inquisition: ‘Ich schätze meine Bequemlichkeit.’ (11. 265) By the penultimate scene, escape is no longer possible. He can no longer experiment but he can still enjoy his comforts: ‘Ich muß jetzt essen.’ (14. 285)

\textsuperscript{65} There is a noble intent behind this. In Scene 1 Galilei tries hard to explain the Copernican system to his house-keeper’s ten year old son: ‘Ich will gerade, daß auch du es begreifst. Dazu, daß man es begreift, arbeite ich und kaufe die teuren Bücher, statt den Milchmann zu bezahlen.’ (1. 192) But his obsession with understanding is not always ‘vernünftig’, as Frau Sarti says when Galilei refuses to leave his books and notes even when the plague is reported (5a. 226). When he is sealed inside his house because of the plague, Galilei cannot understand why the men who bring the bread refuse to bring him a book he needs; ‘als ob es jetzt auf ein Buch ankäme’ they laugh (5b. 229). The ordinary people are locked inside their superstitious world-view, which Galilei with his books and his \textit{Beweise} can destroy, yet because he does not really understand their world, where bread is more important than books, his ideas will be socially ineffective.
scientific research. Galilei insists he wants to be free to pursue his scientific research without concerning himself with issues of politics, religion or commerce. However, in a telling analogy, Cardinal Barberini explains to Galilei that nothing is free:


Even great scientists must pay for their milk and thus by implication the pure scientist will always be in debt to those who pay his or her bills. Thus Galilei fails to understand that *Milch* and *Milchstraße* are equally subject to social, economic and historical forces. The play suggests that science, as a human activity, cannot abstract itself from the social context which gave rise to it.

Ludovico’s accusation that Galilei is ‘geistesabwesend’ when he eats his olives (9. 257) is clearly inaccurate. As we have seen, Galilei is by no means a merely sensual or merely intellectual being, rather he combines both spheres of experience. But in one sense Ludovico is correct: Galilei fails to see the link between his scientific findings and the people who control the means of production. Ludovico and the class he represents — the feudal nobility who control the production of olives, wine and milk — together with the Church, are keenly aware of the implications of the new scientific world-views for their hold on power. Not only do they control the

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66 In Scene 2, we see that although Galilei has deceived the ‘Kurator’ and the Doge concerning the telescope in order to gain an extra ‘500 Skudi’, he is not mercenary by nature (2. 203). He ignores the flattery of the dignitaries and instead talks to Sagredo about the astronomical observations he has made: his sole interest is in the new understanding of the world which the telescope provides. It is Galilei’s fatal mistake that he does not grasp the connection between his science and the society in which he conducts his research.

67 Ludovico shows a very keen grasp of the political structure in his country: ‘Sollte Seine Heiligkeit sterben, Herr Galilei, wird der nächste Papst, wer immer es sein wird und wie groß immer seine
production of material necessities but also ideas. In his disagreement with the Scholastics, Galilei states that he believes in a pure science, one dedicated to the discovery of truth: ‘Ich würde meinen, als Wissenschaftler haben wir uns nicht zu fragen, wohin die Wahrheit uns führen mag.’ (4. 223) Yet in his conversation with ‘der kleine Mönch’, Galilei shows himself only too aware of the ideological importance of the Ptolemaic world-view for the Church: ‘Warum stellt er die Erde in den Mittelpunkt des Universums? Damit der Stuhl Petri im Mittelpunkt der Erde stehen kann!’ (8. 245) Significantly Galilei adds: ‘es handelt sich nicht um die Planeten, sondern um die Campagnabauern’ (8. 245). Indeed this is the key point which the dialectic of the text suggests that Galilei misses: science is inseparable from the fate of the ordinary people. Galilei fails to understand the implications of this. He is aware of the suffering of the peasants yet he insists in believing that unmediated facts — that Jupiter has moons for instance — are more powerful than the vested

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68 In his speech in Scene 1 Galilei seems to have a much clearer idea of the political implications of the new world-view: ‘Selbst die Söhne der Fischweiber werden in die Schulen laufen. Denn es wird diesen neuerungssüchtigen Menschen unserer Städte gefallen, daß eine neue Astronomie nun auch die Erde sich bewegen läßt. [...] Und die Erde rollt fröhlich um die Sonne, und die Fischweiber, Kaufleute, Fürsten und die Kardinäle und sogar der Papst rollen mit ihr.’ (1. 191) Neither of the last two sentences cited were in the first version (1. 11).
interests that control the social order. In his belief that science can operate separately from politics and society, as an autonomous metadiscourse, he misunderstands both the nature of knowledge and the role of the scientist. He also underestimates the power of the authorities to control knowledge. Indeed the authorities are prepared to allow Galilei to continue his research providing he restricts himself to ‘mathematischen Hypothesen’ (7. 239). According to Cardinal Bellarmin the Church believes ‘daß wir nicht wissen können, aber forschen mögen’ (7. 239). Providing the research remains abstract and unconnected to everyday life then it is permissible: pure science is not concerned with threatening social structures. Rather it allows the authorities to control both the direction of research and the results of science in order to increase their hold on power.

In his criticism of the Scholastics’ faith in Aristotle, Galilei utters an ironic judgement on his own actions: ‘Die Wahrheit ist das Kind der Zeit, nicht der Autorität.’ (4. 222) As a prisoner of the Inquisition in his final years, Galilei is

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70 Ralph Ley observes that this is an allusion to Francis Bacon’s Novum Organon (‘For rightly is truth called the daughter of time, not authority’) and sees a correspondence between the notion that truth is a function of history and ‘Marx’s concept of the epochal nature of history’ (Brecht as Thinker, p. 212). He continues: ‘There is thus implicit in Galileo’s activist pronouncement of the fourth scene the concept of history which forms the central thread of the Communist Manifesto.’ (p. 213) See also Knust, who notes that Olshki’s history of Galileo’s era (see above, note 35) shows that this was a common saying during the Renaissance and not coined by Bacon (pp. 218-19; cf. Werke V, 391). Bacon was an important influence on Brecht’s thinking and there are several allusions to the Novum Organon (1620) in Galilei. According to Schumacher, the following sentence was underlined in Brecht’s edition of Bacon: ‘Das wahre und rechte Ziel der Wissenschaften ist aber, das menschliche Leben mit neuen Erfindungen und Mitteln zu bereichern.’ (Schumacher, p. 41, citing from Kirchmann, op. cit., p. 131; other references to Bacon in Galilei, p. 40, also Charbon, pp. 251-52.) Clearly the crucial sentence in Galilei’s final speech, which encapsulates the socially committed vision of the Berlin version, is indebted to this: ‘Ich halte dafür, daß das einzige Ziel der Wissenschaft darin besteht, die Mühseligkeit der menschlichen Existenz zu erleichtern.’ (14. 284) Brüggemann notes that Bacon’s attempt to create ‘eine praktische Philosophie, die konkret zur Verbesserung des menschlichen Lebens […] beitragen will’ is comparable to Marx’s dialectical materialism (pp. 251; on Bacon and Brecht’s theatre theory, see pp. 250-57). On Brecht’s reception of Bacon’s inductive empiricism, see in particular Reinhold Grimm, ‘Das Huhn des Francis Bacon’, in Zu Bertolt Brecht: Parabel und episches Theater, ed. by Theo Buck, Literaturwissenschaft-Gesellschaftswissenschaft, 41
permitted to dictate his *Discorsi* concerning the laws of motion\(^{71}\) to his daughter, Virginia, who then hands over the pages to the Church authorities.\(^{72}\) As Cardinal

\(^{71}\) Throughout the play *Bewegung* is used ambiguously to suggest both movements of physical bodies subject to the laws of gravity, as well as the socioeconomic laws governing people and political action. As such it is monistic in its bringing together of physical and sociological forces. Compare Galilei’s opening speech where he describes the new spirit of enquiry, the desire to know why the stone falls (1. 190; above, note 50), with his comments to ‘der kleine Monch’ on the need for the peasants of the Campagna to ‘in Bewegung kommen’ (8. 246). Similarly, Galilei says on hearing that Barberini is to be Pope: ‘Die Dinge kommen in Bewegung.’ (9. 253) It is a phrase which suggests both scientific and sociological change. This is emphasized in the same scene where Galilei describes how people used to the economic forces in society will understand the new science: ‘Aber die das Brot machen, werden verstanden, daß nichts sich bewegt, war nicht bewegt wird.’ (9. 257) This understanding of causality is of course fundamentally part of the world-view of Classical Physics as opposed to that of the New Physics. The play thus implies that Galilei, although aware of social injustice and the need for revolutionary change, is incapable of seeing that his science is fatally divided from the very society which he claims to want to help. He attempts to hold himself and his science apart from the *Bewegung* of society in order to concentrate exclusively on the *Bewegung* in nature, thus (according to Brecht) introducing a false dualism into the world-view of science.

\(^{72}\) According to Gudrun Tabbert-Jones, not only Galilei’s character but also Virginia’s is presented in more negative terms in the American and Berlin versions of the text: she becomes ‘a burdensome child — a liability’ (‘Brecht’s Female Characters in *The Life of Galileo*’, in *Brecht Unbound: Presented at the International Bertolt Brecht Symposium Held at the University of Delaware, February 1992*, ed. by James K. Lyon and Hans-Peter Breuer (London: Associated University Presses, 1995), p. 254). Galilei describes her as ‘nicht intelligent’ (3. 208) and discourages her from looking through the telescope, preferring instead that she attends Mass (3. 212-13). His treatment of his daughter is to be contrasted with the care he takes in explaining his theories and discoveries to Andrea, the son of his landlady. When Virginia meets the Inquisitor, he is surprised that she knows nothing of her father’s putatively heretical notions. Indeed it is left to the Inquisitor to tell her something of these ideas (7. 241). In a moment of irony, Virginia turns to an astrologer (‘zu einem richtigen Astronomen’) to forecast her future with Ludovico. The irony seems to be double-edged as this manifestation of popular superstition, to which Galilei’s new science is opposed, appears accurate: ‘Drei Monate lang muß ich achtgeben, weil da die Sonne im Steinbock steht [...]. Wenn ich den Jupiter nicht aus den Augen lasse, kann ich jede Reise unternehmen [...]’ (9. 249). Subsequent to this Galilei announces his intention to begin studying sunspots, a move that brings him into conflict with the Church, as had his original discovery of the moons of Jupiter. As Tabbert-Jones rightly says: ‘Virginia’s narrow-mindedness seems to be the result of negative reinforcement. If in her later years she has become nothing but a mindless tool in the hands of the church, then Galileo has nobody but himself to blame.’ (p. 257) It is Galilei who pushes her into the arms of the Church by keeping her in ignorance, because of which she becomes in the penultimate scene the agent of the Church, enforcing the rule of the authorities. Tabbert-Jones notes: ‘[Galilei’s] conduct serves as a warning against science and scientists who do not take human issues into consideration.’ (p. 263) As Christoph Lorey has observed, Galilei’s treatment of the women around him, who are more in touch with social reality than he is, suggests that his understanding of science is flawed and that without changes, science will never attain its true liberatory potential (‘Glaube und Zweifel’, p. 270). See also Schumacher, pp. 289-90, Bernard Fenn, *Characterisation of Women in the Plays of Bertolt Brecht*, European University Studies, Series 1: German Language and Literature, 383 (Frankfurt a. M.: Lang, 1982), and James K. Lyon, ‘Brecht’s Women’, in *Mews, Critical Essays* (1989), pp. 235-45 (first publ. in *Bertolt Brecht in America* (Princeton: Princeton University Press, 1980), pp. 220-31).
Barberini suggested in his analogy of Romulus and Remus (see above), in return for being able to live in comfort and pursue his research without commercial pressures, Galilei must pay a price. The penultimate scene, depicting Galilei under house-arrest, offers a potent image of pure science trapped by its own helplessness before the mechanisms of society and exploited by the powerful few. In this final image of the founder of modern science, the audience does not see the promise of a better future as the Danish version suggested, but rather a bleak view of science exploited by the forces of reaction. The earlier view of science as the bringer of enlightenment and liberating people from superstition, has vanished and science has become the means to ever more lethal technologies.

Part of the price that the authorities exact for allowing Galilei to continue working, albeit without publishing, is that he publicly renounce his belief in the Copernican heliocentric system. This central event is of course the dramatic focus of all versions of the play, but its effect is viewed very differently in the final version. No longer is Galilei’s *Widerruf* a demonstration of his *Schlauheit*, an act performed in

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73 The first scene in particular creates a view of science as bringing enlightenment (‘schien das Licht des Wissens hell’ (1. 189)) in an age of superstition. New ways of understanding the world will undermine the hegemony of the Church and will empower the ordinary people (9. 257, lines 22-33). It is a view which is more powerfully present in the Danish version, which asserts even in the penultimate scene the hope in a better future: ‘Ich bleibe auch dabei, daß dies eine neue Zeit ist. Sollte sie aussehen wie eine blutbeschmierte alte Vettel, dann sähe eben eine neue Zeit so aus! Der Einbruch des Lichts erfolgt in die allertiefste Dunkelheit.’ (13. 106) Yet the quest for knowledge has a Faustian element which comes to dominate the final version, the notion that the desire for knowledge can become an end in itself: ‘Ich denke manchmal: ich ließ mich zehn Klafter unter der Erde in einen Kerker einsperren, zu dem kein Licht mehr dringt, wenn ich dafür erführe, was das ist: Licht.’ (8. 247) The final version shows that a science dedicated solely to the accumulation of knowledge, *pure science*, has dangerous implications for humanity as a whole.

74 Galilei is not unaware of the importance of science and technology to warfare. His ‘Proportionalzirkel’, as well as being used to calculate the rate of interest on capital, can be used to determine ‘die Schwere von Kanonenkugeln’ (1. 199). His telescope promises the Venetian seafarers an advantage over their enemies’ ships (2. 202, lines 32-35; in the first version, the ‘Kurator’ is reading a text written by Galilei himself, 2. 22-23). It is ironic that it is ‘Instrumente’ which cause Galilei to recant, as throughout the play he is associated with the invention of instruments, such as water-pumps (8. 246, line 18) and the telescope. As the Inquisitor points out, ‘Herr Galilei versteht sich auf Instrumente.’ (12. 270)
the same spirit as the silent resistance of the Cretan philosopher Keunos in the parable told by Galilei to his students in the first version (8. 72). Rather than being presented as a pragmatic hero, who bends beneath the weight of irresistible force so that the truth may survive, Galilei emerges in the final version as a criminal, a ‘Verräter’. His attempt to smuggle out his *Discorsi* to the free world which is present in the Danish version, is dropped from the Berlin text (see 13. 95). The fact that Andrea does in fact take the manuscript of the *Discorsi* to Holland becomes a fortuitous occurrence: Galilei seems resigned to the fact that his science is merely an intellectual exercise, a quest for abstract knowledge, and only his vanity has prevented him from destroying it (14. 280). He has achieved his wish for time and space free from the concerns of the market to enable him to search for *Beweise*. And yet his dream has become a nightmare. In the Danish version, Andrea describes what Galilei had come to symbolize for many people:

Sie stünden nicht nur für eine bestimmte Lehre von der Bewegung der Gestirne, sondern, und mehr noch, für die Freiheit des Lehrens und für diese auf allen Gebieten. Nicht also nur für irgendwelche Gedanken, sondern für das Recht zu denken überhaupt. Welches bestritten wird. (13. 101)

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75 See above, note 55. I use the word parable advisedly. The *Widerruf* scene reveals clear similarities between Galilei and Christ. In this scene Galilei’s scientific ‘apostles’ are juxtaposed with the Christian Virginia, who is praying audibly. She hopes he will renounce his ideas and live; Andrea and the others want him to resist and be martyred (‘Un glücklich das Land, das keine Helden hat!’ (13. 274)). Andrea’s voice competes with Virginia’s at the crucial moment of five o’clock, and it seems as if Andrea is reciting the creed of the new science: ‘Der Mond ist eine Erde und hat kein eigenes Licht. Und so hat die Venus kein eigenes Licht und ist wie die Erde und läuft um die Sonne. [...]’ (13. 272). Galilei’s role as teacher-saviour is more successful in the first version where Galilei is viewed as the unambiguous bringer of a better age, even if his recantation means its dawn is delayed. In the final version however the new age he brings is not necessarily a better one: the view of science presented by the text becomes more ambiguous. On this see Herbert Knust, ‘Brechts Galileo-Evangelium’, *Euphorion*, 79 (1985): 207-25.

76 According to Brecht, Galilei in the penultimate scene ‘unterliegt der Versuchung der Wissenschaft’: ‘Zum Schluß ist er ein Förderer der Wissenschaften und ein sozialer Verbrecher.’ (Rülicke, ‘Bemerkungen zur Schlußszene’, p. 108.) According to Rülicke, Brecht made clear during the Berlin rehearsals that ‘Galilei müsse als sozialer Verbrecher, als völliger Lump gezeigt werden’, and that ‘die soziale Seite seiner Wissenschaft [ihn] tatsächlich nichts angehe’ (p. 120).
In this version, Galilei did not just represent the cause of science, but rather the plight of intellectuals in general who resist authoritarian regimes in the name of intellectual freedom. Galilei accepts that he has betrayed the trust of these people and he reproaches himself for this (13. 102). But the revelation that he has been secretly finishing his *Discorsi* has the effect of justifying his *Widerruf* both in Andrea’s eyes and in the eyes of the audience. This is the archetypal intellectual struggling to fulfil his life’s work beneath the watchful eye of a totalitarian regime: for Galilei we can now read the names Sakharov or Solzhenitsyn.

The penultimate scene in the Berlin version is however very different. The effect of Galilei’s final speech is now that of a *Pointe*: the audience’s view of science as campaigning for *Vernunft* against superstition and reactionary, totalitarian politics is suddenly brought into question. Instead Galilei as the representative of science is shown to be working unwittingly for the interests of the authorities. Andrea is at first overjoyed that his former teacher did not sell out to the enemy: ‘Und wir dachten, Sie wären übergelaufen! Meine Stimme war die lauteste gegen Sie!’ (14. 281) He thinks Galilei purposely concealed his true beliefs in order to fool the ‘Feind’ so that he could continue with his research: ‘Auch auf dem Felde der Ethik waren Sie uns um Jahrhunderte voraus’ (14. 281). Up to this point the text echoes the Danish version, albeit that the exchanges are more focused in the later text. But Galilei destroys Andrea’s hopes that he has founded both a ‘neue Wissenschaft’ and a ‘neue Ethik’ (14. 281): ‘Ich habe widerrufen, weil ich den körperlichen Schmerz fürchtete.’ (14. 282) Andrea’s response is to state that ‘die Wissenschaft kennt nur ein Gebot: den wissenschaftlichen Beitrag.’ (14. 282) But Galilei’s reply to Andrea represents a sharp departure from the 1938-39 version: ‘Und den habe ich geliefert. Willkommen in der
Gosse, Bruder in der Wissenschaft und Vetter im Verrat! Ist du Fisch? Ich habe Fisch. Was stinkt, ist nicht mein Fisch, sondern ich. Ich verkaufe aus, du bist ein Käufer.' (14. 282) The bitterness of these words is striking and indeed shocking. The idealism of earlier speeches has vanished and we hear the voice of a disillusioned man, revolted at his own weakness. Although he is nearly blind, Galilei is now able to see all too clearly where he went wrong. He no longer believes, as does Andrea, that it is enough to make a contribution to the advancement of science. It is not enough just to have written the Discorsi. Galilei now feels that science is about more than understanding the laws of nature. Science, he realizes, is inseparable from a climate of intellectual openness, and ignores at its peril what Brecht termed 'die soziale Seite [der] Wissenschaft' (see above, note 76).

Galilei’s long final speech provides a stark contrast to the promise of a new age which he foresaw in Scene 1. This earlier optimism is expressed in the lines recited by the boy Andrea:

O früher Morgen des Beginnens!
O Hauch des Windes, der
Von neuen Küsten kommt! (1. 192).

At the beginning of the play it is morning, Galilei is washing himself, stripped to the waist, a figure of vitality and health. Now in the penultimate scene it is night, Galilei is closely watched by the monks and his daughter, and his eyesight is failing. At the end of this scene Andrea asks: ‘So sind Sie nicht mehr der Meinung, daß ein neues

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77 The origins of this passage lie in Bacon’s Novum Organon, where he cites from Lucretius (see Kirchmann, p. 178; Werke v, 384). Knust refers to Wohlwill’s work on Galileo, which paraphrases Bacon: ‘Darf man mit Bacon sagen, daß es aus den hier angedeuteten erfreulichen Anfängen uns anweht, wie der Hauch des Windes, der von neuen Küsten kommt’ (Knust, p. 216, citing from Wohlwill (1969 edn), I, 125). See above, note 70.
Zeitalter angebrochen ist?’ Galilei replies: ‘Doch. — Gib acht auf dich, wenn du durch Deutschland kommst, die Wahrheit unter dem Rock.’ (14. 285) The allusion to the threat of Hitler’s Germany no longer dominates this exchange as it did in the first version (13. 106; see above). Instead a profound ambiguity dominates the enigmatic word *doch*: is the new era that has dawned a better one, or is it perhaps one which can only promise yet more suffering for the ordinary people? Has Galilei set a good example to the following generations of scientists, or was the price exacted for a *pure science* one that must now be paid by all scientists? Galilei’s speech which precedes these comments suggests that the future will indeed be bleak. Galilei has finally realized the full importance of the relationship between science and society. He has seen how the ordinary people ‘riß uns das Teleskop aus der Hand und richtete es auf seine Peiniger’ (14. 283). For the people, science held the potential to explain their suffering and empower them, a fact not lost on the authorities who ‘überschütteten uns mit Drohungen und Bestechungen’. ‘Aber können wir uns der Menge verweigern und doch Wissenschaftler bleiben?’ Galilei asks (14. 283). He continues:


Science, Galilei says, is not just about discovering the truth about nature, but it is about the practical application of that truth to relieve the hardship endured by ordinary people: ‘Ich halte dafür, daß das einzige Ziel der Wissenschaft darin besteht, die Mühseligkeit der menschlichen Existenz zu erleichtern.’ (14. 284) At the end of his
life, Galilei firmly rejects the notion of pure science, 'Wissen um des Wissens willen', as playing into the hands of the 'Machthaber' who wish to control and exploit science in order to create 'neue Drangsale' (14. 284). Although such a science will indeed bring new discoveries and technological progress, it will also mean 'ein Fortschreiten von der Menschheit weg'. The scientists' cries of Eureka! will be met by 'einem universalen Entsetzensschrei' (14. 284). These harsh words about science are matched by equally damning comments about himself: 'ich überlieferte mein Wissen den Machthabern, es zu gebrauchen, es nicht zu gebrauchen, es zu mißbrauchen, ganz wie es ihren Zwecken diente'. Galilei now believes that he could have changed the whole direction of science, moving it towards a genuinely liberating human endeavour instead of one in the service of the authorities and the profit-principle:

Hätte ich widerstanden, hätten die Naturwissenschaftler etwas wie den hippokratischen Eid der Ärzte entwickeln können, das Gelöbnis, ihr Wissen einzlig zum Wohle der Menschheit anzuwenden! Wie es nun steht, ist das

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78 Compare this passage with Brecht's 'Über experimentelles Theater' (p. 53; cited above).
79 In the penultimate scene of the first version, Galilei seems to rule out the possibility that one man can have an effect on the course of science or history: 'Aber natürlich, ein einzelner Mann kann sie [die Vernunft] weder zur Geltung noch in Verruf bringen. Sie ist eine zu große Sache.' (13. 106) However the force of the Berlin version of the same speech is to highlight the role of the individual in reforming science: 'Ich hatte als Wissenschaftler eine einzigartige Möglichkeit. [...] Einige Jahre lang war ich ebenso stark wie die Obrigkeit.' (14. 284) The earlier version is more consistent with Brecht's theory of theatre as developed in the 1930s. As Gert Sautermeister has argued the Berlin version of Scene 14 is 'wahraht unbrechtisch' and indeed has more in common with Schillerian drama ('Zweifelskunst, abgebrochene Dialektik, blinde Stellen: Leben des Galilei (3. Fassung, 1955)', in Hinderer, Brechts Dramen (1984), p. 145). By appearing to blame Galilei's Widerruf for the division of science from the socioeconomic context, Brecht places too much responsibility on one man: 'Sein Held, so suggeriert er, hätte als opferwillige Erlöserfigur das gesellschaftliche Heil herbeiführen können und beschreite statt dessen als intellektueller und sozialer Unheilstitter den Weg der Verdammnis. Da ist nicht mehr materialistische Dialektik, sondern säkularisierte Religion und barockes Welttheater im Spiel. Mit der 14. Szene bricht sich Brechts kritisch aufklärende Dramaturgie an einer anachronistischen Helden- und Märtyrerkonzeption.' (Sautermeister, p. 140.) According to Sautermeister, Brecht ignores the dialectical view of history in his reworking of the penultimate scene. The notion that the atom bomb could be the result of Galilei's failure to society is a 'grandioser Irrtum' (Sautermeister, p. 142; see also above, notes 14 and 41). Fuegi also notes that the play in its final version has little to do with the Brecht of the 1920s and 30s, but sees this as one of Galilei's strengths (pp. 93, 184-85). See also M. Helena Gonçalves da Silva, Character, Ideology and Symbolism in the Plays of Wedekind, Sternheim, Kaiser, Toller, and Brecht, MHRA Texts and Dissertations, 21 (London: MHRA, 1985), pp. 124-25.
Höchste, was man erhoffen kann, ein Geschlecht erfinderischer Zwerge, die für alles gemietet werden können. (14. 284)

Galilei realizes that he has supplied science with a role-model which will make possible a science that serves the holders of power rather than one committed to humanitarian ideals. By publicly recanting and accepting the role of a pure, theoretical scientist offered to him by the authorities, the play suggests that Galilei made the hydrogen bomb and the possibility of nuclear holocaust a reality. Galilei opens the way to a science whose epistemology assumes a separation between observing subject and experimental object, and which can therefore claim to be ethically neutral, a discourse dealing in objective facts existing independently of contexts and values. Galilei’s ‘mörderische Analyse’ (14. 285) leaves the audience in no doubt that the new scientific age which has dawned will bring further suffering to the ordinary people.

It is difficult to overestimate the importance of this final speech for the play as a whole. Perhaps this is why both the American version and the Berlin version on which Brecht himself worked omitted the final scene, which depicts Andrea on his way out of Italy, in order to give Scene 14 more prominence. As Darko Suvin has suggested, the final scene emphasizes the ambiguity which is undeniably present in the play’s depiction of science. The final scene harks back to the Danish version, where science is presented as a force for progress in the world, undermining

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80 See Fuegi, p. 209, note 12.
81 Suvin writes that the final scene is ‘entirely appropriate to the play’s first version but not appropriate to the horizon of betrayal. Appropriateness to this horizon would entail an Andrea that carried on Galileo’s devolution as the key link who ensures the rise — and as the first representative — of the “race of inventive dwarfs” who will finally lead to the atom bomb. The dilemma of what is the tenor of the manuscript he is carrying, a liberating or a death-dealing science, remains painfully unresolved.’ (‘Brecht’s Life of Galileo: Scientific Extrapolation or Analogy of the Knower?’, Forum Modernes Theater, 5 (1990), p. 134.) See also Charbon, p. 147.
superstition and promoting rational solutions. This favourable view of science owes much to the undoubted successes of applied science in the nineteenth century and suggests that the methodology of science should provide a model for other areas of human life and discourse. This view is directly challenged in the Berlin version, perhaps surprisingly given the fact that it was intended for performance under a system which claimed to subscribe to a scientific Marxist world-view. But the clue to this attack on the trend of modern science is contained in the verse which prefaces the final scene:

Liebe Leut, gedenkt des Ends
Das Wissen flüchtete über die Grenz.
Wir, die wissensdurstig sind
Er und ich, wir blieben dahint'.
Hütet nun ihr der Wissenschaften Licht
Nutzt es und mißbraucht es nicht
Daß es nicht, ein Feuerfall
Einst verzehre noch uns all
Ja, uns all. (15. 286)

82 According to Steve Giles, although Brecht was sympathetic to the objectives of logical positivism particularly as regards the elimination of metaphysics from logic, he rejected the notion that observations could ever be disinterested or value-free. For this reason Brecht was a philosophical pragmatist ('Bertolt Brecht, Logical Empiricism, and Social Behaviourism', MLR, 90 (1995), p. 90). Brecht believed that 'the viewer is inextricably located within social processes' (p. 93). Giles concludes: 'Brecht rejects out of hand the demand that sociology be value-free, but it is also vitally important to note that he does not draw the logical empiricist conclusion that a politically committed sociology must for that reason be unscientific. Indeed, he argues that in an antagonistic societal formation, the notion of an “objective” standpoint is in any case an epistemological absurdity: “Nur das beteiligte, mittätige Subjekt vermag hier zu erkennen”'. [...] As far as Brecht is concerned, the pure, contemplative, knowing subject is an idealist illusion.' (p. 93; Giles cites from Brecht's Der Dreigroschenprozefi, Werke, XXI: Schriften i (1992), p. 513.) See also S. Giles, 'Post/Structuralist Brecht? Representation and Subjectivity in Der Dreigroschenprozefi', in The Other Brecht, i: The Brecht Yearbook, 17, ed. by Marc Silberman, et al, (Madison: International Brecht Society, 1992), pp. 147-63, and Lutz Danneberg and Hans-Harald Müller, 'Brecht and Logical Positivism', in Essays on Brecht: The Brecht Yearbook, 15, ed. by Marc Silberman, et al (College Park, Maryland: International Brecht Society, 1990), pp. 151-61.

83 Suvin comments: ‘The final scene — taken over without radically significant changes from the first version — establishes an [...] unambiguous spectatorial sympathy for the young scientist who is trying and succeeding to smuggle the truth across the border. This final bright message is diametrically opposed to the intended — and I think on the whole attained — gloomy message of the play as a vehicle: the final scene works directly against the horizon established by the rest of the play. [...] Scene 15 suggests that Andrea is reading the manuscript of Marx while the play as a whole, which had just culminated in Galileo’s sardonic fulmination, demands that he be reading Teller.' ('Brecht’s Life of Galileo', p. 134.) On Brecht and Marxism, see above, note 27.
The allusion is quite clear: the threat of nuclear holocaust. The question posed by the final scene in the Berlin version, is whether Andrea has learnt from what Galilei has said about science, and whether as the representative of future science he will therefore be able to reform science to include a Hippocratic Oath. Clearly if one views Galilei as a history-play such talk is anachronistic, as the tendency in science from the founding of the Royal Society in the seventeenth century up until Brecht's own day was to assert the objectivity and value neutrality of science. Therefore in an important respect, Brecht's play suggests that Galilei failed: he won the argument about the laws of nature but lost the battle to help the 'römische Hausfrau' (14. 284). That the historical Galileo could ever have entertained such notions is out of the question. But as I have tried to emphasize, Leben des Galilei is a play about modern issues intended for the post-war audience, an audience keenly aware both of the way scientists were implicated in the atrocities committed in the name of science in the Third Reich and the massive investment of scientific resources, in both the United

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84 The allusion is even clearer in the American version, where the verse comes at the end of the thirteenth scene and the last four lines are spoken by Galilei himself (13. 181, lines 12-15). Rülücke reports that Brecht wanted Andrea's exclamation in scene fourteen: 'Discorsi!' (14. 281) to have an explosive impact: 'Das muß aber kolossal wirken, wie die H-Bombe!' ('Bemerkungen zur Schlusseszene', p. 143.) Fuegi comments: 'Brecht wants us to believe that Galileo hands Andrea the materials essential to the work done at Los Alamos, the work that led to the first test explosion, and J. Robert Oppenheimer's citation from the Bhagavad Gita: "I am become Death, the destroyer of worlds."' (p. 180; on Oppenheimer's fascination with this Sanskrit poem, see Rhodes, pp. 662-63, and 676.)

85 According to Schumacher, Brecht developed the idea of a scientific Hippocratic Oath for the American version but decided not to use it. Only after the development of the H-bomb did he feel that such an ethical code was necessary for scientists as well as medical doctors (p. 307). Schumacher has identified several examples of scientists in the late 1940s and early 1950s who also felt such a code was necessary in the nuclear age, but maintains that this was an original idea of Brecht's. Other examples included G. Weltfish's 'Der Eid des Homo Sapiens' (Physikalische Blätter (Mosbach), 2 (1946)), C. Daniel and A. M. Squires's suggestion of a professional ethic to which scientists should subscribe (Bulletin of the Atomic Scientists (1947), p. 303), and Nobel prizewinner Frederick Soddy, who in his book The Story of Atomic Energy (London: New Atlantic, 1949), p. 128) argued for a Hippocratic Oath and for scientists to refuse to work on military projects (Schumacher, pp. 308-11). See also Charbon, p. 146.

86 See above, note 23. See also Chapter 1, note 30 of this thesis.
States and the Soviet Union (not to mention smaller states such as Great Britain), in the development of nuclear armaments.

As I have suggested, Brecht's play raises problems which go to the heart of science as it has developed since Bacon and Galileo, and challenges notions which many scientists still hold sacred today. The objectivity of the scientific observer and the value neutrality of science itself remain key tenets of scientific practice. Nevertheless, the high profile involvement of scientists in both the Second World War and the Cold War has led many to challenge the validity of these assumptions:

Sometime in the late 1940s after the Manhattan Project, haunted by the fear of nuclear power, Westerners in large numbers began to see the need to understand the values and motives of the scientists who ushered in the nuclear age. In effect they rediscovered the scientist as an agent, rather than simply a servant, of historical change. Those who now held such power had to be probed, their backgrounds and values questioned. For the first time it became necessary to get away from the eighteenth-century portrait of the scientist as a selfless participant in the new Republic of Letters. Ironically, the heroic image of science had obliterated the human agency at work in any scientific enterprise. It came as something of a shock to discover the scientist as partisan and policymaker, caught between the ideals of scientific openness and progress and the military necessity of mass destruction. Nothing in the previous history of science, as it had been told from the Enlightenment onward, had prepared Westerners for science in the context of nuclear power and the Cold War.87

87 Appleby, Hunt and Jacob, *Telling the Truth about History*, p. 30; cf. Chapter 1, note 31 of this thesis. In a recent speech Sir Michael Atiyah, President of the Royal Society from 1990-95, said concerning the dropping of the atomic bomb on Japan: 'No other single event has so profoundly affected relations between science and society. It cast a very long shadow over the next half century.' ('Science in a Farewell to Arms', *THES*, 5 January 1996.) According to Atiyah, one of the effects of the close collaboration of pure scientists with military and industrial interests during the Manhattan Project was that 'the ivory tower was no longer a sanctuary': 'from now on science and big money were partners'. The public viewed science with increasing hostility during the Cold War, at first concerning nuclear weapons and then environmental worries. Atiyah speaks of a need to 'regain the confidence of the public', a process which involves a change in the attitude of scientists and not just a re-education of the public as many scientists believe. Among the questions he feels scientists should now be asking are: 'Have we sold out to the military-industrial complex? Do we pay sufficient attention to the way science is applied? Have we subverted the international idealism of science for narrow chauvinist aims?' According to this leading mathematician, the scientist in the post Cold War world can no longer justify working for the international arms trade.
As Brecht’s play demonstrates, science cannot isolate itself from the sociohistorical context, something research into the history and philosophy of science also emphasizes (see Chapter 1 of this thesis). To assert the value neutrality of science is to deny its origin in a given culture and time frame. For Galilei, his determination to pursue pure science leads him to surrender himself to the power of the Church. Galilei learns that to ignore the influence of society on the practice and findings of science is to risk becoming the tool of the authorities (see above, note 31). Pure science is potentially an exploited science. To assert the value neutrality of science absolves scientists of the responsibility of questioning the morality of the system in which they work. Leben des Galilei thus argues for a committed science, a science which accepts that it is indebted to its social context and recognizes the need to declare itself to be actively engaged in the attainment of humane goals: Galilei’s Hippocratic Oath for scientists. By raising these issues, Brecht’s play demonstrates immense ethical and social vision and a keen understanding of the role of science in the modern world.

Leben des Galilei is recognized as an internationally important work, dealing with issues that have been central to ethical and political debate in the last half of the twentieth century. It is a play that is rooted in a faith in science as the engine of human progress and yet registers a profound doubt at the development of modern science. It is not surprising therefore that during the 1950s and 1960s a series of works followed from other writers which also dealt with aspects of these issues. Indeed Brecht himself planned another play on science, this time on Albert Einstein.88

88 Einstein died on 18 April 1955, two days after the Cologne première of Galilei. During the rehearsals of the play in Berlin, Brecht had begun planning a play called Leben des Einstein, which would focus on the dilemma of scientists such as Oppenheimer whose ideas are employed for the production of weapons of mass destruction (see Werke V, 353). Brecht had been fascinated by the figure of Einstein for many years (see above, note 24) and owned many books on him (Schumacher, p. 470, note 32). One of the themes that the play would have examined was the indeterminacy that was posited by the New Physics and its implications for historical determinism.
The Physikerdrama has become an important part of late twentieth-century German literature. Plays such as Carl Zuckmayer’s Das kalte Licht (1955), Friedrich Dürrenmatt’s Die Physiker (1962), and Heinar Kipphardt’s In der Sache J. Robert Oppenheimer (1964) took up, with varying degrees of success, themes which Brecht’s Leben des Galilei had raised. Although these plays bear witness to the important role of science in the post-war period, Brecht’s seminal play is by far the most significant work of the genre and continues to prove his most popular work. This

(Mittenzwei, pp. 158-59; see also above, note 41). Einstein vigorously opposed the idea that causality was merely a concept and not a universal principle, a position expressed in his famous comment: ‘Gott ist kein Würfelspieler!’ (see Niels Bohr, Atomphysik und menschliche Erkenntnis, 2nd edn, 2 vols [Braunschweig: [n.pub.], 1964], t: Aufsätze und Vorträge aus den Jahren 1933-1955, ‘Diskussion mit Einstein […]’, pp. 32-67; cf. on Einstein and the New Physics, Emter, pp. 51-54, and Schumacher, p. 323). According to Knopf the central theme of the play was to be the paradox of the scientist who set out to prove the fundamental harmony of the physical world but who sees his theories exploited in order to create the ultimate weapon with the ability to destroy the world: ‘Gezeigt werden sollte, daß die Wissenschaftler sich nicht einerseits standig auf die “reine Wissenschaft” berufen konnten, andererseits längst zur “angewandten” Wissenschaft übergegangen sind und damit der Gesellschaft (in erster Linie den — oft nicht verantwortlichen — Politikern) die Ergebnisse ihrer Wissenschaft zur Nutzung überlassen, ohne ihre Auswirkungen zu reflektieren oder zu verantworten.’ (Knopf, Brecht-Handbuch, p. 375.) Leben des Einstein remained a plan as Brecht died before he was able to write it. See also Ziolkowski, ‘The Ethics of Science from Adam to Einstein’, p. 176.


According to Suvin, Galilei is ‘probably [Brecht’s] most popular single work, both on stage and in print’ and had sold 2.4 million copies world-wide by 1990 (‘Heavenly Food Denied’, p. 139).
may be due in part to the prolonged genesis of the work, a fact that has resulted in a
play that manages to bridge the gulf between the scientific optimism of the late
nineteenth century and the pessimism which has increased throughout the twentieth
century with each new advance in the technology of destruction. By this I do not mean
to suggest that it is a play that attempts to smooth over the real problems that confront
our scientific and technological culture. Rather I mean that despite the bleak
prognosis offered by the penultimate scene, the dialectic of Brecht’s play implies that
in human beings there is an innate desire for a neues Zeitalter that promises
something more than new weapons. The ‘Licht des Wissens’ (1. 189) does not have to
become ‘ein Feuerfall’ that consumes us all (15. 286; see above, note 73). Brecht’s
Galilei does not retreat into nihilism as does Dürrenmatt’s Die Physiker. Instead I
suggest that the final scene functions as a dialectical corrective to Galilei’s pessimistic
verdict on his own life, and in the youthful figure of Andrea, Brecht’s play shows that
there is still hope for a better future. Andrea’s act of individual kindness in buying the
jug of milk for the old woman — a sign perhaps that unlike his mentor he is aware of
the social responsibility of the scientist, of the equal importance of Milch and the
Milchstraße — and more importantly his attempt to destroy the children’s
superstitious beliefs, suggest that there is a genuinely progressive element in science
that should be preserved and nurtured. For, it is suggested, in the ignorance of these
children at the border-crossing lie the seeds of a new age of irrationalism, one which
spells the death of the ‘Licht des Wissens’ as surely as does the nuclear holocaust of
the ‘Feuerfall’. Leben des Galilei does not therefore rule out all hope of a better age to
come. Just as Galilei had left Venice thirty-five years earlier with ‘die Wahrheit in der
Tasche’ (4. 214, line 25), so at the end of the play Andrea crosses out of Italy carrying
his teacher's *magnum opus*. A new age is beginning but what that new age will bring is the responsibility of individual scientists such as Andrea. His comment to the young boy is a message of hope, a hope that rests in the determination of individuals to understand the world and their refusal to be satisfied with incomplete answers: ‘*Wir wissen bei weitem nicht genug, Giuseppe. Wir stehen wirklich erst am Beginn.*’ (15. 289)

The final scene therefore serves to highlight the hope that science still holds out to humankind, even after Hiroshima and Nagasaki. But it also reflects the problematic view of science which *Galilei*, as a composite of three very different versions, itself embodies. Science has the potential to discover knowledge which can be applied to produce both life-preserving and life-destroying technologies: the aircraft which Andrea predicts (15. 289) will be both a form of civilian transport and the delivery vehicle for nuclear bombs. Knowledge itself can liberate people from superstition and dogma, but it can also lead to a Faustian obsession with ‘*Wissen um des Wissens willen*’ which is vulnerable to exploitation. Scientific knowledge, the play suggests, should be used ‘*zum Wohle der Menschheit*’; but then how is the common good to be defined? These and other problems raised by the play serve to foreground the real complexity of the uneasy relationship between science and culture in the second half of the twentieth century, a complexity which the play does not seek to obscure. They also typify Brecht’s own ambivalence towards modern science reflected in the dialectical approach of *Galilei*. Neither positivist nor relativist in its approach to science, Brecht’s play seeks a pragmatic understanding of one of the urgent issues of the age. In the post Cold War period, when the phenomenon of science and its interrelation with society appears more differentiated than was hitherto
suspected, *Galilei* remains as perceptive as when it was written. In the final analysis, *Leben des Galilei* is a play which through its formidable dialectical energy succeeds in raising more questions than it answers. However, Brecht's insight into the issues involved means that these questions have remained central to the continuing debate concerning science and culture.

Brecht's *Galilei*, like all the texts that I have discussed, recognizes that scientific beliefs impinge profoundly on the consciousness of men and women at any given time, providing them with potent metaphors for their being in the world. Time and time again those metaphors produce not certainty and well-being, but rather conditions of tension and conflict. And, as we have seen, the literary text can frequently offer unforgettable explorations of the lived, felt complexity of precisely such moments of cultural challenge and change.
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