

Consequences of Proportional Systems in Architecture

The system of architecture inscribed by Vitruvius in *De Architectura* and famously drawn by Leonardo da Vinci in 1490, as well as Cesar Cesariano after him in 1521, has provided modern architecture and art historians with argumentation for placing the architectural object at the centre of a system of relations between symmetry, geometry and proportion.

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Drawing from this observation, this paper is more of a work-in-progress than conclusion and will ask questions, and begin to construct connections and arguments, rather than provide full-fledged hypotheses and answers. It is part of a larger body of research that is currently structured into three sections; the first being a discussion of the historical root of the problem addressed in the research, and why this problem exists. The second is the presentation of what I am referring to currently as an 'alternative history', one which I argue is the result of the uncovering of a series of assumptions. This leads me to an interpretation of the problem. The third is the setting this problem within the territory of computational design and technology today. This paper focuses mainly on the first part of the research: the historical root of the problem, and thus this is the first of a series of three papers that will be presented in various venues in the following year.

I will begin with two assumptions. Firstly, that the proportional system mentioned above can be read as the first instance in architecture of the 'proportional figure' as a technological construction, organised spatially through the use of the aforementioned correspondences. Secondly, underlying this reading of the proportional figure is an initial observation that the nature of this technological inscription is denoted utilising an idealized, classical figure in form and signification. As a result, this research uses these observations to frame an argument that within architecture there is a coded, technological relationship between this system of proportions versus all other systems (i.e the ideal system versus non-ideal systems). This codification places the idealized, proportional figure in a position of dominance through which architectural history has been written, inscribed, translated and transcribed. However, with advances in technology, this system can be questioned for its relevance in the 21st century, a time in which forms of production may necessitate stepping outside systems of proportion to bring into architecture other means of, and parameters for, achieving the organisation of

space. This will be discussed very briefly later in the paper when discussing the consequences of proportional systems in the contemporary architectural discipline (i.e. the third section of this research).

When one looks at the last century, this system of relations can be seen to have regulated, in varying ways, architectural design methodology since its 'rediscovery' and re-inscription into architectural discourse around the middle of the 20th century. Most discernibly it can be observed in the work of Le Corbusier, as demonstrated in his development of the *modulor* beginning in 1943, which he described as "a harmonious measure to the human scale, universally applicable to architecture and mechanics." It was a solution to the universal standardisation of forms of production post-World War II.¹ Perhaps even more characteristically, Le Corbusier wrote that he "would have the right to claim royalties on everything that will be constructed on the basis of [his] measuring system"² as it quickly became recognisable around the world. Robin Evans in *The Projective Cast: Architecture and Its Three Geometries* (2000) wrote that what is most interesting about Le Corbusier's *modulor* is how it embodies the dilemma of the architectural discipline – i.e. how to devise a system which could "both be certain and free".³ Le Corbusier ultimately believed that the power of the *modulor* would be in the ability of such a system to rectify the relationships between the failures of the metric system and the Anglo-Saxon system across the industries and disciplines of the built environment. His *modulor* had the potential to embody multiple solutions within a singular unified and idealized figure.

It is towards the conclusion of World War II that Corbusier began his work on the *modulor*, when much of western Europe had been devastated by the very technologies that Corbusier had lauded only just twenty years earlier in *Toward an Architecture* (1923). The *modulor*, therefore, could be argued as the architect's attempt to reconcile the threat of technology, rather than the incompatibility of existing means of measurement and forms of production. The impact that war had in the early half of the 20th century was, in fact, the threat it made to the Modern project. We can see this reaction played out in Walter Gropius' manifesto to the Bauhaus⁴ and in the final chapter of Sigfried Giedion's *Mechanisation Takes Command: a contribution to anonymous history* (1948), titled "Man in Equipose" where the prolific historian and Le Corbusier supporter calls technology "more dangerous" and "less easily controlled than natural forces" since it "reacts on the senses and the mind of its creator".⁵ This can also be seen in an editorial for an issue of *Architectural Review* in the 1940s where an editor of the magazine, H. de C. Hastings, published a series of photographic essays on the destruction in London titled "The End of Last Time" while simultaneously calling for a 'picture' to reconcile the disparate elements within a city;⁶ written as a reaction to the effects military technologies had in the devastation of any rationalism within the modern city.

The 'picture' that Hastings called for is that of the idealized, measured and proportional classical figure. Any other system for measurement, i.e. metric or foot-and-inch, becomes irrelevant and diminished in this frame of thinking. Therefore, the ideal figure was re-established, as the dominant fiction,⁷ a term that the theorist and historian Kaja Silverman has used to describe an "ideological reality [that] solicits our faith above all else in the unity of the family and the adequacy of the male subject."⁸ The Modern project post-World War II was one that is ostensibly masculine, delineated through a rationalism that sought out the sustainment of a idealized figure. This prevented the "sense of ideological fatigue" that Silverman recognizes in her work as the primary catalyst for not accepting the

Other, i.e. those figures that do not fit within a the dominant fiction.⁹ In essence, the dominant fiction establishes a way for architects to perceive, and therefore experience, the world. It is a way to regulate the production of the architectural discipline, a means through which ideology manages the ways in which we make certain assumptions, have certain beliefs, and therefore act in certain ways in response to others, to events, and to systems that may not be the one which is held in the position of dominance.¹⁰

This can be seen particularly in the work of Rudolf Wittkower in *Architectural Principles in the Age of Humanism* (1949) as well as the essays of Colin Rowe including “The Mathematics of the Ideal Villa” (*Architectural Review*, 1947) and “Mannerism and Modernism” (*Architectural Review*, 1950) – although it should be noted that these texts are only very early texts in Rowe’s forte of essays that relate to this topic. As the architecture historian Alina Payne has aptly observed, the publication of Wittkower’s text in 1949 was the final rejection by Wittkower of the discourse of *Einführung* as presented in the work of Geoffrey Scott in *Architecture of Humanism* (1914).¹¹ The effect of each of their texts has been influential in the teaching of art and architecture. Architecture and art historians, such as Payne, have recorded this rejection and thus transcription of both historians’ positions thoroughly, particularly just before the turn of the 21st century. However, I would argue that research into the time that Wittkower and Rowe wrote these texts is evermore evident due to the flurry of work on Rowe in the last few years, for example the upcoming book to be published in 2015 by Emmanuel Petit titled *Reckoning with Colin Rowe: Ten Architects Take Position*.

Rowe’s methods – as accounted for in these books through his essays, letters and disciplinary influence – became, by and large, the ‘norm’ from the mid-20th century onwards in architecture education. This is due to the exodus of Josef Albers, Rowe and others from Europe to the United States, and the establishment of the Texas Rangers in Austin, Texas, which by and large set down an architectural curriculum that was tied to the proportional figure and systems of proportion, geometry and symmetry, and spread throughout the United States once the members of the Texas Rangers left Austin for different schools around the country.¹² An example here is the development of the Nine Square Grid problem by John Hejduk while at University of Austin Texas during his early formative years as a teacher with Rowe. However, the recent works on Rowe mainly focus on his later years, rather than the formative years in which he developed his critical methods.

Rowe, as a student of Wittkower, has been assumed throughout scholarly work on him to have appropriated the methodology of comparative technique that Wittkower was utilising as early as 1934 when he published a piece on Michelangelo’s Laurentian Library in *Art Bulletin* titled “Michelangelo’s Biblioteca Laurenziana.”¹³ Both Rowe and Wittkower’s texts had a devastating effect on the capacity for other readings of the historiography and teaching of art and architecture history, particularly those attached to theories of *Einführung* (such as Heinrich Wöflin or Geoffrey Scott) or its corollaries in the advances in science, technology and psychology. This has had significant consequences for architecture. However, there has been very little scholarly work by contemporary theorists on this topic, despite leading schools of art and architecture in Europe and the United States, respectively, developing curricula and programmes which emphasise the use of Rowe and Wittkower’s methods.

This proliferation of Rowe’s methods has resulted in the emergence of figures

that do not fit the 'norm'¹⁴ being regarded as insufficient to hold a position as a legitimate perspective alongside the proportional figure by mainstream scholars and educators. Therefore, this subjugates the potentiality for a system of architecture based on a different kind of figure or system of proportion. This has limited architectural research on this topic to a series of narrow readings of the relationships between discourses on the figure, the body and architecture that have been dependent on the work of Wittkower and Rowe as well as Giedion, such as that of Alberto Pérez-Gómez, Christopher Hight, Joseph Rykwert and Peter Eisenman.

However, to begin to consider this we must return to the period of 1943-1949, just after the conclusion of World War II when there were published the three texts which are central to the dissemination of ideas surrounding idealized, proportional systems by Giedion, Wittkower, Rowe and Le Corbusier mentioned above. This period that marks the publishing of these texts is the time at which the potentiality for histories of other systems besides the classical, proportional system, was halted within architecture, initially by Le Corbusier's *modulor*, then by Rowe and Wittkower's revival of a humanist system for architecture and finally by Giedion's *man in equipose*. Perhaps by uncovering the relationship between Wittkower and Rowe (and later, the one between Rowe and Eisenman), as well as the relationship of Wittkower to Giedion, light could be shed on this revival. For example, by breaking open the methodology of Rowe that he used in his Masters dissertation for Wittkower at the Warburg Institute in 1948 on Inigo Jones, where assumptions on Jones' intent for his own research made up the crux of Rowe's argument: perhaps within this a key to what precisely influenced Rowe's methods.

In addition, in this period of time, one cannot separate technological advances from architecture's relationship to the figure as it was, on the one hand, a time of technological advancement, and on the other, a time of great bodily violence and destruction. The cultural and social context of this research therefore cannot be ignored as it provides a fertile ground for understanding reasoning for certain decisions made during this time, for understanding how the dominant fiction came into being, i.e. the reaction of Hastings in *AR* to the bombing of London mentioned above. Ultimately, this work wishes to provide a history other than the one which is known and 'accepted' as a dominant fiction within the architectural discipline, one which has not yet read. In addressing the main questions that have arisen from the outlining of this historical problem, the work hopes to formulate a different map of architectural history, opening the field of proportional systems back up for interrogation. By precisely theorizing the consequences and effects of a different history on architecture, I would argue that this unknown history is a necessary perspective for a contemporary world which is increasingly multiple and complex.

This issue of multiplicity brings me to the third section of my work, which is the setting of this problem within the territory of computational design today. There have been moments, particularly in the period of the Baroque or within the eclecticism of the 19th century (such as the Palais Garnier by Charles Garnier, which Le Corbusier remarked was "a lying art")¹⁵ where the 'idealized' proportional system has lapsed in architectural design. This could be seen as enabling the production of architecture that was 'incoherent', 'eccentric', 'noisy' and/or deviated from the rules of classicism as a response to advances in the sciences and technology in both of these periods, for example in the 20th century, one could see this in the work of someone like Frederick Kiesler and his work at the

ENDNOTES

1. Le Corbusier, *The Modulor: A Harmonious Measure to the Human Scale, Universally Applicable to Architecture and Mechanics: Volume 1*, Basel: Birkhäuser (2000).
2. Ibid, 56.
3. Evans, Robin. *The Projective Cast*, MIT Press (2000), 275.
4. Gropius, Walter. "Bauhaus Manifesto and Program" (1919).
5. Giedion, Sigfried. *Mechanisation Takes Command: a contribution to anonymous history*, W.W. Norton and Company (1948), 714.
6. Hastings. H. de C. Hastings. "The End of Last Time - the first instalment of a survey of bomb damage to buildings of architectural importance". *Architectural Review* (1941), 6.
7. The term 'dominant fiction' was outlined in Silverman, Kaja. *Male Subjectivities at the Margin*, Psychology Press (1992).
8. Ibid, 16.
9. Ibid.
10. This has been explored further in Katerina Rüedi Ray's work on gender and the Bauhaus, particularly in her essay "Bauhaus Hausfrau: Gender Formation in Design Education", *Journal of Architectural Education*, Vol. 55, No. 2 (November 2001), 73-80.
11. Payne, Alina. "Rudolf Wittkower and Architectural Principles in the Age of Modernism," *Journal of the Society of Architectural Historians*, Vol. 53, No. 3, September 1994, 338.
12. In his book *The Texas Rangers: Notes from the Architectural Underground*, Cambridge MA and London: MIT Press (1995), Alexander Caragone gives the most thorough account of this curriculum and the Texas Rangers during their time in Austin.
13. Rudolf Wittkower, "Michelangelo's Biblioteca Laurenziana," *Art Bulletin*, Vol. 16, No. 2 (June 1934), 123-218.
14. Norm here referring to fitting within the scope of the dominant fiction.
15. See "art de mensonge" in Le Corbusier, *Almanach d'Architecture Moderne, Collection de 'L'Esprit Nouveau*, Charles Eliot Norton Lectures 1938-9 (Paris, 1955), 120.
16. Creighton, Thomas. "Kiesler's Pursuit of an Idea," *Progressive Architecture*, vol. 42, no. 7 (July 1961), 104.
17. Milton, John. *Paradise Lost. A poem, etc.* Suttaby, Evance & Fox & Crosby & Company (1812), 274.

Laboratory for Design Correlation at Columbia University on ideas of continuity.¹⁶ With advances in the technology of production in the last twenty years, and, in parallel, the development of contemporary discourses of computation and digital design in relationship to the natural sciences, this system can be questioned and the dialogue between forms of production, systems of proportion and architecture re-opened. The theorising and historicisation of proportional systems, I believe, is essential to this discussion. New manufacturing technologies and digital design softwares, as well as the work of philosophers such as Gilles Deleuze, Felix Guattari, Manuel De Landa and speculative realists such as Graham Harman and Levi Bryant, perhaps allow us to think beyond the homogeneity production by systems of proportion and symmetry of the idealized figure. New technologies give agency to other systems outside of the idealized or rationalised 'norm', for example in forms of variability, variance or differentiation – heterogeneity – within a particular architectural system. This means that the 'deviant' systems of ways of delineating architecture that were effectively put to rest by the architectural historians and architects post-World War II are now efficaciously relevant to contemporary architectural design in the 21st century.

I would also suggest that these shifts constitute or formalise the basis for the rise of contemporary formalism, which was detached from the political agendas of the earlier half of the 20th century, culminating in the establishment of the Soviet Union and thereafter, the Cold War. This we can see explicitly in Rowe's work, as well as in his the work of his student, Peter Eisenman. In this context, this work wishes to provide a history other than the one which is known and 'accepted' as a dominant fiction within the architectural discipline, one which has not yet been read. The call that the *AR* editors made in 1947 in their editorial "The Second Half Century" for a re-education I think is most poignant here, when they quoted John Milton's *Paradise Lost* when he wrote:

Then purg'd with euphrasy and rue
The visual nerve, for he had much to see.¹⁷

Through the extricating of these parallel histories, we can advance architectural discipline's understanding of the relationship of the figure and proportional systems to architecture. In parallel, it allows a development of a history of the consequences of proportional systems in architecture in terms of the relationship of these systems to mechanisation, technology and the political constitution and tensions of this period. This holds great significance within contemporary architectural practice that increasingly utilises tools of computation that enable variability, variation and difference as a means to achieve an architecture which can engage with changing and fluxing parameters programmatically, spatially and environmentally.