The imprint – unforeseeable and unaccountable

Florian Roithmayr

The Slade School of Fine Art

UCL

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I, Florian Roithmayr, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract

This research project examines the imprint connecting mould and cast: the interstitial space hidden out of sight between materials, forms and shapes.

The questions I’m asking are how this interstitial space comes into existence, what takes place and what is produced there?

Mould and cast often appear as separate and distinct stages of form and counter-form within a sequence of events. This might be a consequence of postproduction symbolization, caused by attempts to fix the imprint through language, by singling out and arresting moments that are really part of flowing networks, or by an over-emphasis on resemblance and recognition.

I will formulate alternative approaches to the imprint’s intra-act, by deconstructing the object, giving it life and motion, by a desire to present the imprint as an improvisation on the interstice forming a third, miraculous and highly generative ground.

This research is generated through a practice-led methodology, through studio-based investigations of moulding and casting processes in a variety of materials, and through field-studies in archeological excavation, conservation and pedagogy. Starting with Cennino Cennini, I test the possibilities and limits of the description of imprinting techniques from the perspective of artists, makers, observers and historians, set in relation to my own accounts of approaching and describing activities involving materials.

As a contribution to the contemporary discussion of sculpture, this research aims to offer new ways of presenting the imprint occurring in the interstice between mould and cast as a result of formations and processes of transformation that cannot be named, but have instead the potential to accumulate and become sculpture.

I want to acknowledge my gratitude to Sharon Morris, for starting all this by fueling my curiosity seventeen years ago, and for stepping back in to shape this project, for her trust and encouragement, for being an inspiring teacher, artist and person. I feel immensely privileged to hear her voice, to be learning from her example and guidance.

I want to acknowledge my gratitude to Karin Ruggaber for so generously sharing her attention with me, for looking together, for walking along the different Lehrpfade together for a while, and for encouraging me how to find cracks in foundations.

I want to acknowledge my gratitude to Victor Machi for his encouragement and trust, for looking at details and the larger picture, for long discussions in the office, and for all these transformations.

Thank you for helping me to find the best advice. Stanisa Bacic for the inspiration, Sharon Morris for the voice,至Nicole Hewitt, Kristina Krenken, Simon Williams, Pontus Palmberg and Doan-Willis for advice, and others for questions and conversations.

I also extend my gratitude to all who helped and supported these investigations, especially: Emma Furness, and George St. Pierre from Mydly Arts, Green Belt Artists, for their support; Sarah Lovett and Luana Lovato from C Tudor Arts, Matt Porter from the USA; David McMillan, Robert Morlock, Sam Rusanowsky; Simon Williams from Rowing Projects, Richard Salt, Helen Whittaker and Wim Demeulemeester for taking me to Sudan, Carol Young, Laura Sorace, Claudia Gori, Chika Byrd, Vincenzo Balbo, Ben Robertson and Andrea Nisita for talking to me, the British Schools Rome, Lucie Homan and Kate Smith for the 180 Hours Project, Sara Cziggla and Laura Miller from Site Gallery, Pavel Pyš, Matthias Chevreau, and the Order of the Third Bird.
Opening of the mould
From: Rachael Dann
CEMENT
Miracle
Charles Sanders Peirce
How to make a face mould from life
A visit to the plaster workshop Felice Calchi
A visit to the Grant Museum
Dismemberment
Removal
Armature
PLASTER
Supervision
Supervision
Removal
Armature
How to cast plaster
Filming
Uncontaminated in situ
In situ
In situ
In situ
A visit to the Great Museum
A visit to the Opificio delle Pietre Dure

Foraminifera plaster models,
Detail from Codex I, 1511-1513, detail of roman fresco,
I tre libri dell’arte del vasaio,
Belvedere Torso,
Filmstill. France. Checkoslovakia,
Anonymous
Study from the Human Figure,
Bronze, 236 cm. Palazzo Vecchio, Firenze
Palissy, Bernhard, or one of his followers (ca. 1580-1600)
Piccolpasso, Cipriano (ca. 1557)
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February 2012 - ongoing

Inquisition of the ongoing project, at the closing of the year of 40 laurets in the Deutsche Business in Brussels during the 1990s and 2000s.

The project materializes in several different publications, as a result of an exhibition, a photographic exhibition of the project, and an exhibition of the photographs.

As a result of the project, a new publication is expected to appear in early 2013.

I don’t feel like it: [Sharon Morris, Artist: ‘Gospel Oak’] 9

I don’t feel like it: [Asif Din, Eco Architect: ‘The significance of embodied energy in buildings’] 9

I don’t feel like it: [Armitage reprints ‘Musae Arcaegonicae’ 10]

Albania reprints

Deutscher Museum, Munich

March 2013 - ongoing

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Albania reprints

Museo Arcaegonicae Nacional, Madrid

March 2013 - ongoing

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Albania reprints

Visit to Friggia Polo, crane

July - September 2013

The city of Groningen is an ideal case study for the analysis of car wrapping and car pimping processes through a participatory research project.

The project is based on observing the application process, participating in the specific working conditions of all the people involved, and then mapping and analyzing the results.

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100 Hours project

July - September 2013

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Index reading group

July - September 2013

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Inquiry reading group

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The International Kurru Archaeological Project (IKAP) is a collaborative project co-directed by Dr. Geoff Emberling (University of Michigan), Dr. Rachael J. Freestone (University of Cambridge) and Dr. Laura Gilmour (Pennsylvania State University). It is a long-term endeavor to study the ancient city of Kurru, located in the Sudanese desert. The project aims to explore the history and cultural heritage of the region, focusing on the study of its archaeological remains.

IKAP has begun work to remove Reisner's spoil heaps, and re-excavate some of the royal tombs. Professor Abbas Sidahmed Mohammed Ali, a Sudanese archaeologist, has been leading this work. Dr. Geoff Emberling's team have begun work to re-locate elements of the town site. Dr. Rachael J. Freestone and her team focus on studying the painted tombs, which are considered some of the most important surviving examples of ancient Egyptian funerary art.

In addition to their fieldwork, the project also includes a research room, adjoining the main gallery. This space is open daily to the public, where visitors can explore the tools and materials used in the excavation process.

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A shared live investigation of the acts of inscribing and evoking: two stone ma-
sons address four pieces of rock through text, either in the act of inscribing the
words or through evoking them:
do I write you
here
or draw on flying
dust
awoken by blows
open a mouth
and speak to me
do I write you
here
or draw on flying
dust
awoken by blows
open a mouth
and speak to me

Florian Roithmayr presents a new body of sculptural works which observe materi-
al transformations in the processes of making. Capturing the unexpected gestures
that occur in the interstice between mould and cast, the sculptures embody the
consequences of one surface, material or body yielding another. The configuration
of the exhibition changes daily at the inclination of the front of house team as
Roithmayr sets up parameters before relinquishing control of the works.

Interested in labour that renders itself invisible upon completion, Roithmayr has
undertaken intensive internships, shadowing engineering specialists such as a car
surface decorator and a concrete beautician, and microscopic research to perfor-
minate the unexpected gesture and to question how these relate to the history of
making and the formation of the material. The sculptures act not as discrete objects but
as representations of an accumulation of research, process and production.

For this new commission, Florian Roithmayr has transformed the architecture of
Bloomberg SPACE to present an aggregate of his research into material interac-
tions at an unprecedented scale. Roithmayr’s gestural sculptures curl and bend
over themselves as if they might envelop the viewer’s body. Poised between raw
material and expressive form, these works articulate the tensions between their
interior and exterior surfaces. This material precariousness produces inflections as
indeterminate as the wordless prefixes that make up the exhibition title - ir re par
sur.

The Praque Quadrennial
Czech Republic
February 2016

I organised a four day retreat to share and to learn about curiosity. I invited the following partici-
pants to a castle in the Czech Republic, hosted and facilitated by the Prague Quadrennial:

Graham Burnett, Princeton University, New Jersey
Carin Goldberg, Cooper Union, New York
Rachael Davis, University of Syracuse, Syracuse
Edward Pennington, University of Iowa, Iowa City
Sarah Brookes, Sheffield University, Sheffield
Bridgette Usher, Sheffield University, Sheffield

Foreign Objects
CCA Derry - Londonderry
August 2016 – October 2016

Foreign Objects is an exhibition of works by Robert Anderson, Laura Eldred, and
Florian Roithmayr; artists that are interested in the material consequences of the
physical body and its social interactions.

Florian Roithmayr’s sculptural work embraces the unexpected consequences of
one material being set in relation to another. A range of materials with competing
properties (foam, clay, steel, paper) imprint themselves upon one another through
moulding, casting and gravitational contact. Among his works for Foreign Objects are
sculptures that have been produced on-site at CCA over an 8-day period, which – like
der other works in the exhibition – carry the traces of human-object and inter-object
exchange that has been shaped over time.
The ambition of this project is to research, generate and present the imprint as an unforeseeable and unaccountable occurrence in the interstice connecting mould and cast.

By imprint I mean the meeting and separation of several elements, the production in this encounter of one form or configuration through another, the potential of a direct physical transfer; the shared, existential, or conventional connections established between a model, the mould taken from it, and the shape, surface and volume it calls forth in the cast produced in it; the consequences of touch, reaching out, being in contact, the possibility to proliferate, be distributed and form genealogy. The operation or performance of the imprint indicates an approach, an adjustment and a separation, similar to making marks or leaving traces behind. The imprint, in short, is the drive, action and consequence of one surface, material or body, passing another.

By unforeseeable I mean surprising, unexpected and unpredictable developments. There are no prophesies to be found. Progress is disordered, interrupted, non-linear: it is difficult to establish, and recapitulate a chronological or sequential trajectory. As an operation, there are not always clearly identifiable precursors, and one cannot immediately imagine successors. Asims and objectives are postponed indefinitely; results remain to be seen at a later stage. The motivation is often based on heuristic discovery rather than recognition. Evaluation based on resemblance appears inappropriate. Situated in the dark, underground, or the periphery, the unforeseeable is often isolated, withdrawn to the point of invisibility, and has its own kind of public.

By unaccountable I mean occurrences and events that develop and unfold so quickly that words cannot be attached to them. Words might appear afterwards, though the delay opens a kind of gap. Sometimes this occurs in silence, possibly unheard-of, often outside of language, or symbolized without the use of language. Here, within the space of such occurrences and events, other appearances and speculations may also appear in response to frenzy or space without. Thus, without, the operation is difficult to observe, sometimes impossible to witness. The unaccountable, in short, is the speechless figure within, who is a figure of speech without.

By interstice I mean a third space created by the coming-together and then coming-apart again of two materials, shapes, or figures. As a temporary, fleeting and improvised negotiation, the interstice causes lasting transformation and re-adjustments in its constituents through their succumbing to change – subtle as it might be. As a ground for invisible and silent surrender, the interstice is the miraculous and generative potential outside language and sight.

This written report traces and follows the questions motivating my research, the activities and investigations that informed their development, as well as the conversations and interviews I have conducted with archaeologists, educators, conservators, and artists. I’m reporting in three parallel strands consisting of the reports of facts, artefacts and awkward musician and gather, reporting what I’m doing, my actions and reflections, and reporting remembered dialogues. The text is written from top to bottom on each double page spread, in three distinctly formatted columns, which correspond and interlink with each other.
Towards the end of the fourteenth century, Cennino Cennini, an Italian painter working in Tuscany, compiled a manuscript called Il libro dell’Arte o Trattato della Pittura, which has been variously translated as Book of the Arts, The Craftsman’s Handbook, or Treatise on Painting; it forms a technical manual describing recipes and instructions arranged in nearly two hundred chapters that attempts to provide an insight into art techniques and materials for “all those who want to enter this profession”. It forms a view into art practices—a view of the time at the advent of the Quattrocento.

Reading through the surviving transcriptions of Cennini’s writing, it becomes clear that the painter turned author aimed to have fulfilled his interest in fresco, tempera and early oil painting, with the inclusion of drawing, gilding, and ornamentation of novel, textiles, and glass. A short section towards the end of the manual deals with impressions of reliefs and medallions, which is given the numbering chapter 181 to chapter 189. In one of his surviving manuscripts, either from his own hands or copied at his behest, Cennini describes in detail how to make a mask, the art of moulding.

For moulding and casting faces, the handwritten transcript of Cennini’s instructions for the human life model is clear, if only on the second attempt:

...il viso fagli tenere laboccha e cchogli e gli occhi serrate.
...make sure he keeps his mouth and eyes shut.

And in the previous chapter Cennini specifically describes the methods and devices designed to enable a person to stay alive while the face is covered in plaster: the aim here is to facilitate a system for the model to breathe even when every orifice is underneath a heavy layer of fast-setting material. These are, essentially, instructions on how to stay alive while being inside the mould, instructions for survival; to become part of moulding.

References:
and casting, to participate in the process of form giving and form taking, the human mod- 
el – being alive and breathing – has to close eyes and mouth. Nothing shall be seen, and
nothing shall be said. It seems that for living models to become complicit in the processes
of moulding and casting, to enter into or surrender to the mould, we enter into a place
outside visibility and language, provided we want to stay alive. To survive the moulding
process requires a moment of forfeiture of speech and sight.

And yet Cennini clearly felt compelled to find words to describe the invisible and
unspoken passage from life model via mould to a finished cast. Maybe he struggled to
put into writing what he knew in practice. And still, something made him use words in
addition to pigments and gesso. What compelled him?

150 years after Cennini, in 1550, Giorgio Vasari published
Le Vite de’ più eccellenti pittori,
scultori, ed architettori
(Lives of the Most Eminent Painters, Sculptors, and Architects).
It is essentially the first encyclopedia of artistic biographies as they were known in the
Quattrocento Renaissance, a term Vasari himself uses in his compendium. Vasari was a
painter in the services of the Florentine Medici family, and it is to Cosimo de’ Medici, the
first of a long line of Medici patrons of learning and the arts, that
Le Vite is dedicated.

Vasari included a prefix to Le Vite, which is now often called On Techniques, and which
comprises an introduction to the three arts of design, architecture, sculpture and paint-
ing. Vasari’s introduction exceeds in scope and detail Cennini’s earlier compendium:
It is an advanced manual, giving detailed descriptions of techniques, processes and the
searching and transformation of materials in various fields of application. The section on
sculpture includes modelling in several materials and in different scales and proportions.

There is a decisive shift in the content of the descriptions from Cennini’s early
Quattrocento to Vasari’s Cinquecento. But there is also an astonishing consistency in the
language of the description, despite the 150 years separating them.

This shift from Cennini’s description of casting from life to Vasari’s descriptions of
producing perfect castings is indicative of a far reaching change in attitude towards the
fashioning of mouldings and castings. Imprinting techniques at the time of Cennini, that is,
at the early Quattrocento Renaissance, were part of an engagement with nature that also
included practical cosmological applications: body parts were cast as ex-voto offerings
in wax or other easily available materials like cartapesta (papier-mâché); this included
death-masks of recently deceased family members. Reproductions and reproducibility
were only for private mourning. By the middle of the Cinquecento however, fashioning
moulding and casts became part of a public display, an outward direction, less motivated
by spiritual reasons, and – as a tool of propaganda – directed towards early forms of
securing political power and influence. Many of the Medici family members, for example,
had their facial features captured in plaster moulds that could generate endless reproductions to guarantee visibility, even if they themselves were temporarily absent (because of political exile or injuries). It is necessary to start this present discussion of the description of moulding and casting processes with this fundamental shift in attitude expressed in the transition from Cennini’s transcript to Vasari’s manuscript. Cennini is concerned with survival and the continuous well-being of his life models: he describes breathing devices in bronze or silver, suggests rose-oil scents to sweeten the proximity of his models to plaster, and offers remedies for the afflictions of red-burning skin caused by the moulding processes. In Vasari’s manual, there are no practical references to casting from life (except a short paragraph on advanced methods in casting leaves, herbs and flowers, without giving any specific details of the procedure). Instead, Vasari introduces categories of difference between a successful and an unsuccessful casting process: in paragraphs 1-9, he describes account for possible defects in the casts of bodies, but he expresses no concern for the living bodies themselves. The accounts, instructions and descriptions referring to causes and remedies of imperfections aim at technical quality, but he does not say anything concerning the human wellbeing. Vasari’s focus is on bronze casting based on the lost-wax method, in which a wax model encased in clay or plaster is heated to evaporate the wax as gas, leaving behind a hollow cavity within the clay or plaster case, which is then filled with molten metal. Vasari’s description of the moulding process is more technically advanced, which means it is no longer based on destroying the mould to access the cast, but instead is done through producing multiple pieces of moulding, allowing the removal of these individual pieces from the model, and subsequent re-assembling, leaving both the initial model and mould intact, allowing for repeated castings from the same piece-mould (§ 55 - § 71). Vasari was certainly not the first narrator describing the method of lost-wax casting method and by the time of his writing, Renaissance Italy, and especially Florence, had seen a large amount of bronze work cast through the lost-wax methods. Donatello had piece-cast his Judith and Holofernes (no earlier than 1452), Andrea del Verrocchio’s Cristo and Bartolomeo Colleoni had been cast (1483 and 1493), and Benvenuto Cellini had achieved to produce his Perseus with the Head of Medusa (1545) in one single casting. 83 See, for example, Fasanelli, Roberta (2008) “Compelling Presence, Wax Relics in Renaissance Florence” In Fasanelli, Roberta (Ed.) (2018) “Palazzo Medici Riccardi: Wax Relics and the Shape of Power”, Los Angeles: Getty Research Institute. Kohl, Jeanette (2013) “Casting Renaissance Florence: the loot of Clemente de’ Medici and imperial patronage” In Chiesa, Pietro, Taras, Homer and Zhou, Dimitrios, Casts & Collectors, The Art of Renaissance Sculpture London: V & A Publishing. 84 Fasanelli (2008), p. 399 - 400. 85 Kohl (2013), p. 250 - 252. 86 “A new World” p. 59. 87 Panzanelli (2008) p. 194.
What connects Vasari to Cennini however, despite their clearly different ambitions and despite their different working methods and applications, is a certain linguistic similarity, even over the 150 years separating each publication: What Cennini and Vasari share is an astonishing consistency in words.

Gennaro Gennari:
CAPITOLI CLXXXI
Come sia cosa utile l'improntare di naturale
Chapter 181
How to make use of casting from life.

Giorgio Vasari:
Cap. XI.
Come si fanno i modelli per fare di bronzo le figure grandi e picciole, e come le forme per buttarle; come si armino di ferri e come si getti di metallo, e di tre sorti bronzo; e come, gettato il modello, si rinettino e si ceselino; e come, mancando pezzi che non fussero venuti, si innestino e commettano nel medesimo bronzo.
Chapter 11
How to make models for large and small bronze figures, with moulds for casting them in their armatures of iron; and how they are cast in metal and in three sorts of bronze; and how after they are cast they are chased and refined; and how, if they lack pieces that did not come out in the cast, these are grafted and joined in the same bronze.

In Vasari's section on sculpture techniques, comprising chapter 8 to chapter 10, all but one include this wording:

In 50 years before Vasari compiled his manuscript, Leonardo da Vinci wrote his notes on mechanics, on statistics, geometry and also on major engineering principles and justifications. This work, named Madrid Codices Volume I and Volume II, after they were discovered by chance in the Biblioteca Nacional de España in Madrid in 1965, also contains a section on how to cast a bronze sculpture of a trotting horse using the lost-wax method, together with detailed preparatory drawings of the moulds and processes. The horse was never cast, but Da Vinci exhibited a large clay model in 1492 in Milan, which

Vasari describes in his Vite:

... those who saw the large model that Leonardo fashioned in clay thought they had never seen anything more beautiful or superb...

Benvenuto Cellini published his De’ secreti del reverendo donno Alessio Piemontese, an enormously popular collection of writing that went through multiple editions and translations across Europe. Benvenuto Cellini's De' secreti, followed by Giambattista Della Porta's Magia Naturalis (Natural Magic, 1558), and Isabella Cortese's Secreti (Secrets, 1564), initiated a long line of publications that lasted into the eighteenth century, which were expressions of a deep fascination with secrets and wonders combined together with a tendency to collect, to own and to accumulate, and sometimes also to publish these secrets. The choice of the word secrets is interesting here, because the intention to publish seems to contradict the title printed across the cover of the manuscript.

In most cases, these secrets were not accumulations of many different kinds of practical applications, which in the case of Piemontese meant that amongst recipes of jounce and candied fruit, of cosmetics and remedies, he reveals recipes for pigments and also gives detailed instructions on how to cast in gold and silver using molds.

To make a water called Magistra, wherewith the said earths to make mouldes, is tempered and moisted, againe at euerie Casting and Founding. ...

The first German transcription of Piemontese's Secreti, published in 1588, was titled Kunstbuch Des Wolerfarnen Herren Alexil Pedemontani and it followed in style the di-rec-tion of publications called Kunstbüchlein or Illuminierbuch, a field of artist-manuals influenced by early publications by Albrecht Dürer.

In 1594 England, Hugh Plat published his collections on husbandry, distilling and...
moulding in the collection titled The Jewell House of Art and Nature containing short rare and profitable inventions, together with newly seen experimentes in the Art of Husbandry, Distillation, and Vtiling.

Amongst Plats many instructions on

10. How to harden leather…
12. How to roast meat more speedily…
20. How to walk safely upon a high scaffold…
68. How to tell the just number of apples, nuts, shillings, &c, as they lie in bulk together
141. How to preserve Damsons, Cherries, Pear plums…

one can also find

142. The art of moulding and casting.

In France, Piemontese’s Secreti was translated into French as Les Secrets de Révérend Signeur Alexis Piemontois by Christofle Plantin and published in Anvers in 1557.

Around the same time in Italy, the potter Cipriano Piccolpasso started to compile his manuscript called I tre libri dell’arte del vasaio nel quale si tratta non solo la pratica, ma bravemente tutti i secreti di essa cosa che persino al di’ d’oggi è stata sempre tenuta acosta, del cav. Cipriano Piccolpassi durantino. Roma, dallo stabilimento tipografico, via del corso num. 387.

Piccolpasso narrates a form of producing glazes for pottery that continued in finished the work of the Della Robbia family workshop, producing three-dimensional, highly colourful ceramic works. Whereas the Della Robbia family never published their skills, Piccolpasso instead shares his knowledge, including a description of fashioning plaster moulds for casting in clay, which were essentially green-moulds. This might be one of the first instances of a description of plaster moulds explicitly for fashioning clay, not however explicitly kept apart by Piccolpasso himself. It states that all credit for detailed accounts of making plaster moulds, single or in multiple pieces, should be given to someone else:

I will not extend myself much on this matter, because in the PICTORYCAV of Signor Vannuccio Beringuccio, a noblemen of Sienna, in the 8th book, where he treats of the vtiling of various reliefs, all that can be said about making moulds is to be seen. And so whoever wishes to get knowledge of it may have recourse to the studies of this gentleman where he will find all that he desires. … Accordingly, I will pass briefly over the making of moulds, seeing that so worthy a gentleman has taken his trouble from me. In his work can be seen how to work with plaster and without, and likewise what should be done where no plaster is to be found, how you make moulds for reliefs, and…

19 Piccolpasso, Cipriano (1657). I tre libri dell’arte del vasaio nel quale si tratta non solo la pratica, ma bravemente tutti i secreti di essa cosa che persino al di’ d’oggi è stata sempre tenuta acosta, del cav. Cipriano Piccolpasso durantino. Roma, dallo stabilimento tipografico, via del corso num. 387.
how for intaglios, how you make piece-moulds, and, in short, all that can be said. At the moment it is enough for me to show you the manner of moulding in clay.

His reference is to Biringuccio’s practical encyclopedia describing processes with various metals, which had been printed in Venice ten years earlier (Chapter 5 of Book III). Given a detailed and practical description, just as Piccolpasso acknowledges. Not long after Biringuccio, Agricola published his De Re Metallica in 1556, which is also, just as Biringuccio’s Pirotechnia, a richly illustrated source book with practical instructions focusing on metallurgy.

Piccolpasso’s manuscript Le tre libri dell’arte del vasaio was not published until the nineteenth century, but a transcript travelled to France in the sixteenth century, where, after a short while, in 1580, Bernhard Palissy published his Discours admirable de la nature des eaux et fontaines, tant naturelles qu’artificielles, a collection of writings on natural phenomena including springs and ice, settings on trees, rock and sand, together with his accounts of clay and the production and application of glazes.

Palissy was a self-taught potter and natural historian, who spent several decades attempting to learn how to produce porcelain wares. Even though he never discovered the recipes for imitating Chinese Porcelain, his interest in natural science and geology led him instead to develop a rustic style of pottery that is abundantly ornamented with cast reproductions of fish, lake and sea animals, plants amidst vegetation, all glazed in rich and deep colours. Palissy developed intricate procedures for moulding in plaster for casting fish, crustaceans, reptiles, salamanders, frogs, fronds and dragonflies. He placed these reproductions next to casts of clay plants, leaves and paddles.


21 Biringuccio, Vannoccio (1558) Pirotechnia. Li dieci libri della pirotechnia, nelli quali si tratta non solo la diuersità delle minere, ma ancho quanto si ricerca alla prattica di esse: et di quanto s’appartiene all’arte della fusione ouer getto de metalli, et d’ogni altra cosa à questa somigliante. Composta per il s. Vannuccio Biringoccio, nobile senese. p. 121.


In Palissy's writing, Theory, allowed to begin the conversation with Practice, asks to be shown and taught skills:

**THEORIQUE COMMENCE.**

... _de me montrer à faire des fontaines aux lieux les plus stériles d’eaux._

Theory begins...

Here, as before with Cennini and Vasari, the house to... begin the mediation of the topic.

Palissy has structured his specific mediation in the form of a dialogue between Theory and Practice. Theory is repeatedly asking to be explained how something is done, demanding instruction and demonstrations. Theory becomes the student looking for answers,渴望 knowledge, while Practice is clearly the master with the knowledge of experience and wants to pass this on. The problem Palissy outlines throughout the dialogue is that Practice does not believe in passing on knowledge through words. Practice praises one's own experimentation, trial and error, failure, and eventual rewards. Theory wants immediate and direct insight.

Palissy's Practice makes it clear that not everything can be shown and told.

**Theory**

If you will please teach it to me, I promise I will keep it as secret as any man to whom you could teach it... 27

**Practice**

Even if I used a thousand reams of paper to write down all the accidents that have happened to me in learning this art, you must be assured that, however great a labor you may have, you will still make a thousand mistakes, which cannot be learned from writings, and even if you had them in writing, you wouldn't believe them until practice has given you a thousand afflictions. 28

And still, Palissy is writing, despite his distrust of words.

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24 Palissy (1957) p. 64-65.
26 Palissy (1957) p. 28.
27 Palissy (1957) p. 190.
Come si…
How to….

How does one start to approach descriptions of the processes of moulding and casting?

Cennini’s Libro dell’Arte starts a long line of manuscripts, treatises, codices, sourcebooks and compilations of writings, which together established the technical treatise as literary form in the Renaissance. Over the following centuries, some of these manuscripts and publications observe and describe moulding and casting as part of a focus on art practices, but more often publications included recipes and instructions on moulding and casting amongst a huge variety of subjects, ranging from alchemical experiments to engineering, medicine, agriculture and theology to name just a few.

The technical manual, giving written accounts of the making of objects and the procedural shaping of the surrounding material world formed part of a formula to estimate and approximate an explanation of nature and its workings: being able to make something, and then being able to pass on this ability, was one way to imagine knowledge, a practical knowledge based on skills in techniques and understanding of materials, and it was the attempt to narrate this knowledge, and so to share, exchange and make it available, that ushered in the proliferation of writing on making.

The Renaissance artists were beginning a line of inquiry, accumulating methods and techniques, collecting and disseminating instructions and recipes, and publishing discoveries. Not that the wonders and mysterious workings of nature became any less mysterious: being able to copy and produce the same effects as nature, albeit in different materials, was not to diminish the awe these natural wonders inspired. But being able to copy and reproduce, being able to imitate nature even entailed managing the mystery, and so the possibility to extend, or maybe even to make it yielding. As much as copying and imitating were attempts to imagine knowledge, it also made not-knowing bearable, which in turn inspired more curiosity. This meant that even if one couldn’t answer the question as to why something comes into being, one could at least answer how it does. Here, descriptions were essential narrative strategies to develop and extend the speculative conjunction into a literary device. Meaning was generated not through the revelation of hidden workings, but through drawing attention to the procedural and material developments leading to the appearance of an object, a technical or chemical process that unfolds over time and involves activities, tools, and materials, which all need to be accounted for. Narratives and descriptions followed these developments.

Even if knowledge of reproductive techniques did not automatically and immediately offer complete and full comprehension, it made the absence of full knowledge less

threatening. It became possible to tolerate incomplete explanations and mediate the lack of comprehension through an approximation achieved in the descriptions of technical and material processes, which became just as awe inspiring, because they were now performed by human hands, and could offer—at least as ambitions—the possibility to exchange the procedural knowledge and impart it at different times and different places.

The process of moulding and casting has a particular place in the line of such procedural descriptions found in technical manuscripts and published manuals that attempt to disseminate knowledge and expertise: one of the powers of moulding and casting often evoked in these manuals is the potential to reproduce likeness. Vasari already set the standard for what constitutes a good casting, and what he meant was that good casting resembles and looks deceivingly like the original—and it is to the end of achieving this convincing likeness that the skill of the person performing the casting is often evaluated. Producing successful casts—being able and skilled enough to reproduce the likeness of an object, person, a small animal, or a plate—has been considered to entail skill, mastery of materials and tools, and often an imagined grain of the power of creation. Being able to produce a convincing likeness of something was almost as powerful as making the thing itself.

One can understand the abundant inclusion of small animals cast in metal in the surface decoration of cups and vases for salt in this manner: through an assumed transfer, the life energy of the animal is conveyed in the process of life-casting to the metal object resulting from this procedure, which then, unmoored into the device, continues to animate whatever is contained within—drink or salt alike. During the sixteenth and early seventeenth century, South German alchemists and artists like Michael Madziu, Wenzel Ritter, or Heinrich Jonas produced very intricate metal works through casting directly from life, developing processes in which small animals like salamanders were dipped into plaster, into which the hot molten metal was then injected, burning their corpses out of the mould, and filling the cavity left behind.

The assumed transfer of anima, a kind of metempsychosis of energy or power of a creature facilitated through a process of moulding and casting from life and captured and contained in the final material, established a strong and powerful relationship between the representation and the represented, a relationship assumed both on the basis of likeness as well as the connection established between the model’s material and various subsequent moulding and casting materials entering a network of contact and touch, in which...
the animal entering the mould had to surrender its life. The creature itself does not live to tell the tale. Instead, its sacrifice is assumed to animate the previously inanimate material.

A similar link between representation and the thing represented can be found in the format of the description itself: the narratives accounting for the coming-into-being are standing in for the activity. Words recreate that which can be evoked or that which can be described: both voice and scripture can conjure and manifest renditions and animate impressions through imagination, similar to the way a mould might yield a cast. The narrative itself can also be read as a conversion of the material of activities through a translation into the material of words, which is similar to a cast as the translated material of a model converted through the process of moulding.

As useful as the technical treatise became in imagining and managing knowledge, however, it was also apparent to many authors that a transfer and exchange through words was not the same as through actions, that descriptions and instructions, as powerful as they could be, nevertheless also opened a gap between doing, writing, and reading.

Early thinkers and practitioners of the powers of transfers like Paracelsus were very clear about the inanimate: the technical treatise has given attention to both animate or material resemblance and inanimate or unanimated correspondences, and translated several descriptions of this nature from touch based on contact and other technical intermediate bodies and materials, inscribing in such diverse objects as chrysalids, ocres, soils, life casts and death masks, the Shroud of Turin, ex-votos (plaques), etc. Didi-Huberman, Georges (2002) ‘L'air et l’empreinte’, Papet, Edouard (Ed.), Paris: Le monu-pur, sér. image, sér. icon, sér. index, sér. sign, sér. touch, sér. gesture, sér. script, sér. body, sér. soul.

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For a detailed analysis of technical descriptions and material processes during the early Renaissance, especially with regards to moulding and casting from life, the assumed generative potential of these processes, as documented in early manuscripts and transcriptions, see:


in their view that direct experience – as opposed to the study of texts – was an essential ingredient of the apprehension of insights, and many followed Paracelsus’ view that there are decisive differences between scripture and nature.

There appears a material trajectory linking model, mould and cast, binding what can be seen as visual resemblance of representation to the thing represented, but also acknowledging a gap opening in between the descriptions attempting to account for this process and the words used to narrate this.

It is worth attempting to open this gap a little further.
I cut a shape out of brown cardboard. The cardboard is a long rectangular piece, triple-layered with two corrugated layers in between. Cutting through these layers poses some difficulty, and makes for not so even and neat cuts of brown cardboard. I am not concerned with evenness, nor with neatness. I have my mind set on the shape. I place the cut out shape on the table. Depending on where I stand, the shape could look like the letter U, very elongated.

I cover the top of the brown cardboard shape with brown packaging tape and trim off any access. I cut long strips of brown corrugated cardboard from the off-cuts. I cover these strips with brown packaging tape and trim off any access. I attach these like a wall around the cutout shape and fasten the wall to the shape with brown packaging tape. I work quickly and methodically, attempting to complete the wall on the outside and the inside of the shape as quickly, but also as sturdily, as possible. The brown packaging tape sometimes sticks to itself, sometimes doesn’t stick down so well, sometimes sticks wrong ends together, sometimes doesn’t hold the walls to the shape so well. I am not concerned with these happenings. I do not see them as errors or imperfections. The cut out shape now resembles a low walled, hollow, concave form in the shape of an elongated letter U.
What is a mould?

A hollow containing form—referred to as concavity, which is sometimes also referred to as a container for empty space, or which is sometimes referred to as a shell-like impression—referred to as negative or as simply a depth—also sometimes called a negative, or of a negative volume, void, or vessel—negative space or form, and which is often specifically called mould, is sometimes also called negative, or more specifically negative mould or negative type mould, and sometimes negative receiving mould, or concave mould, and sometimes it is calledmatrix or matrix, and sometimes it is calledfemale or mother, and sometimes it is even called negative casting mould, or containing mould or simply container, and sometimes it has been called anenvelope, or else case mould or just case, skin or jacket.

And sometimes, to differentiate cases of a casting made over the mould or without the mould, rather than within, this mould is then also called a positive mould, or a convex mould, which on occasion is also called a male mould or just male, or a pattern, or, properly, a form, as it is said to constitute a shape over which another shape is built up.

81 Piccolpasso (1980) p. 64.
97 Mills (1990) p. 94.
107 Piccolpasso (1980) p. 64.
Moulds are said to have to be good and suitable. Their main objective is said to be to hold the shape of the model so that a cast can be made.

Moulds are categorized according to varying parameters, some of which differentiate primarily between rigid moulds and flexible moulds, others which differentiate between opaque moulds, jelly moulds, and piece moulds (which is similar to differentiating between opaque moulding, flexible moulding, and piece moulding) and others which divide into porous, non-porous, and flexible types, or others divided into four basic types of moulds, which are one-piece, two-piece, open or referenced types of moulds. Flexible moulds could be further divided into hot setting moulds and cold setting moulds, although it would be more accurate to specify this as hot setting mould material and cold setting mould material.

Other materials and substances used for moulds include Plaster of Paris, glue or gelatine, rubber, plastics, agar compositions, bonded sand, clay, wood, metal, concrete, paper, card-board and fabric, and there are many more possible moulding materials.

The selection of material for creating a mould is said to depend on:

- The physical nature of the model.
- The casting material.
- The desired number of castings.

The suitability of a moulding process is said to depend on:

- Suitability to ultimate casting media.
- Number of castings desired from single mould.
- Suitability to form being cast.
- Accuracy desired in reproduction of pattern.
- Accuracy desired in detail on casting surface.
- Handling; weight of mould.
- Cost of moulding materials.
- Availability of material.
- Time involved in mould technique.
- Feasibility in relation to studio and equipment available.

27 Mills (1965) p. 45.
33 Percy (1965) p. 100.
36 Verhelst (1973) p. 12.
I keep cutting shapes out of brown cardboard and wrap them in brown packaging tape. On the following days, I repeat this activity, but each time differently.

Mould types

In general, one can find that there are

- waste moulds, which are sometimes also called lost moulds, and which are said to be usually made of a single or a small number of layers of Plaster of Paris, which have to be kept thin, and which sometimes have a coloured initial first layer to indicate proximity to the cast, and which have to be slipped or pressed onto the final casting produced in it, which is a course of actions that is said to destroy both the mould and the moulds, which is described as a process of wasting, from which the name derives, which makes them a one-off process. Waste moulds are said to be the simplest and most economical form of a mould. They are said to have the advantage of never producing mould lines if made of a single wasted mould, but are also described as possibly consisting of several mould sections, which would then have mould lines, and which also have the advantage to

- mould types

- waste moulds

- mould sections

- mould lines

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Butler (1997) p. 11.


Butler (1997) p. 11.

Verhelst (1973) p. 12.


Butler (1997) p. 11.
of being very simple, and have the ability to reproduce very complex shapes\(^1\), and which can also convert non-permanent materials into permanent materials\(^2\), but which have the disadvantage of producing only a single cast\(^3\) before they are destroyed;

and there are piece moulds, which are also called multi-part moulds\(^4\), which consist of several sections or a number of small pieces or caps, which are sometimes called inserts\(^5\), which often accommodate overhangs through undercuts\(^6\), which determine and regulate the size and number of the individual pieces and sections, which should fit together\(^7\) and other gage alignment\(^8\), through what are variously called locating keys\(^9\), register holes\(^10\), or register notches\(^11\), which are a number of notches, depressions, grooves or shallow holes on the seams of a piece of the mould, which are used to connect to the seams of another piece and keep all the adjacent pieces in position\(^12\), which mutually achieve through indentations made during the moulding process to allow for subsequent correct registration between additional mould sections, which are then held together in what is called a jacket\(^13\), a case\(^14\), a template\(^15\), or a cover\(^16\), which is an additional mould layer of the same or similar moulding material locking them together\(^17\) in a sequence that should be numbered\(^18\). It is said that building a piece mould is fundamentally the same as building a waste mould\(^19\) but has the advantage that the original can be preserved undamaged\(^20\) and the mould is not wasted but can be kept indefinitely\(^21\) and can be used for multiple and repeated castings\(^22\), which is also said

\(^{13}\) Rich (1961) p. 90.
\(^{14}\) Wagner (1963) p. 77.
\(^{15}\) Mays (1982) p. 77.
\(^{17}\) Butler (1997) p. 27.
\(^{19}\) Mays (1982) p. 77.
\(^{27}\) Foss (1980) p. 185.
\(^{30}\) Mays (1982) p. 32.
\(^{31}\) Raths (1999) p. 27.
\(^{32}\) Mays (1982) p. 27.
\(^{33}\) Andrews (1988) p. 27.
\(^{34}\) Verhelst (1973) p. 15.
\(^{35}\) Toft (1929) p. XV.
to be a great advantage over jelly moulds, which deteriorates over time. Piece moulding is said to be a highly specialized process; and there are fibreglass moulds, which can be constructed according to the same principles and possess similar terms and features, some of which are called bottom lands, which serve as platforms on which to build the mould, and on which are placed the pattern boards, which are used as a surface on which to seat the model in constructing the drag section of the mould, and sometimes a feature called core, which forms the inner mass that maintains the wall thickness of the casting; which is different from what is called back-up or backing material on the other side of the mould, which is additionally coated with facing, which is a fine material to assure maximum reproducibility of the model, and some which are called spacers, which is used to hold the model material during mould construction, and between which there are parting lines that form the points of separation for the mould, and some which are called pouring baskets, boxes, or cups used to receive molten metal for the mould, and features which are called spruce, which are vertical shafts used to direct the molten metal into the mould and which leads into a sump before a feature called runner, which is a horizontal feed running from the spruce to the mould cavity, and some which are called chokes used to control the flow of metal and trap dross, which are accumulated metal oxides, fluxing materials and impurities building up on the surface of molten metal, and some which are called gates, which are openings at the end of the runners used to control the speed at which the metal feeds into the mould cavity, and features called feeders used to supply additional metal to the mould cavity, and some which are called vents, which provide a means for air and gas to escape the mould as it fills with metal.}

38 Wagner (1963) p. 77.
41 Verhelst (1973) p. 15.
43 Verhelst (1973) p. 16.
44 Mills (1965) p. 76.
45 Verhelst (1973) p. 20 - 22.
and there are investment moulds, which could be either one of a variety of different materials, which are all said to add strength, bulk, and porosity to the mould, which allows for thinner and more intricate castings, but which has the disadvantage of lacking permeability, which results in a need for more complex venting, which is specifically the case when pouring metal into investment moulds, after which the moulds themselves are removed, chipped away, and destroyed to free the cast, which makes building investment moulds as effort that is undertaken knowing fully well that the mould will need to be broken; and there are sand moulds, which are based on very old techniques said to generally consist of sand (or sometimes plaster) and a binder compacted around a mould in sections stacked on top of each other from which the mould is then retrieved and used for the next moulding, which means there is little deterioration, which allows for repeated usage, which means that sand moulds are often used in industrial production as metal-casting moulds; and there are ceramic-shell moulds, which are said to be moulds for investment casting processes, and are said to be particularly simple and practical approach to invest wax-patterns, due to their high strength with comparatively thin walls; and there are flexible moulds, which are said to be essential either if more than one casting is desired from complex patterns or in the preparation of complex hollow models for lost-wax techniques. Flexible moulds are also said to have memory, which allows them to reform into their moulded shape when pulled off a model or cast; and there are gelatine moulds, which are sometimes called glue moulds, which are also sometimes called jelly moulds, which are made with material derived from boiling organic tissue in water, which sets into flexible mould material which is often stabilized and supported by an additional plaster jacket. Gelatine moulds are said to show a lot of

49 Mill (1965) p. 84.
52 Verhelst (1973) p. 20.
55 Verhelst (1973) p. 17.
60 Mills (1966) p. 53.
resilience and elasticity, and are said to have superseded piece moulding because of their flexibility (but have been superseded by polyvinyl rubber in this respect), which allows them to accommodate overhangs without the need for undercuts, or which will allow undercut parts to draw easily out of the material, which will spring back ready for the next cast— which is due to their gelatine content, which also means they can only be kept in a short period of time before they deteriorate—and a new mould is necessary; which is also why they could only after a few days when the gelatine is of the cheap kind, but which also allows for many casts in this period (although it is said that good details will last for not more than four castings, which are even as fine as and not more than two when no hardening agent is painted onto the mould surface). Wax casts (which are used to make bronze casts through a process of lost-wax casting), which are said to often be made in gelatine moulds, might often also be the end of gelatine moulds, as the heat of the wax melts the gelatine; and there are agar moulds, which are sometimes also called glue moulds, which are like gelatine moulds but use a vegetative derivative from marine algae native to the Pacific and Indian Oceans, which is a colourless substance soluble in water, which may be useful for fashioning life castings, as it is non-toxic, but cannot be stored too long before it deteriorates; and there are silicone moulds, which cure chemically at room temperature, in anywhere from 24 to 48 hours, and which are made of compounds that are said to be the costliest but also of the highest quality; and there are rubber moulds, which are said to be the result of two basic approaches, which is either to cast the moulding material around the work, which is practical for small works and is frequently used by industry, or to brush on the moulding material and build it up in layers, which is more applicable to sculpted forms too large for the cast approach.}

61 Wagner (1963) p. 07.  
63 Mills (1965) p. 53.  
64 Mills (1965) p. 58.  
68 Mills (1965) p. 53.  
70 Mills (1965) p. 61.  
71 Mills (1965) p. 53.  
74 Verhelst (1973) p. 17.  
75 Verhelst (1973) p. 17.  
76 Verhelst (1973) p. 17.
and there are cold rubber moulds, which are also called cold setting rubber moulds, which cure without heat, which is why they are also called cold setting rubber moulds, and which is why they can be used on or filled with model or casting materials that might otherwise be affected by higher temperatures. Cold rubber moulds are said to be synthetic rather than natural rubbers, and are also referred to as "RTV" (room temperature-vulcanizing) compounds, which are said to set by catalytic action, which makes them set faster than natural materials like latex, which is also said to give them better shelf-life and more variable degrees of elasticity;

and there are latex moulds, which are made of the naturally fluid, water-soluble sap of the rubber tree, which is said to dry in the air to a tough but flexible and elastic like, and which is stipulated to be build up in successive layers, which dry slowly without the use of catalytic additives, and which normally are said to need a supporting case of plaster or fiberglass backing;

and there are vina moulds, which are sometimes called polyvinyl moulds, which have superseded gelatine or glue moulds in mould making processes (but might have been in turn superseded by polyurethane moulds themselves), which are based on vinyl resins, which are hot-melt material moulds, and which may be melted down and re-used indefinitely, and which have very high melting points, some of which as high as 170 °C, which makes them ideal for casting with materials that produce heat or are hot, some of which are Plaster of Paris, cement, resin or ferrous metals; some of which in turn are used as materials for strengthening mould jackets to support the vina mould; and there are containing moulds, which are sometimes called case moulds or jacket moulds or simply a shell, which have a sole purpose, which is to support moulds made of more elastic and flexible material, which are sometimes called skins, which have not enough stability in themselves, and which therefore need a more rigid backing, which is achieved through what is usually a two- or three-piece plaster mould on small works, or

78 Mills (1965) p. 53.
85 Percy (1965) p. 38.
86 Percy (1965) p. 69.
87 Percy (1965) p. 70.
89 Mills (1965) p. 15.
91 Mills (1965) p. 15.
92 Verhelst (1973) p. 17.
a fibreglass piece mould for larger works. V-shaped keyholes are sometimes cut into the containing mould to fix the flexible inner mould in position.

and there are mother moulds, which have also been called casings, or main cases, which are described as being similar to containing moulds except that they do not support flexible insertions, but which instead contain a large number of smaller piece moulds, so numerous in fact, that their quantity necessitates the mother to hold them together. Sometimes, however, mother moulds are described as the bigger half of a two-piece mould, to which the smaller one will be joined, or the mother mould is described as the main piece of a mould, to which numerous smaller sections are added. In both cases, the additional smaller pieces are called minor sections or caps. In the case of the mother mould being the main supporting part of numerous additional mould sections, it is said that in order to support the mother in holding all the numerous additions, another further addition called a cradle is sometimes needed, which might be constructed from vertical and horizontal wooden spars.

and there are fabric moulds, which are sometimes called cloth moulds, which are said to have inherent possibilities for sculpture, and can be made of cloth using a sewing machine, or which can be made of polyethylene or stiff cellophane, which turn them more into plastic moulds, but which in any case are also said to work well for concrete castings, producing fine textures and rendering wrinkles very well.

and there are inflatable moulds, which have the possibility to be deflated, and which can therefore be settled very easily, which is said to make them particularly useful for making negative spaces or cavities within the boundaries of a sculpture, but which are also said to be adaptable to architectural applications.

and there are wax moulds, which are said to reproduce fine forms, and which are fine for moulding small delicate forms, and which are excellent for small and very much undercut relief work, which is the reason they are said to have been used extensively.
by Victorian sculptors, especially using micro-crystalline wax**, which can be fashioned by simply dipping the original into the molten wax, which can then be further supported by wax bandages, and which can be even further reinforced yet by wood laths** (which is sometimes also reinforced by a plaster jacket with additional support from embedded iron bars). Wax moulds are said to be opened by cutting into the wax and re-locating either the model or the casting, or simply warming the wax and peeling it away**, which, in the case of a supporting plaster jacket with embedded iron bars, is only possible after the plaster has been chipped away**. Some methods of wax moulding are said to be used to fashion castings of faces, hands or small and delicate objects such as flowers, small animals, coins or medals**.

and there are sulphur moulds, which are said to be built from a sulphur and iron mix method to a liquid state, which has been described as being a mould material like Plaster of Paris**, and which are sometimes, but infrequently, used to fashion impressions from very delicate surfaces found on coins and medallions**.

and there are wooden moulds, which are said to be made as a hollow carved piece of wood**, and specifically of or other wood that can be split evenly, and which are also said to be usable as often and as much as one wishes**.

and there are paper moulds, which are also called paper-mache moulds, or carta pesta moulds**, which are sometimes called direct moulds in paper or cardboard**, which are said to be a cheap method, and which are suitable for modelling a number of coats of paper on top of each other**.

and there are plastic moulds, which are made from vinyl or polyethylene materials in powder, pellet, or shredded form**, which are said to be suitable when working with ma-

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110 Toft (1929) p. 120.
111 Mills (1965) p. 61.
112 Toft (1929) p. 121.
119 Verhelst (1973) p. 16.
120 Wagner (1963) p. 92.
terials that can withstand temperatures of up to 200˚ Celsius\textsuperscript{122}, and which are described as particularly useful reliefs or forms that are not exceedingly complex;\textsuperscript{123} and there are foam moulds, which can be made of either polyurethane foam (Durofoam) or urethane (or polyurethane) foam, which might both appear similar, but which have important differences between them, and which are supplied as either solid blocks, sheets, and bars, or as liquid two-parts systems\textsuperscript{124}; which are said to offer many possibilities as direct-reveal materials\textsuperscript{125}, and which are also said to offer distinct possibilities for angular or rectangular forms or unusual textural surfaces\textsuperscript{126}; and which are both said to be mould material that can be either dissolved or simply torn away, which is specified as commensurate excitement and involvement\textsuperscript{127}. and there are lead moulds, which are used for casting phenolic resin, and are fashioned by dipping a model, which is usually a precisely machined steel arbor into molten lead, which is then cooled by dipping it into cold water\textsuperscript{128}; and there are iron moulds, which are fashioned out of two flat pieces of iron that have been engraved on the facing-sides, and which, when aligned and filled with molten lead, are said to turn out as a single-casting\textsuperscript{129}; and there are metal moulds, which sometimes also doubled up with slightly smaller twin positives, give perfect results when squeezed together with material like papier-mâché between them, but which are described as expensive, owing to the cost of making the metal moulds\textsuperscript{130}; and there are split moulds, which produce separate or partly dis-assembled castings\textsuperscript{131}, which are then joined together, or the cast is fashioned by joining two half-moulds on the seams\textsuperscript{132}; which then produce one whole cast\textsuperscript{133}, which is also called intact cast\textsuperscript{134}; and there are press moulds, which are said to have been used for many centuries\textsuperscript{135} and are sometimes as simple as a receptacle, into which clay is pressed, which, on occasion,
also hammered into the mould\textsuperscript{136}, it's stipulated that press moulds have to be open-ended (to allow the hand access for pressing the clay), that they be bone dry, and that they be kept dust-free\textsuperscript{137}. It is said that tiles are often fashioned in press moulds, but that press moulds may also be employed for hand-forming or squeezing clay in the architectural terra-cotta industry\textsuperscript{138}; and there are clay moulds\textsuperscript{139}, which, on the one hand, are said to have the advantage of functioning as flexible moulds when unfired, even though this might be within limits\textsuperscript{140}, and which, on the other hand, are also used as fired-clay moulds\textsuperscript{141} when made of unfired clay, which then replace plants moulds in bronze casting\textsuperscript{142}, in which case they might even have a clay-bonded core for casting hollow bronzes\textsuperscript{143}. Clay for clay moulds, on occasion, is said to be mixed with dung\textsuperscript{144}, and sometimes it is said to be mixed with grog filler, which can then be used both as mould and core filler for high temperature castings\textsuperscript{145}.

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137 Mills (1990) p. 36.
142 Biringuccio (1558) p.231.
143 Vasari (1960) p. 163.
144 Thomsen (1979) p. 132.

I cut longer and wider shapes out of cardboard and cover them in brown packaging tape. They no longer fit on the table. I roll out plastic sheeting and place the cut out shapes on the floor. The shapes are now longer and wider than me. I can step through the shapes easily or lie down in between. I start to extend the cardboard strips with other cardboard strips to make even longer shapes. I wonder when to stop.

One day, I cannot lift the cardboard shape without it breaking in the middle: it is too long. I pause.

Mixing

I mix plaster into water.
Plaster is said to be an extremely versatile material, an accommodating and abundant sculpture medium with appealing characteristics, with engaging qualities described as soft and adaptable, which is said to be an excellent study material, and also an economical material, or a most basic, simple-to-handle, and inexpensive studio material, which is said to have to be bone dry.

Plaster is said to be applicable in dribble, in icinglike flows, in buttery slabs, in smooth mounds, in brittle crusts, through pouring, through spatter, brushing, or thin coating.

Plaster is said to be consistent in varying from soft to exceptionally hard or puttylike.

It is said that the setting of plaster can be accelerated, retarded, or the plaster can be killed.

Knowledge

One could know that plaster was made from the solid and crystalline gypsum through dehydration and decrystallisation, which is also called calcining process.

One could know that gypsum deposits were formed through the evaporation of seawater, leaving behind crystalized salts comprising calcium, calcium sulphate, silicates and carbonates.

One could know that through the addition of plaster to water, the plaster rehydrates and recrystallises to return to its original gypsum state. One could also know that plaster might also be made with lime instead of gypsum, or even cement, all through a process of crystallization in an exothermic process.
I fill plaster mixed with water into the cavities formed by the small walls around the cut out shapes. The white liquid mixture flows along the brown edges of the cardboard and spreads out evenly in between the hollows formed by the walls surrounding the cut out shapes.

How to cast plaster

The plaster is said to be sprinkled, scattered, or sifted into the water until it floats, which is described as forming a dry film on top of the mix. The mixture is said to stand for a few minutes to allow lumps to dissolve, after which it is said to be completed by mixing either with hand or a drill and mixing blade.

How to cast plaster

One could know that when lime is used, water is added to a white powder called slaked lime (calcium hydroxide), which is produced from quicklime (calcium oxide), which in turn is produced through heating limestone (calcium carbonate). One could that lime plaster is said to be water resistant, and was often used for fresco painting.

One could also know that gypsum, which is also called regular gypsum, or hydrated calcium sulphate, or plaster (Plater of Paris), all have the chemical formula CaSO$_4$$\cdot$H$_2$O.

One can read that gypsum is derived from the Latin gypsus, which is derived from Greek word γύψος (gypsos), meaning “plaster” or “chalk”, which became the German word Gips and the Italian word gesso.

One can also know that plaster (English) and plâtre (French) derive, like the word Plaster (German) from emplastrum (Latin), meaning “wound plaster”, which was originally a past or cream for wound with a medication or protective dressing, which is in turn derived from the Greek emplassein, which means to daub over, or to mould. This in turn is derived from em, or in “on” or “into”, together with plassein, which means “to form”, or “to shape”.

One can then also read that the double meaning in the original indicated both healing and building as in “to shape” or “to form”, but also “to mould” or “to smoothen”, or “to smoothen”, or “to cover (a hole)”. This in turn is derived from plassein, which means “to form” or “to shape”.

How to cast plaster

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I mix more plaster than needed. Often I do not know precisely how much plaster is needed: maybe the content of one black rubber plaster mixing bowl with 2.5 l capacity provides enough plaster for one medium sized U-shape. This is a guess. Maybe I could start to calculate future quantities based on the experience gained by previous attempts.

I mix more plaster than needed, so as not to be caught out with too little plaster. I mix more plaster than needed because it is difficult to fill the plaster neatly into the U-shape. I am under pressure to work speedily so that the plaster does not set before the work is completed. I experience a conflict between wanting to fill the mould as evenly as possible, but also as quickly as possible, and I often accidentally pour plaster to the sides of the U-shape, sometimes the U-shapes overflow, some plaster escapes through crevices and the level has to be topped up. The plaster is leaking out. The plaster spills over. I pour the plaster and let it overflow and leak, filling the U-shape with more than is needed, and then gently tap the U-shape to release all trapped air bubbles to the surface of the plaster. I level out the excess plaster with the edge of a leftover strip of brown cardboard, and let plaster drip down the outer sides of the cardboard covered in brown packaging tape. The inside of the U-shape is now filled with just enough plaster. All excess - leaked or over-flown - clings to the outside of the cardboard, forming a kind of growing outer layer, similar to a crust of plaster, an

Uncontainable / Excess

The liquid mix is then said to be poured⁴⁰, or the mould, which is said to have been treated with a release agent⁴⁰, is said to be charged⁴⁰, or the plaster is said to be filled against the clay⁴⁰. The pouring is said to be done gently, slowly, and at one pace. It is said to best avoid pouring the plaster too quickly⁴⁰. When pouring plaster into the mould it is said to be advisable to have a helper standing by with stop to plug, any occurring leak and prevent the plaster from spilling⁴⁰.

The mould is then said to be vibrated, which is said to release all air bubbles and ensure a dense surface. Vibration is said to be achieved by tapping the mould with the hand, which is said to be the simplest and most common approach, or by placing the mould on a vibrating table, or by inverting an air-operated follower into the plaster mass⁴³. When the mould is full, any excess is said to have to be trimmed off and the mould is said to be left to set⁴⁰.

The mould is said to be supported during the casting in a bucket of sand or in a wooden or cardboard box, or in the case of large moulds, supports are said to be built into the mould to make it self-supporting⁴³.
Armatures

An armature is said to support materials, and has been called the internal support, or reinforcing, or specifically a butterfly, when it is a wooden cross supporting a clay pattern.

Armatures have been compared to the steel framework of a building, a skeleton, or the skeletons in human and animal forms.

Armatures are divided according to varying specifications, which range from sufficient rigidity to carry weight, precisely corresponding proportions to the piece, careful planning and construction, to a transfer of stress to give stability.

Armatures are said to be made from any materials that will provide the needed form and support, such as wood, usually fir or yellow pine, polystyrene foam, galvanized pipe, concrete reinforcing rod (re-bar), wire mesh, encrustation, or forming little pools of leakage on the table around the shapes, like solidified pools of leakage, I know that too much plaster has been used – more than is needed to fill the hollow cavities. I have given up any attempts to contain leakage and overspill: I resign myself to the fact that filling the cavity is a messy, uncontrollable, unpredictable overspill or overspill creating overabundant excess.

The plaster starts to set. The plaster starts to get warm.

Support

Following my curiosity I want to enlarge the cardboard U-shape more and more. I am also aware that the longer the U-shape, the more likely it is to break. At a certain point, I start to integrate internal support within the plaster. The cardboard U-shape has become so large that the inherent strength of the plaster would not be enough to support its shape on this scale. The plaster needs support to resist breaking under tension. The plaster’s tensile strength is no longer sufficient to support the length intended for the shape. If oversized, the plaster will need additional core strength. The addition of support allows the rendition of an impossible within, created through the incorporation of an invisible without.
A separator, which is sometimes called a parting agent, and sometimes a lubricating agent, release agent, or parting compound, is said to mainly function in preventing two materials from permanently sticking to each other, for example concrete (or any other filling material) and plaster (or any other moulding material), or plaster and plaster when fashioning a multi-part plaster piece mould.

Separators are sometimes divided into two category types, with the first type being surface separators and the second type being area separators.

Surface separators are superficial pore-sealing substances or surface lubricants, which prevent one material from adhering to another material, or one material to itself, and which are used to support and facilitate the subsequent removal of a mould from a model.

Removal

I start to remove the cured excess plaster: at first, larger pieces, formed during the overspill or leakage, are broken off and easily lifted from the rolled-out plastic sheeting on the floor. Then pieces attached to the outer side of the cardboard covered in packaging tape are easily removed. Then I remove the cardboard covered in brown packaging tape, the room rings with the sound of shattering plaster.

Copper wire, or in the case of mediums like clay, the internal support is said to be compressible materials such as crushed newspapers, foam rubbers, bunches of leaves, grass or corn husk;

wood armatures are said to need a coat of shellac for water-proofing; and metal armatures are said to need a layer of rust-inhabiting primer, although it is also said that this might not be necessary. In other instances, however, iron for clay armatures have been said to be best avoided, as they are said to cause the clay to crack open or break up, since they are not compressible, and are also said to constitute a foreign body within, which might also lead to what has been called splitting of the form.

84. Verhelst (1973), p. 03.
Surface-separating agents are said to be solutions employed on one surface of a substance or from the cured or hardened casting. Surface separators are said to be solutions employed on one surface of a substance – or what is also sometimes called the interface between substances – from sticking to another. Parting agents guarantee that two substances will remain separate substances and do not bond, even when brought into direct contact with each other. They can be as simple as rape seed oil, graphite or French chalk; or plastic, such as fluoro carbon (Teflon®), silicones, polyethylenes, polyethylene dioxides, soft soap or liquid detergents; though the results are said to be not uniformly satisfactory. Hersomus, white or yellow, combined with carbon tetrachloride, shellac in alcohol, or mixtures of shellac, borax, hot water and water soluble azo dye, lead or taller, clay-water or clay-slip, PVA or non-particulate solutions, sweet oil, mineral oil, or petroleum jelly; talk or cork floor; and sometimes it can be as simple as the model or residue of the modelling material on the inside surface of the mould, serving as a separator for the casting. And sometimes, mould materials and filling materials do not need parting agents when the combination of materials does not produce adhesion.

Parting agents can be impregnated into the areas to be separated by inserting either a wall of metal, which are called chins; or putting a wall of clay; or adding a wall of the model, or residues of the modelling material on the inside surface of the mould, serving as a separator for the casting. And sometimes, mould materials and filling materials do not need parting agents when the combination of materials does not produce adhesion.

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Impervious dividing areas into sections are said to be made by inserting either a wall of metal, which are called chins; or putting a wall of clay; or adding a wall of the model, or residues of the modelling material on the inside surface of the mould, serving as a separator for the casting. And sometimes, mould materials and filling materials do not need parting agents when the combination of materials does not produce adhesion.

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Foraminifera

In the Special Collection of UCL, partly housed at the Grant Museum of Zoology, is kept an incomplete set of foraminifera plaster models. These marine microorganisms are an extensive order of rhizopods, consisting of a chambered shell of calcium carbonate. Many of them have various openings or lines in their shell through which pseudopodia extend, giving them their name: foramen, which can be translated as ‘hole bearer’.

In the nineteenth century, leading scientists disseminated sets of foraminifera models reproduced in plaster to promote the study of Palaeontology. Alcide D’Orbigny (1802-1857), for example, based at the Museum National d’Histoire Naturelle in Paris, sculpted over 100 different specimens of these microfossils in limestone, and then moulded and cast them in plaster. They were distributed in fasciculi comprising 25 models each, accompanied by printed illustrations.

Around the same time, Leopold Blaschka, and later his son Rudolf, started to produce glass-spun models of marine invertebrates, which were distributed to leading science museums. Not much later, the German biologist Erich Haeckel published his lavishly illustrated enlargements of lithographs and autotypes called Kunstformen der Natur (Art Forms of Nature) collectively in two volumes. Haeckel produced over 1000 illustrations of various organisms.

The collection at the Grant Museum is incomplete and consists of several plaster models, which have clearly been taken from the D’Orbigny sets, mixed with models from other microfaunal collections. Judging by abbreviations on their labels (for example d’Orb or F&R), these other sets could have been from Anton Reuss (1811-1873) and Vaclav Fric (1839-1916).


Dismemberment

I remove more and more brown cardboard covered in brown packaging tape. I experience a conflict: part of the process of plaster casting engages me in a process of destruction. I deliberately and systematically dismember, tear apart, pry open, pull and divide pieces of cardboard, brown packaging tape, and plaster. Some parts I keep, others shatter into many fragments. The debris accumulates on the floor. I am walking over increasing amounts of crumbled pieces of cardboard, packaging tape and plaster.

The mass grows.

The volume seems disproportionate—but I struggle to say in relation to what? I experience a shock by this infliction. The mind is set to break down and open up. I start to question my real intention here.
A visit to the Grant Museum

I remember her coming to the Grant Museum in London with me to look at small white plaster pieces.

- I begin to consider these models as sculpture, and, taking this viewpoint, they appear totally understated – unconvincing – simple – absurd – brazen – mute – modest – slightly daft – romanticized – or humble even. From this viewpoint they seem like very basic, primary forms – Ur-Shapes, an idea rather than a reality. The model standing in for something else. They could be included in the sculptural category relating to scale, to enlargement, the making visible of what wouldn’t be visible otherwise.

- Do you wonder how they are made?

- Do you mean what material, or how the material was shaped?

- It’s difficult to reconstruct. What is clear is that these models were produced using a whole palette of different processes, techniques and materials, mixing traditions of imitazione, idea and disegno with procedures based on contact and touch. They appear simultaneously cast and carved. It seems that some material is added and some is removed – by casting or by cutting through. Sometimes the without doesn’t correspond to the within. Actually this is often the case. Here, the within is said to be made out of plaster, which leaves many possibilities: lots of different materials were mixed together and then called plaster.

- How do you separate outside from inside?

- Instead of outside, I could as well say without. This would then mean something like: that which the model is meant to represent lies without its coming into being. Sometimes the without doesn’t correspond to the within.

- Actual this is often the case. Here, the within is said to be made out of plaster, which leaves many possibilities: lots of different materials were mixed together and then called plaster. To start with, there probably was a model, made in clay, or even in plaster already. From this was taken a mould and then a casting with plaster, possibly followed by a process of carving. Carving is a process of subtraction, of taking-away. They are, however, never an exclusive act; they are made out to be so when they are performed almost simultaneously or are part of a flow of activities that do not appear as separate, distinct or contradictory acts during their performance. Some material is added and some is removed, retrospectively one might be tempted to speak of additions and subtractions. In the moment of operation, these words do not necessarily register quite the same way as what appears as appropriate, or even necessary, activities. Modeling, in clay or in plaster, is a hybrid of both addition and subtraction.
- What about the black markings?
- Here, what might suggest the foramen, the holes giving them their name, seems not to have been part of the modeling, casting or carving process, but appears to have been applied in paint, as small black dots at numerous sides. Maybe even with something as crude as a black marker pen. These little plaster casts show obvious traces of being handled, parts have broken off and were repaired, then painted over again, with several different layers appearing as various and subtly shaded regions. The holes are, in some cases, heavily filled with a different mixture than the plasters, though circular marks I have seen at the Natural History Museum are kept in wooden drawers, at small crates, not painted. All of this happened before they ceased to be teaching-aids and became artifacts instead.
- How do you approach them?
- If you don’t mind, I would prefer if we consider these plaster works as teaching-aids for now. For this is what they were, before they were taken out of circulation. I start to wonder what it is they aid, what and how they assist? What do they teach? How do they demonstrate? Of course they simplify, reduce and abstract as much as they present and make concrete. They are shaped by their sculptural properties of scale and material transformation, but also by a logical, analytical process of reasoning and interpretation. They respectively allow and reduce, process and then retrieve information, perceptions, and knowledge. Shaped by a need for classification. Formed by a will to instruct. Multiplied through molding and casting and dispersed by the ambition to exchange and disseminate knowledge.
- How do you account for the number?
- Here in front of us are enough of them to suggest there could be more. A sameness that also suggests endless variations. Fragmentary resemblances, but also deterioration through touch. The unique exception, and also an endless proliferation.
- And you in front or amongst them?
- As a group they totally exclude me, throw me back unto myself. They continuously show me what I know, what I recognize, and how I try to make sense. The only thing I really notice for certain is myself, my knowledge, my attempt to approach them, but nothing new they might be intended to show.
- Where does this lead you?
- I’m going round in circles. At precisely this point I fail entirely to get over myself. These little models appear to refuse my interpretations and projections — my knowledge of sculpture, my training in looking, detecting and interpreting doesn’t touch them. And so I become aware, less of the army

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The model

Sometimes a casting is made in a mould taken of an existing model. Sometimes this is described as a transfer from a non-permanent material like clay to a more permanent material like plaster or concrete. It happens on occasions that in this conversion the model, which is sometimes also called the original image or the original form or the original three-dimensional model, gets destroyed and superseded by a single duplicate of this now lost original.

At other times, however, the model is itself also a cast, for example a wax model used in the lost-wax bronze casting process is often cast itself before it is lost. If this is the case, then it is called indirect cast or inter-model, which is also sometimes known as counter model, although it has been suggested that this implies a negative of the model, which it is not.

Sometimes, the model is also called a master copy, master or simply referred to as the work, and sometimes the material of the master is also the material used for the mould jacket (if it is a flexible mould, or multipart mould), and most likely also the material for the casting. Sometimes the modeling material can be reused as casting material.

82 Butler (1997) p. 11.
88 Percy (1965) p. 89.
89 Verhelst (1973) p. 17.

of plaster models I’m looking at, and more of my own faculties, ambitions and skills. What I connect to is myself and these little assistants appear to add this connection. There is nobody else yet: they are not a portal to a maker, a teacher, another. They certainly don’t teach me anything I don’t already know.

Just me and them - and then we even more than before. There seems to be too much of one kind of knowing, and too little of another.

- What are you going to do?
- It’s not really any longer just them and me. I have invited you here as well. It’s us now - then, you and me.
A visit to the plaster workshop Felice Calchi

In my memory, Andrea Felice and myself are meeting in a plaster workshop near Ciampino Airport on the outskirts of Rome:

In some of these instances, the importance of the model as the master is transferred to a cast, which then becomes the master cast for moulding future models, which might then in turn be moulded to produce an edition of casts. In cases of limited editions, all moulds are said to be destroyed upon completion of the set number of casts to preserve the edition’s integrity.

In other instances, the model is an existing cast, from which a mould is taken, which is then called original cast, or sometimes replica, which one could then also call a copy or reproduction, which in some instances are authorized by an artist or an artist’s estate. Sometimes, the model is also called definitive pattern or the original model is also called original plaster pattern when it is made in plaster, or clay pattern when it is made in clay, which suggests that it can be used for further mouldings. And sometimes the model has also just been called pattern without reference to its material, in which case it is unclear if it is intended for moulding at all.

Sometimes the model is not destroyed in the moulding process, and is instead re-worked afterwards, which will allow subsequent mouldings of the altered model, which would then produce different casts which are then called versions. The same applies to inter-models.

The desire to produce either a single, unique, and authentic piece, or multiple, various and numbered proliferations, often creates uncertainty: it is said that the distinction between an original and a reproduction is confusing when a number of originals are cast from the same mould: it is often difficult to foresee how many results will spring from one source. It is difficult to foresee the fidelity of the results to the original.

15 Verhelst (1973) p. 31.
clay, and then you have to transform it into another material. So you need a mould. Of the clay model you make a mould in plaster, called lost mould, or fast mould. So you make the mould on the clay, then you take off the mould. And your clay model is destroyed. At that point, you have lost your sculpture, because you don't have anything. You had to think a lot for that work, and at that point you don't have your work. You have just the mould, and you have to hope that your mould maker was skilful. Because if the mould was not good, you have lost your work completely. So that time is a magic time for you.

- This is a magic time for you. This might also be a magic space for you. The mould, touching the model, then losing the model, and hoping to touch the material being filled into the mould. You hope for the best. You don't see your work anymore, and you cannot foresee the future outcome. You hope that these materials touch, but never fully combine. You hope that they yield to each other, and you hope that they yield to each other in return. But you hope that they never become one. You hope that there is always a small space between them, as close as they might get to each other, because you hope they will come apart again. So you have, like you said, for something magical - time or space. But also a kind of space you can't go in, so you don't see what happens there. It's magical for you, but also hidden from you, it's a kind of space you have to imagine. And you feel it become invisible to you. You can try to think it, or you can attempt to imagine it. But you can't see it, so if you are working in the dark, or if you work blindly and you don't actually see what you are doing.

- Some months ago, I wanted to create an experience for myself. I asked my father to make a life cast of my face. But not so that I would simply have the cast of my face, but because I wanted to live inside a mould. I wanted to know what happens during a moulding process. I make a lot of moulds. And I wanted to know what it would feel like when I am inside a mould. So, during the work, I can hear the sounds of the process. I can appreciate the smell of the plaster, and every one of these sensations makes me cautious of the situation, of the process.

- Do you mean you were very aware of the sensation of being inside the mould?
- I was both inside and outside. I can feel the rubber alginate on my face. I can feel my father move, and move around me. I know the timing of each step. The noise of the tools amplified inside the mould like inside a box. The warmth of the plaster is intense and how long it takes. Before my closed eyes, I can see every movement of my father, at every moment, because I know what he is doing. I was two persons at the same time.

- Do you mean you were both your father and yourself in this moment?
- No, but I was in the mould and also outside looking, looking at the work.
How to make a face mould from life

Casting from a living head, casting a face from life, or fashioning a face mould has been described as being carried out with plaster, with plaster bandages, or with agar, either as a single one-piece mould, or through a two-piece mould.

In making a cast from a living head with plaster bandages, the ears need to be sealed with lubricated cotton wool; the nostrils are said to remain uncovered, and sometimes straws or small plastic tubes are inserted, or sometimes quills with fine wool are inserted into the nostrils as said to allow the subject to breathe; or breathing tubes are to be inserted, for the subject to continue to breathe. Sometimes, a frame is placed in position and fastened to the subject’s head where the mould is to end; or a cloth is tied around the model’s head to act as a barrier. The model is kept in a horizontal position to facilitate the application, which is specified in most cases. Separators are said not to be required when using agar compositions, but are needed when using plaster or plaster bandages.

It is stipulated that a death mask is carried out in a similar fashion, except that quills are not needed, and the eyes can be left open.

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83 Wagner (1963) p. 84.
86 Wagner (1963) p. 84.
88 Wagner (1963) p. 84.
Peirce's semantics is formed through the triadic relation of a sign to an object leading to an interpretant. The flow in Peirce's semantics, the process of semiosis, is the flow of signification through the relationship of sign, interpretant, and object, which then becomes the new interpretant. The interpretant needs to be fully formed and recognized for it to function as a sign, through continuous and on-going processes of engagement or through shifts in language or conceptualization.

Peirce extends the triadic nature further to the sign in regards to the function of its representamen conditions consisting of iconic, indexical or symbolic types, corresponding to firstness, secondness, and thirdness, which Peirce called qualities, forces and mediations.

In Peirce's aesthetics, the first and second interpretant are formed before an interpretative thirdness arises, that is before known meaning is attachable.

**Charles Sanders Peirce**

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In my memory we are sitting together at a table. I say the notion of a dialectic relation seems to be insufficient or problematic when thinking the flow of processes in moulding and casting.

She says you could instead introduce thirdness. Through Peirce’s semiosis, it becomes a triadic relation, of sign, interpretant, and object, which then becomes the new interpretant, etc. Peirce offers the possibility to think the formation of meaning, the process of semiosis, not as binary or dialectical negation of form and counter-form, of mould and cast, of signifier and signified. It’s not the two sides of a coin. Peirce introduces the interpretant, or thirdness, as an element that continues, drives and extends the chain of signification.

I say it is interesting to give rise to meaning through the primacy of process and flow, which can also arise through breaking the process.

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**Supervision**

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I say it is interesting to give rise to meaning through the primacy of process and flow, which can also arise through breaking the process.
She says that this might be also what Peirce describes as metaphysical shifts of firstness to thirdness, and the need for the interpretant to be fully formed and recognized for it to function as a sign.

She says this is very interesting, because this is a process we are engaged in. There is another way of describing this through a shift in language or a shift in conceptualization.

I say in working with materials and processes of moulding and casting, it has become apparent that what was initially fascinating was to produce something that looks like something else, sharing a resemblance, something that establishes an iconic relationship. Then I realized that the ideological or existential relationship between two forms, shapes or materials demands more engagement, that there is a powerful relationship and connection based on touch and contact, even if, and especially when, they do not resemble each other. And now it is as if the qualities we attach to the materials takes center stage. I mean plaster remains the same material with the same behavior. It doesn't change the way it gets warm when it starts to set, whether it is doing this in the Renaissance or now. But how we think of it changes, the meaning we attribute to this warmth changes, what, if any, emotional responses are triggered changes.

She says in Peirce, meaning is formed through the interpretant. You move through firstness and secondness to arrive at thirdness. This is the flow of signification, this is semiosis and the formulation of meaning.

She says you have to allow for the formation of the first and second interpretant before you start to make an interpretative thirdness. That is before you start to attach known meaning to something. You have to allow the factual, your feelings, your responses, your theological responses.

I say often recognition starts to interfere too soon.

I say two materials come together, but there is also something in between them that exist because of their coming together, which is the moment of encounter. It is the additive or accumulative process of putting two things together. But also the fragmentary, subtractive, disintegrative process of coming apart.

She says it becomes very interesting, because this space-in-between is like a space-of-the-unknown.

I say it is hidden, it exists as a relation across the two entities, but some part of it, a new part that starts to exist, also remains unknown and cannot be named yet.
She says what we are talking about is the unknown: something is coming into being and we are not sure how and why.

I say the origin of this is really quite strange. It is almost like an emergent property of the process itself. And what is its significance? It means it is indicative of something. It is indicating something that is arising without an origin on an aspect of the process.

She says something was created by putting these two together.

I say they both create each other the moment they are put together. But there is a sudden additional indication: an invisible, ephemeral, allusive, un-nameable form of some peculiar sort, possibly continuously yet to come. Miracle is to say: this space is miraculous, in the sense that it makes us smile.

The word *miracle* is derived from the Latin word *miraculum*, with the sense of 'object of wonder', which in turn is derived from *mirari*, with the sense of 'to wonder at, marvel, be astonished,' or figuratively 'to regard, esteem', which in turn is derived from *mirus* meaning 'wonderful, astonishing, amazing,' and the earlier *smeiros*, which derived from the Proto-Indo-European word root *smei* meaning 'to smile.'
CEMENT
A box

A space is delineated — nested, enclosed. Surrounded on all sides by wooden limits, it confines an area on a horizontal and vertical axis. Sideways, upwards, downwards starts to have limits. My foot, my knee, my leg, up to my hips, along the chest, to my shoulders, and back again. Width and length. Less than a cubic meter, but more than a cubic foot perhaps.

Cement and sand are turned and mixed and become one. Equal measures — one to one proportions.

A little water is added, a little at a time, and cement, sand, and water become one. This fluid, wet mixture is transferred into the box. It fills the space up to my hips. Two volumes, one empty, the other full. Or three volumes, two half volumes and one entire volume, comprising the two half volumes.

Through a long nozzle, expanding foam is inserted into the cement-sand-water mixture, and it becomes a cement-sand-water-expanding foam mass. So it appears.

The foam comes out of a canister under high pressure and enters the cement-sand-water mixture like a jet. The inside dances through the wet mixture, driven by the pressurized force, bouncing off the sides of the box. The cement-sand-water-foam mass start to erupt. The level rises. There is great tension between the wet mixture and the expanding foam. A battle is taking place, both substances attempt to fill the space there is, pushing each other out of the way. The box is the only cavity there is. It determines the available space for both the cement-sand-water mixture and the foam.

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The place is the confined space, delineated by the edge of the box.

The taking place happens within, two conflicting forces are fighting for dominance: the cement-sand-water mixture and the foam each want to fill what space there is. They work against each other: the foam, expanding, the cement-sand-water mixture, resisting. The battle rages until the foam is done with exploding, and the cement-sand-water mixture is done with resisting. An agreement has been reached and each one settles into its claimed space.

The space, no longer a space as much as a filling, both a volume and edges, though inseparable at present, is ending.

The whole top, volume, mixture, foam and edges are turned upside down and the edges are peeled back. The top and the bottom of the box are taken off. The four sides are taken off. Only the volume remains — a mass of cured cement-sand-water mixture with strata of foam.
A cast

A cast is sometimes called a mold, and sometimes it is called a positive cast or positive form, and sometimes it is referred to just as positive, and sometimes it is called impression as well.

Casting is sometimes called a means for imitation or reproduction through mechanical transformation, with the intention to create more rigid, substantial, durable, permanent, economical, accurate or numerous results, which is a description of an intention directed towards identified objectives, and specifically an intention to convert into different material registers, and which, it could be argued, might also entail an intention to translate into different sensorial regimes.

Sometimes casting is described as an act of filling (which is also called charging) with material to reproduce volume and surface detail from something else, which is also described as an act of casting a material or material and the interface or contact face of the mould, which will result in the cast bearing the same texture, both of which are descriptions of an intention to convey and transfer properties or characteristics from one entity or surface to another.

The essence of casting is said to be the creation and filling of empty space, which, as an ensemble of the activities of creating and filling, leads to a description of the casting process as divided into two fundamental stages or phases, which are firstly the formation of an impression or negative mould from the original (creating empty space), and secondly the positive result or reproduction of the original object from the negative impression (filling of empty space) (although the term casting is often specifically used to only de-
scribe the second stage), and with said two stages described as either a series of multiple creative steps resulting in a single object, or, conversely, as a system for producing multiple copies of a single object, which are two different objectives towards which casting is said to be able to be directed, and which seem to imply, in the first instance the characteristic of uniqueness and distinction (which has also been called innovative), and in the second instance, the characteristic of proliferation and the formation of a series (which has also been called reproductive).


Dust

I prepare another box and fill it with foam and cement-sand-water mixture. I’m covered in dust. My clothes bear cement dust. I have a cement dust shirt. My eyebrows, my hair, my shoes, my hands are grey. My lungs start to be cast from the inside. I swallow dust. I’m turning into cement.

In return, I start to spit into the cement-sand-water mixture. I drop a few hairs in. Nail clippings. I piss into cement-sand-water mixture. I’m trying to break even with concrete, measure up to it, keep pace with it. I’m still encased in cement dusts.

I will have more spit. My hair will grow back. My nails will grow back. But even after all that, there will be concrete, all around, it will outlast a lifetime.

Opening of a box

The box is removed: the four sides and the bottom are unscrewed and lifted off. They reveal a smooth block of concrete and foam mixture packed together tightly. The foam starts to be removed: first the bigger pieces are scraped out, the pieces that are easy to reach. I scrape, tear, scratch, stab at the foam. Once removed, some foam reveals more foam, or reveals foam surrounding smaller pieces of concrete. Some removed foam reveals concrete, or concrete interrupted by smaller pieces of foam.

When the foam is peeled, lifted or scratched away, I do not know what is behind the removed piece. I do not know what will be revealed. I hope for concrete. If it is concrete, I do not know what forms the concrete has, what shape, what size, and how – if still – it is connected to other forms or shapes of concrete.

I continue to remove foams and there appear smaller and harder to reach pieces. Steel dental tools.
can reach into the smallest cavities and crevices. The concrete, now cured and hard enough, stays behind. The concrete remains, this remainder. Or some of it remains. When the foam is peeled or scratched away, I do not know what is behind. I do not yet know what will be revealed. I expect concrete. I hope for concrete. I do not know what form the concrete has.

I peel, I remove, I lay bare, I uncover, I expose. I open the mould.

I remove the mould. As I work and scratch the foam away, I become aware of the archaeological characteristic of this activity. It is as if I’m performing an excavation.

Excavation

I work methodically: the intention is preservation, but the ambiguity is informed by a desire to reveal and make available. Sometimes, the reality is different, and intention, ambition and situation do not correspond. When this is the case, the desire to reveal and uncover brings with it destruction and concealment.

Archaeology

During an excavation season on the bank of the river Nile, where, for a while, it flows back south again instead of north, before it returns to its original direction, an international team of archaeologists, geologists, structural engineers and artists found two ceremonial amphorae buried in the sand in the recently uncovered entrance to what was then believed to be a subterranean funerary temple.

Unusually, the vessels were found upside down, and their base, which now formed the top, had been crudely severed off.

First, the team of trench-workers discovered the cut vessels protruding from the sand. They then carefully worked downwards to remove layers of debris and free the amphora of sand, which had to be removed from around as well as from inside the containers. When about two thirds of the vessels were exposed, two archaeologists carefully lifted these upside-down hollow volumes from the sand: what remained were two concave impressions in the sand, their surface surprisingly patterned and colourful.

Over several millennia, the pigmentation of the amphorae had transferred from the vessels to the surrounding layer of sand and once the empty containers were removed, the
From: Rachael Dann
Subject: RE: checking in
Date: 14 December 2016 18:13:25 GMT
To: Florian Roithmayr

Dear Florian,

Great to hear from you! Yes, Paris is wonderful - I love being here!

Congratulations on being close to submission - it seems like you’ve been very quick. When is the deadline? Is the exhibition open to the public, as I’d love to come and see it if that’s possible. I’m so glad that you found some good source material and some fruitful experiences in Sudan. The texts you sent me are more than passable: I enjoyed reading them, and they brought back memories: I remember the pots in the mortuary temple. It is actually quite fascinating to read the passages, as I feel a sort of intimacy in them: for me they reference so much, but I think you’ve captured many layers (pun intended) of insights and meaning about the past, the archaeological process and the various processes of creation that we’re involved in.

Not trying to look I’m correcting your efforts! We’ve decided that it was a mortuary temple. Mortuary temple is more technically correct (or more Egyptological). I’d say ‘excavators’ rather than ‘trench-workers’, and just to be picky – they weren’t amphorae (amphorae have a very particular shape and handles). If you want a more descriptive term you could use ‘round-bellied pots’. All good wishes from Paris,

Amities,
Rachael

Associate Professor, Egyptian & Sudanese Archaeology
Department of Cross-Cultural & Regional Studies
Karen Blixens Vej 5
Copenhagen S

Opening of the mould

The opening of the mould has been variously described as freeing the sculpture within", revealing the fluided cast" or stripping off", removing the mould", or the mould gently

62 Johnson (1960) p. 54.
64 Verhelst (1973) p. 13.

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pigments remained behind, forming a kind of mirror-image of the coloured pattern found on the vessels now appearing on the exposed sand surface.

This instance, however, lasted no longer than several seconds. The arid climate immediately evaporated all moisture from the exposed sand, and the wind carried away both dry sand grains and pigments. The concave impressions collapsed and dispersed.

62 Johnson (1960) p. 34.
64 Verhelst (1973) p. 13.
eased off, or else removal of the cast from the mould or the model from the mould, which is also called the withdrawal of the model, or, poetically, the cast out of the mould.

It is said that in opening the mould, one has to be cautious, take great care, work gently, use careful leverage, not hurry, have patience and not get flustered.

Commence chipping:

A waste mould – as the name indicates – is said to be chipped away, or, from the perspective of the cast, it is a process of chipping-out. In all cases, the mould without is destroyed to reveal the cast within.

Often, the mould material is thin enough to be chipped away, whereas the casting material should be harder than the moulding material. The mould needs to be damaged, the cast should not be damaged.

In most instances it is said that the chipping is done with a chisel and a wooden mallet, which has been described as an old carving tool that has served its time, or a blunt joiner’s chisel, but sometimes with a hammer instead.

Chip the plaster away with a hammer and chisel:

Sometimes the chipping adopts a strategy, which might be to start from the top and work down, or it is said that there are parts which are best chipped out first, and others which are said to be better left awhile, or it is said that it is best to start whenever possible by

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11 Glass, J. F. (1929) Modelling and sculpture, a practical treatise for students, with a brief history of
the arts. London: B. T. Batsford, p. 83.
12 Percy (1965) p. 45.
14 Mills (1965) p. 65.
19 Glass (1929) p. 82.
20 Glass (1929) p. 81.
21 ibid.
revealing a high point through the mould, and chip away carefully and methodically.25

The chipping is said to be done into the mass of the mould and cast and not across it, carefully and methodically.25

Sometimes, the first layer of mould material – i.e. the layer immediately covering the model or casting – is coloured to announce the imminent revelation. These are sometimes striking colours of blue, red, green or yellow pigments added to plaster or concrete, which has been described as marking the proximity of the sculpture underneath,26 or as a warning that we are nearing the surface of the cast.26

In the case of a two, or multi-part mould, the chipping is said to be limited to opening the seams joining the mould parts to expose what on the one hand has been called the separation lines, which is said to be then be followed by tapping wooden wedges into the seams to separate the sections and open the mould along what is also on the other hand variously called the parting lines.29

The parts of the mould are then said to come apart because of draft, which is described as the slight angle provided on the sides of the patterns to allow the mould to be readily removed from the said pattern.31

Sometimes the opening of the mould requires different techniques to chipping, which depends on the mould material. These range from carving away, deflation, dissolving or tearing, to scraping out.33 If follows that sometimes the mould is not opened at all, but instead undergoes a process called pattern-removal, which is also called de-waxing (if the material to be removed is wax), or de-foaming (if the material to be removed is foam), which in both cases could be through a process called孔雀, or burning out, or as it is most often the case, losing (as in lost-wax casting, which is also called cire perdue), which, in a way, could also be called wasting.

26 Mills (1965) p. 65.
29 Verhelst (1973) p. 22.
31 Verhelst (1973) p. 12.
34 Mills (1965) p. 38.
36 Verhelst (1973) p. 32-37.
38 Mills (1965) p. 81.
In my memory we sit facing each other in his office. I say to him that the work has become very unstable. He says to me that he hasn’t really thought of it as an inherently fragile space. He says that it certainly is a kind of magical, or quasi-magical space, but not inherently unstable. He says that it is perhaps in regards to the fragility of the mould that I see instability. I say to him that the transitional space of shifting from one form or material to another is inherently unstable and fragile. I say that these kinds of fragilities or instabilities are often required to be covered up for the sake of presenting a stable and coherent framework. I say that otherwise they cannot be accessed and evaluated through established institutional channels. I say that this remains the case unless I also establish a stable premise for accessing instability.

He says that it is in the sense of a transgression of boundaries. He says that declaring something as sculpture creates a kind of foreclosure. He says that suddenly there is an unstable space.

I say that fragility is entailed within the process of letting go and passing on responsibility.

I open another box. I open the four sides and the bottom and lift them off. They reveal a smooth block of concrete and foam matriz packed tightly together.

I start to remove the foam. Once the foam is removed, there is no longer any support. What was a smooth block of foam and concrete packed tightly together, an insulated entity of protection and an upholding unity, now becomes one-sided, top-heavy and unstable.

The removal of some of the foam reveals more foam enclosing a twisted series of cured concrete shafts.

Once the foam is removed, the previously enclosed entity is forfeit.

What were once secure parts become insecure and precariously balanced. It might be that small grains of concrete can no longer support the weight above them, behind them or adjacent to them. What appeared to be a unity, a solid and smooth block of concrete and foam starts to disintegrate and fall apart with the removal of the foam.
He says that a mould involves a process of letting go.

I say it is a kind of sacrifice or surrender. I say this already starts in the studio - from an observational level - with the making of a model; I say I enter a compromise knowing fully well that this is not it. I say from the start I enter an agreement that what I do might not be the end; I say I might spend time making a model, and then build a mould from it; I say I will have to invest time and effort into knowing that I will discard both, that I will break them, that they will be wasted. I also know I will make something else; I say much of what I make will be thrown away; I say I acquire many materials and manipulate them over time, knowing fully well that I will have to break them, tear them open, and throw them away. I say I enter an agreement that what I do might not be the end; I say I spend time and participate in a space of imprints and sacrifices; I say I lose many materials; I say I encounter series and parallel sacrifices; I say this accumulation of referred responsibility, of abandonment and surrender, constitutes the transformation of material at the moment of imprinting; I say this accumulation proliferates and spills over and exceeds the material; I say I become sculpture.

He says letting go, the moment of surrender, is also the moment of care, and brings the implications of care; he says there are certain kinds of moral impositions; he says these processes instigate complexity within the articulation of a moral obligation in relation to the work being produced; he says there might appear an imperative to engage in a highly moral arrangement and relationship with the material world; he says the vulnerability and the fragility both in relation to material, and in relation to another with whom you make work, it generates a certain sense of comunism on the basis of fragility and the moral imperative of care.

I say we are entering a highly unstable but productive space of transitioning; I say it is a space that can be full of risks; I say this space between might translate and catapult itself outwards - from within to without; I say it becomes sculpture.

Fragility

Cracking, breaking, falling apart, disintegration: I can imagine the part that falls off to be still sculpture, imagine two sculptures, three, proliferating quantities of ever smaller sculptures, to the point where what is sculpture, and what is not sculpture, becomes indistinguishable. It becomes dust.

I can imagine the whole lot together as one sculpture consisting of many parts, continuously unstable, broken, or with the possibility of breaking down and scattering, some parts, which are present; some parts, which have exploded off; parts that have been removed and exist elsewhere, a network of fractured parts forming one sculpture, barely holding on to any kind of autonomy, or instead, abandoning autonomy for community.
Casting defects

Sometimes, there are irregularities in a casting process, some of which can be corrected, some of which are said to be repairable, some of which have to be removed, and some of which have to be eliminated or disposed of.

Sometimes, there are irregularities which are so severe, they result in fragmentation, and sometimes there are irregularities which are not visible, some of which are below the surface, some of which are very visible, some of which can occur only in one specific kind of casting process and are then process specific, and some of which can occur in any kind of casting process.

Irregularities result from different causes, some of which have solutions, some of which can in turn be cause for another kind of effect, some of which are given different names and some of which are included in conflicting nomenclature, some of which result in misunderstandings, some of which add complications in the casting process, and some of which are the result of needless and avoidable efforts.

These irregularities are sometimes classified into different categories, some of which relate to filling, some of which relate to shape, some of which relate to thermal changes, some of which relate to newness.

There are also other possible classification systems, some of which distinguish between defects caused by irregularities in the moulding and irregularities in the casting, or some of which distinguish between gas porosity, shrinkage, mould material, pouring and metallurgical defects.

Some defects are caused by shrinkage, some of which are open shrinkage defects, some of which are closed shrinkage defects, which are sometimes called shrinkage porosity, some of which are shrinkage cavities, some of which are shrinkage cracks.

Some defects occur because of gas porosity, some of which in the formation of bubbles during the cooling process of the cast, some of which may occur on the surface of the cast, and some of which might occur within the material.

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87 Atlas (1946) p. 31.
Some defects are caused by pouring irregularities, some on the one hand could be caused by impurities in the pouring material itself, which is called inclusions, and also some that are either partially filled moulds, which are called misruns, or are partially bonded filling materials, which are called cold shuts, both of which are due to lack of fluidity or premature setting, and then, on the other hand, some of which are the result of poor pouring activity itself, some of which can be the result of casting material leaching itself into the mould material, which is called penetration, and some of which that can be the result of casting material leaking out of the mould, which is sometimes called a run out, and then also some of which caused by moulding material coming loose and dropping into the casting material during the pouring process, which is called drops.

Extremely high temperature in pouring materials can sometimes cause small indentations in the surface of the mould material, some of which is a thin line indentation, which is then called a rattail, and some of which is a broader indentation, which is called a buckle, and which sometimes is also called a weld, some of which can also cause in turns the formation of a thin layer of excess metal sitting proud of the cast, which is called a scab, and sometimes the joints of the multiple sections of a piece mould have loose or seams on the casting, which are the results of a leakage of excess casting material into the seam or parting lines of a mould, which are sometimes called flash, and sometimes occur flowing, or sometimes flow, and which are similar to the mark of excess material left along the parting lines in injection moulding processes, which are sometimes called seams, or sometimes uneven lines.

Some defects are the result of mould failure, a flaw which, in the first instance, is either due to over-run mould parts (some of which show tears and some of which show material fatigue), or the displacement of mould material as the pouring material travels through it, which is generally called mould erosion, and which is sometimes specified as a sand hole, and which sometimes might also be called swell, but all of which results in unwanted rough surfaces and excess material, or a flaw which, in the second instance,
is the consequence of inaccurately aligned mould parts, some of which are sometimes called shift, some of which are caused by twisting parts or decentered locating pins on pattern plates.\(^{21}\)

Both pouring irregularities and mould failures are often cause and effect of each other.

Some defects are metallurgical defects, some of which are called hot tears, which are also called hot cracking, or some of which that are called hot spots, which are different, but which are all caused by inconsistent cooling or setting.

In some sculptures, mould defects are left as they appear, which is usually seen as an indication of the method of making the work\(^{22}\), or they are said to be left according taste.\(^{23}\)

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Another box

I make another box and then fill it with expandable foam and cement-sand-water mixture. Particular attention is given to:

- **Preparation**
- **Materials**
- **Tools and Equipment**
- **Methods**
- **Observations and Notes**
- **Further Notes**
- **Precautions**
- **Advantages and Disadvantages**
- **Results**
- **Further Use**
- **Further Reading**

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**Disintegrating bodies**

The Cristo Velato, a marble rendition of a veiled figure carved in marble in 1753 by Giuseppe Sanmartino and displayed in the Cappella Sansevero in Naples, Italy, depicts the dead body of Christ laid out on pillows. Cloth, or a cloak, surround the figure, shrouding...
it, flowing around the body, flowing over and around its form, cascading in many folds and drapes.

Francis Bacon’s painting Study of the Human Figure from 1949 depicts the cropped figure between and surrounded by hanging cloth, the male body partly obscured, either in front of or behind the curtain, a drapery that might be called something like a device.

Ecce Puer (Behold the Boy), also called Impression of a Child, is a series of different versions of the same subject by Medardo Rosso, all presenting the larger than life-size head of a young boy. Reiterated in different materials and varying finishes, the portrait shows Alfred Williams Bent with his face pressed against the drapery of a curtain. Ecce Puer is said to have been a commission for the bust of a young child—the story goes that Rosso spent weeks trying to find the right impression of the boy, as he spent his time living with the family who ordered the work. Then one evening, as guests were gathering in the house, the boy sheepishly hid behind a curtain, and Rosso saw his veiled face. The boy’s contours blurred by the drapes and folds of the curtain as he moved behind and between them.

Rosso, it is said, modelled in clay, and made later wax versions by casting the wax in gelatin moulds, sometimes backed by later plaster supports.

Ecce Puer exists in the following known versions:

Wax: Private Collection, Milan.
Wax: Museo Medardo Rosso, Baruzzo.
Wax: Collection of Lady Balderstone.
Wax: Galerie d’Arte Modeme, Barzio.
Wax: Collection of the painter Pastorelli.
Wax: F. Rosso, Milan.
Wax: Galleria d’Arte Moderna, Riva (1906).
Wax over plaster: Galeria d’Arte Moderna, Affrico, Verona (1916).
Plaster over wax: Galleria d’Arte Moderna, Milan (1916).
Plaster: National Galleries of Scotland (1916).
Bronze: Galleria d’Arte Moderna, Verona.
Bronze: Waflardi-Ricci Museum, Cologne.

Ecce Puer (Behold the Boy) is 93 cm (37 in) in height. National Gallery of Victoria, Melbourne.

The Festa dei serpari di San Domenico (Feast of the snakes of Saint Domenico), held annually in the beginning of May in the small village of Cocullo in the Abruzzo mountains in Italy, is a procession in which the statue of San Domenico is carried from the church and through the streets covered in live snakes.

A visit to the Opificio delle Pietre Dure

In my memory Laura Speranza and Stefania Agnoletti are showing me wax and plaster pieces in the Opificio delle Pietre Dure / Settore restauro materiali ceramic e plastici in Florence.

- So we have here the Medardo Rosso work with all the other things: this is not what you came to ask me about but also shows you the difficulty in our work. We have the wax on the outside of the plaster, yes. Plaster and wax, or wax over plaster, right? The wax is on the outside of the plaster.
- I have seen many different versions of this work before.
- Yes, so this is from Verona and it needs cleaning but it is showing big cracks. And this is the difficulty here with this wax and our work.
- I thought the cracks might have been there with intention.
- This is what we are trying to find out. But we also know that Rosso made a very complicated mixture of materials here that do not really work together. They work against each other.
- You came here to see the wax casts of flowers and fruits by Susini and Callamai we are restoring for the Museo di Storia della Naturale. These are possibly cast with just wax. But the Rosso work here is wax over plaster. And this is a problem: Wax becomes plastic and expands in warm environments and contracts and becomes hard in cool environments. Plaster does the opposite. It contracts when it is warm and dry and expands when it is cool and humid. Wax and plaster work against each other. When the plaster contracts, the wax expands; when the wax swells, the plaster cracks. The force between them shows as cracks, the plaster breaking the wax over it.

There is a line from Sanmartino, via Medardo Rosso and on to Francis Bacon and even the procession of San Domenico covered in writhing snakes: a line of figures, obscured, disintegrating and falling apart, bodies in proximity to draperies, cloth, curtains and moving snakes, figures in proximity.
to what might have been called devices, that both obscure and demonstrate something in this conceal-
ment.

In the Cristo Velato, the flowing and folding cloth intended to contain and hold the broken body produc-
e, and presents the figure of a body instead of hiding and cloaking it, preventing an otherwise imper-
sible form: by removing the body from sight, the cloth, wrapping itself around flesh, produces a figure that disintegrates, falls apart, runs and oozes out of its shape. Everything seems to be in flow: the folds, released from arrest, is made fluid and collapses into fragile ethnicity. The folds, liquid and in motion, no
longer adhere to any contour.

In the moment of disintegration, the veil, surrounding the body it is meant to contain, reveals in this concealment an entirely different, uncontainable body: a revelation of that which it is meant to hide.

here — in this space of extraordinary concealment, a disintegration is taking place.

Ecce Puer shows the marks of Rosso working the soft clay, but it does so as reproduction, as copies of reversed casts that reproduce matter process marks in their translation. There are marks from moulding processes left untouched, criss-crossing the work showing lines where the multi-part mould would event, leaving the imprint of the casting, running over, intercrossing and traversing the reproduction of the initial marks of moulding the soft clay.

The same can be observed on the back of this plaster and wax version of Ecce Puer, where the mould lines seem to cascade down the waxwork like a mountain ridge, and the patination seems to still yet another layer that presents material processes while obliterating representations of resemblance. In this

Notes

I'm building a box and fill it with sand-cement-water mixture.

I start to take notes.

I collect them in a box.

I test this word and that, weigh this sentence against that sentence. Their weight is never quite as heavy as cement, or sand. It is never quite as wet as cement-sand-water mixture.

I scratch out the words weight and wet and write the word allegory underneath. I scratch out the word allegory and write metaphor underneath. I scratch out metaphor and write word underneath.
Concrete, which is also called cast stone\(^1\), which is also sometimes called artificial stone\(^2\), consists of cement, aggregate like sand or gravel, and water.

Concrete can be divided into two kinds or two categories, which are either based on calcium aluminium silicate, which is the main component of Portland cement types, and alumina, which are the main component of aluminous cement\(^3\).

Concrete is a material that is said to involve applications like high fidelity casting\(^4\), and been said to possess qualities like plasticity, workability, adhesiveness, strength and durability\(^5\), resistance to the effects of water and temperature change\(^6\).

Concrete is also a material that is said to have great compressive strength, but no tensile strength, which is instead supplied through reinforcement\(^7\), which is then called reinforced concrete, or sometimes ferroconcrete\(^8\).

Concrete is said to have different kinds of speeds, which are specified as a setting speed, a hardening speed, and a curing speed\(^9\).

The initial change from a fluid to a solid condition is sometimes called setting. The strength developing time after setting is sometimes called hardening. The period of maintaining the development of strength in the solid is sometimes called curing\(^10\).

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\(^1\) Verhelst (1973) p. 43.
\(^3\) Mills (1966) p. 66.
\(^4\) Mills (1990) p. 68.
\(^7\) Mills (1990) p. 68.
\(^8\) Andrews (1988) p. 73.
\(^10\) Mills (1990) p. 70.

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Further notes

I start to copy the notes from the box together on a sheet of paper. I write about the process of combining cement-sand-water mixture with expandable foam. I write a description of the process of combining cement-sand-water mixture with expandable foam. I write many descriptions of combining cement-sand-water mixture with expandable foam. I write as many descriptions of combining cement-sand-water mixture with expandable foam as I make combinations of cement-sand-water mixture with expandable foam. They are all different. Both the descriptions and the combinations.

Many pages describe materials, like cement, sand, water and foam.

But instead of writing about the box, I go on for pages writing about moulds and matrices, which also encompass something like a place, and which also bear many other things emerging from that place.

I start to omit certain facts and focus on other facts instead. I stress attributes, and how one thing leads to another.
Back then, the box arrived. Then arrived the mixture consisting of cement, sand, and water, stirred together. Then arrived the expanding foam. Then the box went. Then the expanding foam went. Then the box returned and was placed underneath the cured mixture consisting of cement, sand, and water. Then both box and mixture consisting of cement, sand and water went.

Duration

When a point becomes movement and line, it requires time. So does a line, when it stretches out to become a plane. Likewise with the movement from flat plane to space. Is it that a painting comes into existence all at once? No, it’s built up piece-by-piece, not different from a house. And the visitor, does he (she) respond to the work all at once? (Often yes, sadly.)

Correlation

The time it takes to make something is different from the time it takes to look at it, which is different from the time it takes to write the words describing it, which is different from the time it takes to read about it. One hardly corresponds to the other.

This means precisely:
On average I type 37.51 WPM with 79.52% accuracy.
I hand write 33.78 WPM with 100% accuracy, but often limited legibility.
I read 161 WPM reading out aloud, and I read 284 WPM in silence when reading Huckleberry Finn, 266 WPM when reading Dracula, 311 WPM when reading The Adventures of Sherlock Holmes.
I cannot combine and mix sand, cement and water within a minute. But I can write the words combination, mixture, cement, water, sand, several times over even, and then still include the word minute, all within a minute.

But...

what material per minute?
what activity per minute?
what sculpture per minute?
what text per minute?

Abandonment

All the end, the expanding foam didn’t make it. The canisters emptied of foam didn’t make it. The bags holding the sand didn’t make it, and bags holding the cement didn’t make it. The cement-sand-water mixer didn’t make it and the buckets to move the cement-sand-water mixture didn’t make it either. The small tools to remove the expanding foam didn’t make it, and neither did the tools used to gather the removed expanding foam bits into garbage bags. Even the box didn’t make it — or didn’t make it most of the time. All of these didn’t make it, even though at the time they seemed like the most essential parts, and nothing would have come of it without them.

Unforeseeable – unaccountable

I write, but I do not write what is really happening inside the box:

I do not write anything about what it is like when expanding foam touches cement-sand-water mixture.

I leave out that it is still not clear whether the foam shapes the cement-sand-water mixture or the mixture is responsible for the formation of the foam, or if, really, they enter a constellation in which form-giving and form-receiving become indistinguishable in the process of formation. Certainly the box gives shape to both, but what is happening inside the box?

I only hint at my uncertainty as to whether the concrete can become a sculpture, or the foam is the sculpture, or both, or a hard, lasting, and visible present sculpture — the other stuff, to be removed, an available absent sculpture once it has been removed.

I go to great length to describe causes and consequences, but always stay outside the box.

I leave out that, after all, the formation of the concrete might not be so accidental as a result. It could be, since the size of the box is carefully chosen, the cement-sand-water mixture makes up half of the
volume of the box, and exactly the amount of expanding foam is injected to make up the other half of the volume. I do not really stress the point that much control goes into not controlling the outcome, much is planned to allow chance.

I attempt to give an account of the concrete and foam, try to account for them, but I cannot write on their account.

I am becoming aware that I am becoming an unreliable witness. Maybe because I am still looking, maybe because I want to stay alive: in either case, I remain outside the box. I do not enter, do not immerse myself within. I do not close my eyes and mouth, even though I remember that the best witness is supposed not to see. The best witness is supposed to be blind. And to enter into the box, which is to say, to enter into the space of the mould, I would have to close my eyes in order to be there, unless I do not want to stay alive, which would make the live cast into my death mask.

Form

The long established practices of taking a facial impression of a recently deceased person, also known as a death-mask, or of a living being through a life cast, has been accompanied by the additional practice of articulating eyelids and pupils in the oval form of the closed eyes shown in the cast, which has been called a reanimated death-mask, a reworking, retouching, or opening of the eyes. The cast is sometimes inserted into a fully modelled bust, with the additional attachment of ears.

Amongst early Renaissance busts to incorporate a death-mask with opened eyes and ears is Donatello’s 1433 terra cotta portrait of Niccolò di Uccello⁴. These were followed by busts attributed to the Benintendi workshop collaborating with Andrea del Verrocchio, or those of Pietro Torrigiani, and many others made in wax, terracotta, plaster or cartapesta throughout the Renaissance.

The practice of opening the eyes of a face cast goes much further back in time, however, and was already in use in Egypt during the reign of Akhenaton and Nefretiti in the fourteenth century BC.

Opening of the eyes

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The formation is known, the form is not: I know what I want the material to become. I do not know what the material will become. I mistrust the material. I know what the material could become. I believe I know the material.

Notes:

34. Schuyler (1986) p. 3.

Donatello (1432) Busto di Niccolò da Uzzano, painted terracotta, 46×44 cm. Museo nazionale del Bargello, Firenze.

workings of Donatello's terra cotta portrait of Niccolò di Uccello. (Photo: Dario Argenta, courtesy Otto P. Erichsen).
I trust the material.
I start to recognise the material.
I make the material into something I know already.
I make the material into something that it has already been made into before.
I start to make the material.
I trust myself.
I do not know the material.
I make the material into something I do not know yet.
I start with the form and manipulate the material into the form.
I start with the form and look for the material most suitable, or that lends itself best, or is the easiest way to realise this form.
I start with the material and do not know the form.
I start with one material and end with another one.
I start with one form (box, rectangular angles, 90 degrees) and end with another one (flow, round, drip, droop).

The formation is known, yet the form is still not.

Alexander Cozens

In his treatise entitled New Method of Assisting the Invention in Drawing Original Compositions of Landscape, Alexander Cozens, cites the authority of da Vinci in favour of the accident. He quotes:

Among other things, I shall not scruple to deliver a new method of assisting the invention; which tho’ trifling in appearance may yet be of considerable service, in opening the mind and putting it upon the scent of new Thoughts; and ’tis this; if you look at some old Wall covered with dirt, or the odd appearance of some streaked Stones, you may discover several Things that Landscape, Battle, Crowd, uncommon Attitudes, fantastic Faces, &c, out of this confused Mixture of Objects, the Mind will be furnished with abundance of Designs, and Subjects, perfectly new.

What Cozens adds is a development of chance processes by way of circumnavigating the need for an ‘old wall covered with dirt’. These walls may not always be so easy to come by. Instead, Cozens suggests a method of blotting with ink, a complex interplay between imitation and invention:

He describes his method like this:

A true blot is an assemblage of dark shapes or masses made with ink upon a piece of paper, and whence of light ones produced by the paper leftblank. All the shapes...

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Roithmayr, Florian (2015) water damaged wall, photograph taken of the PhD room, Slade School of Fine Art, UCL.
The cement-sand-water mixture meets the expanding foam. They are introduced to each other—and into each other—and start a certain interaction within a specific-sized box.

But I do not see that, or only see the result once the sides of the box are taken off and the foam is removed. In the darkness of the box, something is taking place that happens on its own: I might initiate it, delineate it, intend it, but the outcome partakes of a certain degree of chance.

It is by contingency that the formation takes place, and takes place unbeknownst.

And let’s not forget that all of this happens in the service of inventing landscapes—Goreau already knows what he wants to find, what he is looking for—and where to look.

Alfred Gell

In several propositions regarding the question what constitutes an art object, the anthropologist Alfred Gell has introduced limitations embodied within objects that come out of or are found within relationships or networks, for example, a trap embodying intention within the relationship between men and animals, or materials registering intention accumulated through procedural manipulation and interactions with the materials.


Supervision

In my memory, we are sitting together at a table. She says it becomes apparent that you have a lot of intention here. In a way you could say that what is happening in the box is full of intention.

He says here, intention might also depend on the meeting or joining together of different elements at different times, a coming together that is not revealed until a later stage.

I say to produce chance by means of constructing it is a strange procedure. Chance might exclude intention or intent; one does not presuppose the other. The intention to produce chance seems irreconcilable in anything other than an artwork.

She asks does intention drive or propel the formation of mould and cast?

He asks where on the ground connecting mould and cast I want to locate intention?

I say there are associated intentions accumulating, and this accumulation leads to the formation of a mould, which starts to correspond with the intention of filling: something is created so it can be filled.

I say there are associated intentions accumulating, and this accumulation leads to the filling of a mould, which starts to correspond with the peeling open of the mould: something does the filling so it can be released as a cast produced in a mould.

I say there are associated intentions accumulating, and in this accumulation they lead to the peeling open of a mould so release the cast produced in it, which corresponds with the presentation of the result to someone else. Intentions drive, meet and produce each other, even if they are not yet clearly formulated, identified or known: they appear as something yet to come, giving a direction and creating and accumulating into a flow of intentionalities.

I say this flow of intentionality starts to have a direction and starts to move everything along in this direction. It is towards and for someone or something that intention is directed. The mould is made for the mould, the mould is made for the cast and the cast is made for you. It peels from the mould to be shown to you. Every moment of production is an accumulation of intention that propels me and what I do — via mould and cast — towards you.
I start to talk to cement, start to address it with my voice speaking cement.
There is no answer.
I try speaking the word cement in different languages.

/sĭ-mĕnt/
or
/sǝmɛnt/ or
/sɪmɛnt/ or
/se.mã/
or
/tsěment/ or
/ʧe’mɛnto/.

There is no answer.
I try speaking different names.
There is no answer.
I address it with the word cement:
I say cement to it.
I call it with the word cement.
I whisper cement.
I yell cement.
I scream cement.
I'm barely whimpering cement.

But there is no answer to my voice.
I'm trying to figure out why there is no answer.
The cement hears something but does not know it was me talking.
I hear the cement answer but do not understand its language.
I hear something but do not know it was the cement talking.
We do not speak the same language.
We do not both speak.
Only one of us speaks.
We both speak and I cannot hear.
Only one of us hears.
Nothing is spoken that I could hear—or—I cannot hear what is being spoken.

What is spoken is audible to anybody other than me.
What is spoken is not spoken to me.
Not speakingly.
I do not understand.
No speech reaches me.
Not audible.

Inscription

I start to write cement, start to address cement with my script spelling cement.
There is no answer.
I write in different languages:
cement
cément
Zement
Cement
There is no answer.
I start to write the word cement into cement dust. I start to write cement with cement dust.
There is no answer.
I start to write the word cement onto cement. I start to write the word cement onto clay. I start to write the word cement onto plaster.
There is cement, there is clay, and there is plaster.

Silence

But there is no answer to my script.
These are the possible answers I could find for why there is no answer:
I can't read cement.
The cement can't read me.
The cement reads me but doesn't understand my language.
Clay does not turn into cement. Plaster does not turn into cement.

I am not this figure speaking. The figure of speech is not speaking to me. The figure of speech (i.e. describing speech is not really speaking). Or it only speaks in Italics. Or I should add quotation marks.

I cannot speak matter.

I'm a figure.

Matter isn't even a speechless figure.

I have speech. I'm made of language.

Matter doesn't have grammar.

When I look for myself in matter, I find nothing but myself, but I won't find matter.

I cannot inscribe cement.

Here are more answers for why there is no answer:

I can read this figure speaking. The figure of speech is not speaking to me. The figure of speech of (i.e. describing) speech is not really speaking. Or it only speaks in Italics. Or I should add quotation marks. Or it's a figure.

Matter is not a figure of speech.

Matter can't inscribe figures. Figures are a mode of language.

Clay doesn't turn into cement. Plaster doesn't turn into cement.

I cannot inscribe cement.

Supervision

In my memory...

I say to her that I have been trying to speak and write to cement. I say to her that I have been trying out different names. I say to her that I have been trying different languages. I say that I didn't hear an answer.

I say that she suggested a dialogue between material and maker. That this dialogue apparently for the enlightened ones, might not be a dialogue after all.

She says that this was a figure of speech.

I say that if I was a figure of speech, I would have been speaking.

I ask her if I was a figure of speech.

I can't read cement.
The cement can't read me.
The cement reads me but doesn't understand my language.
Clay does not turn into cement. Plaster does not turn into cement.

I am not this figure speaking. The figure of speech is not speaking to me. The figure of speech (i.e. describing) speech is not really speaking. Or it only speaks in Italics. Or I should add quotation marks.

I cannot speak matter.

I'm a figure.

Matter isn't even a speechless figure.

I have speech. I'm made of language.

Matter doesn't have grammar.

When I look for myself in matter, I find nothing but myself, but I won't find matter.
He says that this is unusual as often a dialogue between materials and humans is evoked.

I say that to assume language in approaching another matter, thing, or person, is to learn what is in front of me to my status as a human using human-made language. I say that to assume I will recognize what I'm looking for is to predicate recognition. I say that it establishes an engagement based on a hierarchical relationship before I even start to approach what is in front of me. I say that I do not need to ask what I will encounter when I already place my knowledge in front of me.

When I look using my knowledge, I will probably see nothing but my knowledge. When I speak using my knowledge, I will probably hear nothing but my knowledge.

To approach what is in front of me, to approach another, I would probably have to leave everything I know behind. I would probably have to die (somewhat, or a little at least). I would approach the box and enter together with cement-sand-water mixture and foam. I would fashion myself a death mask.

Instead, I can only keep my eyes and mouth closed.

Instead, there is silence.

Instead, there is nothing.
COPPER
A long flat piece of copper is placed on a wooden board.

Another long flat piece of copper is worked with a ball-peen hammer, the noise is ringing around the room, the hammer is pecking and working the metal, the metal sound is changing in pitch. The copper block is now longer and the upper part is wider. The block is now also placed on a wooden board.

Another long flat piece of copper is worked with a bal-peen hammer, the noise is ringing around the room, the hammer is pecking and working the metal, the metal sound is changing in pitch. The copper block is now longer and the upper part is wider. The block of copper is worked again with a ball-peen hammer, the metal sound is changing in pitch, and the block of copper is now even longer and the upper part even wider than before. The block is now also placed on a wooden board.

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and an upper part starting to curve out from the middle. The block of copper is worked again with a ball-peen hammer, the metal sound is changing in pitch, and the block of copper is now much thinner where the upper part has been spread outwards, and thicker at the bottom. This block is now cut in half and also placed on a wooden board but this time in an upright position, showing what could be called its side rather than its front.

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Another long flat piece of copper is worked with a ball-peen hammer, the noise is ringing around the room, the hammer is pecking and working the metal, the metal sound is changing in pitch. The copper block is now longer and the upper part is wider. The block of copper is worked again with a ball-peen hammer, the metal sound is changing in pitch, and the block of copper is now even longer and the upper part even wider than before. The block of copper is worked again with a ball-peen hammer, the metal sound is changing in pitch, and the block of copper is now much longer with a thin lower part and an upper part starting to curve out from the middle. The block of copper is worked again with a ball-peen hammer, the metal sound is changing in pitch, and the block of copper is now longer with a flat curving upper part, and a pointing thicker lower part. The block of copper is worked again with a ball-peen hammer, the metal sound is changing in pitch, and the block of copper is now much longer, with an elongated lower part giving way into a curved and rounded upper part. The block is now also placed on a wooden board.
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A visit to Freeman College

In my memory, Carole Baugh and myself are meeting in a metal forge in Freeman College in Sheffield.

- In order to get from here to here, you have to have memory, which is a problem for a lot of our students. Generally memory is a difficult thing.
- So there are one, two, three, four, five, six, seven, eight, nine, ten, eleven stages...
- Well no, because it's a flow.
- Right, so these are arrests. They are fictitious in a way?
- Yes.
- But you say memory because you have to remember the flow?
- No, you have to remember, because there is no mould... you see, these objects, and sometimes when I do a talk...
- That's interesting. Are you saying you have to remember the future of the piece of metal in front of you.
- Yes.

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- That's interesting. Are you saying you have to remember the future of the piece of metal in front of you.
- Yes.
--- And the fictitious future - because it doesn’t exist yet - has to overlap with the memory of a real spoon from a previous experience.

--- And you need to use imagination to see how from here, this object becomes this here. So it’s not that you have to have a single memory, which through imagination has brought it to the future. But you are constantly engaged in this process of both memory and imagination, whilst you are physically bending a piece of metal, which you have to learn by sharing motion, movement, willed intention, which is shared with the master craftsman.

--- You must be in tune with your muscles, with holding the hammer, because hammer too much, lose the hammer too much...

--- And also, you do not get to here by beating a piece of metal without regard. So, in fact, to get from here to here, whatever does it, but in our case our students, they go through multiple, cognitive decision making processes.

Chaîne Opératoire

Chaîne Opératoire is the concept of establishing an operational sequence employed in anthropological and archaeological studies to achieve a chronological, segmented overview, often in post-event recapitulation, in order to establish a seemingly organized progression of actions and mental processes within technical procedures.

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I say yes, an ontological and material difference. But every step we are presented with here is an artificial pause based on memory and the recollection of the previous moment, and a fantasy of the future instance just about to happen. The eleven stages do not really exist. And there are not eleven spoons either. There are moments of sense or less work. There are moments of aban-
doned work. Some work has been done eleven times. Some work has been done ten times. Some work has been done nine times. Some work has been done eight times. And dividing into eleven is an artifice, as the relationship between passed stage and future stage is always in the imagination. We do you deceive that one stage is sufficiently different from the previous and following one to warrant being classified a stage? These spoons only exist when you stop, when you pause.

I say that the opposition of form and counter-form, of mould and cast, or absence and presence, are theoretical problems that do not stand up to the experience of material processes in the studio.

She says that the studio as site of practical research has solved the theoretical problem of form and counter-form. I say that problems of this kind only appear retrospectively. I say they are post-production mythologies, that is, broken processes, of ten verbalized, or undergoing another shift in symbolization, or at least a change of signs. The signification arising between mould and cast is not binary, however, but constantly shifts into this third space between them, which can only be seen within the process of its fabrication. It cannot be isolated from it, none of these parts can be severed from the process which produces them as an ensemble.

She says that I have made a research discovery relating mould and cast. She says I should write about this. I say I will, though I'm not sure which of the three she is suggesting I write about: what I'm saying, what she is responding, or what we are saying because we are sitting on the same table together.

In my memory we sit at the same table, not opposite each other, but next to the other, because she is writing and drawing on my papers.
CLAY
A sheet of paper is placed flat on the ground or on a wooden surface.

Size

Another sheet of paper is placed flat on a ground. This is a sheet with specific size, perhaps DIN A0, 841 mm by 1189 mm. Sometimes, it is much larger. It is a roll of paper 1189 mm wide, which is cut into individual parts. At other times, the size is smaller, longer and narrower, like a strip, or else an exact square.

Clay

Another sheet of paper is placed flat on a ground. This is a sheet with specific size. 25 kg of clay is used to cover the surface of the paper. Sometimes 25 kg of clay is made up of two packs of 12.5 kg each. Sometimes it is a single pack of 25 kg. It depends on the supplier of the clay and the way the supplier distributes the product. This is of importance only for a short period of time.

Clay facts

Clay, which is sometimes called earth-clay$^{01}$ or plastic earth$^{02}$, is also called terra-cruca, as long as it has not been fired, or simply green clay, which is also sometimes called terra secca, specified as unbaked or air-dried clay, as opposed to what is called terra cotta, specified as baked or fired clay.$^{03}$

Clay is said to be an exceptionally weather-proof but breakable$^{04}$, abundant$^{05}$, plastic and

$^{03}$ Mills (1990), 217.
ever changing, moulding and fermenting, lively working, soft, malleable, heavy and soggy, transitory or preliminary, non-permanent material, that can be made permanent, and that is also said to be inexpensive, easy to process and good for beginners. Clay is said to be thrown, interlocked, built in coils or slabs, modelled, cast through pouring slip, or pressed into moulds, or stamped.

In addition to cracking, splitting and breaking up, clay is also said to fissure.

Verhelst (1973) p. 38.

Spreading

Another sheet of paper is placed flat on a ground. This is a sheet with specific size. 25 kg of clay is used to cover the surface of the paper. The malleable and plastic clay body is spread from the centre outwards, forming a kind of spine, and then sideways, similar to the arrangement of bones found in some fish. The spreading is done quickly. All the clay should be used evenly. This consideration hovers somewhere between the amount of clay already spread out and the amount of clay still to be used, and the changing proportion between those two amounts.

Clay bodies

Clay is said to be made into a body, which is also called ready-to-use, or prepared clay. A clay body is said to have a balance of qualities such as plasticity, green or unfired strength, porosity and texture, which make it suitable for a particular application. The individual components of clay bodies can consist of varying quantities of sand, coarse sand, flint, haematite/china clay, ball clay, bentonite, grog, quartz and feldspar.

Rich (1961) p. 34.
used to cover the surface of the paper. The malleable and plastic clay body is spread from the centre outwards. Over several days the paper covered in clay rests in its place. If left exposed in an environment that is considerably dry and warm, the liquid (water) starts to be separated from the solids (clay particles) through mass transfer also called evaporation. The liquid water (remains the solids as vapour) and enters the environment, disperses or is carried away as humidity. The gradual separation of liquid (water) from the solid (clay particles) has visual, material, spatial, and sometimes even topological consequences.

Testing clay for shrinkage

It is said that clay is tested for shrinkage by fashioning a mass of the material into a solidly packed cube, with the surfaces of the cube said to be marked off in units of 100, which are said to be 10 cm divided by 100 in each direction. The surface calibration is said to be made with a fine needle and ruler measuring both horizontally and vertically on the cube, which is said to be permitted to dry not slowly once has been marked till it is thoroughly air-dried, which is then said to be checked for measurements, which shows the percentage of shrinkage as 1 percent for every 1 unit of shrinkage.81

81 Rich (1961) p. 27.

and brittle clay

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Shrinkage

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Matters of facts

At a certain instant in time, I read that clay shrinks by so and so many percent. So and so many percent of water leave the clay, and so and so many percent remain. This state is called such and such, and it is an irreversible state, which means the clay could not absorb water and be returned to a plastic and pliable material. Clay firing – as a synthesis – stops this process and increases the total percent of so and so many percent of water in the clay, and after this, the process is no longer reversible as the clay had chemically transformed and a new synthetic crystal structure had formed.

I'm not sure if I did anything different after reading this.
In my memory, we are sitting together at a table. I say to her unfired clay has the capacity to be returned to a malleable state when ground up and mixed with water. It can be re-used many times. It’s only irreversible.

Robert Smithson, taking a tour through Passaic, New Jersey, in 1967, describes the situation like this:

"Picture in your mind’s eye the sand box divided in half with black sand on one side and white sand on the other. We take a child and have him run hundreds of times clockwise in the box until the sand gets mixed and begins to turn grey; after that we have him run anti-clockwise, but the result will not be a restoration of the original division but a greater degree of greyness and an increase in entropy."

I'm not sure what reading this changed in the way I worked. I know that after reading this, I sometimes thought about so and so many percent of water leaving the clay, and thought of the speed of this departure. I sometimes looked at the paper and saw that over the last twelve hours, the clay was shrinking by so and so many centimeters. I tried to see if so and so many percent of water has an equivalent to so and so many centimeters of shrinkage.

I started to make little marks on the floor where the paper clay combination was drying, after one day, after two days, after three days, and so on.

I started to see how much it was rising up, whether there is a correspondence between gaining volume and losing liquid.

re- is a word-forming element or prefix, with the meaning of 'back to the original (place); again, anew, once more' and with a sense of 'undoing' indicating a return to a previous condition. From Old French and directly from Latin re- with the meaning 'again, back, anew, against'. From Indo-European wret, a variant of wert, with the meaning 'to turn'.

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Supervision

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In the catalogue accompanying a recent exhibition of Rodin’s series *Movements de Danse*, a section drawing attention to his working methods describes two headless plaster casts, called alpha and beta by the writers, of which plaster piece-moulds were taken. The plaster casts themselves are described as castings from a mould taken of an earlier unfired clay model.

Arms, legs and torso of alpha and beta are moulded separately, and in combination with another piece model of the head of the Slavic Woman, previously used on the Gates of Hell, the cast pieces are assembled to create the entire series of *Movements de Danse*, press-moulding terracotta body parts, re-arranging and merging them in various configurations, adding and subtracting clay as needed.

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**Folding**

Another sheet of paper is placed flat on the ground. This is a sheet with specific size. 25 kg of clay is used to cover the surface of the paper. The malleable and plastic clay body is spread from the centre outwards. Over several days the paper covered with clay rests in its place. Water evaporates. The clay – drying and shrinking – is prevented by the paper on which it is spread and it can do so. The clay, bonding the paper to itself, cannot escape the paper and escape the conditions it finds itself in. As a consequence, the edges of the paper start to lift off the ground. Both paper and clay start to shrink, and the only way left to do so is to start folding in on themselves. Both paper and clay no longer flat together; they lift and fold and start to take on volume. Together, they delineate a body.

when clay is fired that it undergoes a synthetic transformation and is fixed beyond return. She asks does this have sculptural consequences? I say it has structural consequences: air-dried clay is brittle, fragile, and breaks easily. Firing clay is a transformation into a stronger and more permanent material state. I say it has consequences for care: a demand is being made bearing on my comportment in relation to the work. One could say this implies a moral imperative. I say it has consequences impacting on the experience of the present moment. I say all of these can also be considered sculptural consequences.
Clay – writing – paper

Another sheet of paper is laid flat on a ground. This is a sheet of paper that has been written on before it is covered with clay.

I write the word paper on the paper. Then cover the paper with clay.

The word is no longer visible. Nor is the paper for the time being.

I write the word clay on the paper. Then cover the paper with clay.

The word is no longer visible. The clay is visible.

I write repeatedly the words clay and paper on the paper. Then cover the paper with clay.

The words are no longer visible. Neither is the paper for the time being.

I write with a pencil. Most pencils today contain a core composed of a mixture of graphite and clay. By varying the clay-graphite ratio, hardness or softness of the pencil core is regulated.

I write the word clay with clay on paper and cover the paper with clay.

Some clay is no longer visible.
The Golem

The Golem is a mythical creature in Jewish folklore. In most versions of this legend, the anthropomorphic being is shaped out of clay, and animated through either the inscription of the word shem (a hidden name of God consisting of various letter combinations) into the forehead of the Golem, or through a piece of paper with the word shem written on it, which was inserted into the mouth of the Golem. Animated through the word, the Golem itself however cannot speak.

Wenn du den Körper machst, nennst du die Gestalt

aleph

mit ihren Buchstaben,
wie ich es dir gezeigt habe. Und wenn du die Eingeweide machst, kombiniere
den Buchstaben mem; und wenn du den Kopf machst, kombiniere die Gestalt

schin; And when you make your head, combine the figure

bet; And when you make the

mouth, combine the letter

gimel; for the right eye, the form

he; for the left eye

he; for the right nose

kaf; the left nose is

pe; The right ear

resch; The left ear

taw; The right hand

he; the left hand

waw; The right foot

sain; the left foot

chet; The right kidney

tet; the left kidney is

jod; Liver

lamed; Bile

nun; Stomach

ain; Esophagus

zade; Navel

kof

[…]

When you make the body, you call the form
aleph

with their letters, as I have

shown you. And when you make the intestines, combine the letter

mem; And when you make your head, combine the figure

schin; And when you make the

mouth, combine the letter

bet; For the right eye, the form

gimel; for the left eye

he; For the right nose

kaf; the left nose

pe; The right ear

resch; The left ear

taw; The right hand

he; the left hand

waw; The right foot

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of a complex system of recording. This developed into the cuneiform (wedge-like) script, used to write about all aspects of life. Earliest clay tablets relate to stock taking and the exchange of goods. Later ones contain contracts, loans and debts. Most tablets were sun dried and were never meant to be fired.

Giuseppe Penone

In 2004, Giuseppe Penone presented a work titled Lo spazio della scultura, corteccia (The space of sculpture, bark) at Frith Street Gallery in London. It consisted of a rectangular upright bronze of a flattened piece of tree bark, and a slightly larger rectangular piece of leather embossed onto the bronze. The two materials do not fully overlap, but where they do, the leather embossed onto the bronze taken on the relief of the bark pattern underneath. The leather seems to derive from a different circulation to the bronze, or had a previous function than the un-embossed parts; more marks of having been folded, and the upper edge is cut in haphazard manner, bearing holes from previous stitching.

A similar but larger work appeared at HAC in Paris the following year. This time the bronze rectangle was suspended lengthwise, and the leather showed holes and haphazard cutting across the bronze.

Penone often includes La spazio della scultura as part of titles. For example La spazio della scultura. Pelle di Cedro from 2001, which consists of a bronze cast resembling tree bark and many pieces of embossed leather surrounding it, or La spazio della scultura pelle di cedro – chiodo, a work from 2004 containing bronze reproductions of a tree bark and iron supports.

The space of sculpture

I try to imagine the force needed to make the leather take on the relief topology of the bronze cast underneath, the tools, the effort and labour. I also try to imagine the force needed to strip a large piece of bark of a tree and flatten it out.

At this point, I become aware that I have applied my thinking in reverse: my imagination worked from the application of the leather to the preparation of the bark, from what is closest to me to what is further away. This seems a kind of inversion of what would have taken place. But maybe the bark never existed, and what appeared like bark was really modeled in clay and reproduced as bronze cast via the lost-wax process. I also become aware that this answers to the question has no consequence for my experience of the two materials made to bear on each other. Of course in the overlapping of (bronze) bark and (leather) skin, one covers the other, but I cannot say which of the two does the covering. One yields to the other. The leather certainly doesn’t hide the (bronze) bark: if anything, I’m even more aware of the (bronze) bark because of the (leather) skin. Something yields to something else, but
I cannot say which of the two does the yielding. The space here is one of surrender and production. 

Interscience

What is this space of sculpture?

Here, it is a very particular place created by the imprint of one material onto another. A reversal, a moment of peeling away reveals the passing of a place infinitely small as it were, an interstice between two forms or shapes, between two materials.

It is in-between. In a material level, this space of the imprint manifesting in the interstice appears more defined by what constitutes its sides and borders, than by what is itself. It is temporary – an invented improvisation lasting no longer than necessary, always with the possibility of coming apart again. It is a hypothetical space. It cannot be entered and what takes place there, lies outside of observation. Any attempt at peeling it open also dissolves this space and in the moment of encounter, it disappears.

Supervision

In my memory we sit together at a table...

In as much as each constituent component in a coming-together is always already a threshold in view of all the other components: it is itself plus the potentiality of everything else.

Symbolon

A symbolon, σύμβολον, which often means tally in the sense of something that corresponds to something else, was, in ancient Greece, a clay tablet, sometimes with writing on it, broken into two halves. It formed the physical assurance of a contract. Each party kept one half of the broken tablet. Each half was a material indication representing a form of identification, where the contract had to be fulfilled. It was only those specific two halves fitting together to form a whole, and it was only the parties in possession of the specific halves that were able to fulfill the contract. The symbolon was inherently transferable, as anyone presenting one of the halves was able to fulfill the agreement.

The symbolon represented an agreement or contract (for example over a loan), whereas the term symbola often referred to inter-state agreements, and was used for individuals travelling across borders as a form of legal protection against seizure of property.

Plato spoke of the symbolon as that, which forms one half of a unity:

Each of us, then, is but a tally (symbolon) of a man, since every one shows like a flat-fish the traces of having been split in two, and each is ever searching for the tally (symbolon) that will fit him.21


Broken clay tablet (3100-3000 BC), clay, probably from southern Iraq, 86 x 42mm, British Museum, London © Trustees of the British Museum.
Another sheet of paper is placed flat on a ground. This is a sheet with specific size. 25 kg of clay is used to cover the surface of the paper. The clay is spread from the centre outwards. Over several days the paper covered in clay rests in its place. Water evaporates. The clay starts to shrink and the paper makes it shrink into one direction only. Both clay and paper are more or less bonded together. They do not come apart so easily. Their inherent properties are in conflict rather than complimentary, which results in tension. The stress on both paper and clay is enormous. The stress is sometimes too much and the paper tears and the clay cracks. Sometimes the tears and cracks are so severe, both paper and clay come apart, the volume they created collapses, and clay and paper fall back on themselves.

Opening of the Mouth Ceremony

The making of Egyptian statuary was accompanied by a ritual called the Opening of the Mouth Ceremony. In several steps, the rock is identified in the quarry and the priest/sculptor, who is also called the embracer, looks, in a state of trance, forward or into the rock to identify the likeness of the person the statue is to stand in for. In the following stages, the embracer then looks into the rock to identify all four sides of the statue, marks the contours, and starts to reveal the form within. Using several ritual tools, the embracer then performs the ritual of the Opening of the Mouth, in which the statue is animated through words, and the statue begins to breathe and consume nourishment. At this stage, the statue ceases to be a representation and starts to be embodied. In a later transfer of the ritual from statuary to mummies, this ritual starts to be used to animate the physically preserved corpse in order that it could receive nourishment, hear, breathe, and in order that an element of the soul in the form of a bird, (the Ba, represented as a bird with a human head) could fly out of the tomb and return each night, re-connect with the body, and gather nourishment from it. The physical corpse, mummified, doesn’t pass into the underworld, but rather hovers in a liminal space between this world and the next, forming a connection between them. The ritual words are the main catalyst that allows reanimation and facilitates breathing again, the exchange of air.

Descriptions of these ritual practices as well as the necessary invocations are collected in the so called Book of the Dead, which is translated as Book of Coming Forth by Day, or The Book of Emerging Forth into the Light. It forms a collection of manuscripts written by numerous priests collected over the course of several centuries with the intention of speaking them out loud: Egyptians believed in the creative act of speaking – the power of the spoken word – for pronouncements to become real. It is one of the most well known of Egyptian creation narratives has a god speaking things into existence.


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Supervision

In my memory...

I say to her that the Opening of the Mouth Ceremony as a narrative describes several aspects that place it at the advent of a particular way to imagine the making of sculpture. It describes an approach to art based on foreseeing and prophecy: as the priest/sculptor looks at the quarried piece of rock he identifies the features of the statue within.

She says this reminds me of Michelangelo seeing the slave within the marble he intends to liberate.

I say this is an approach towards form that precedes any transformation, and predestinates the outcome.

I say here everything becomes known before the start.

She says this pushes back the idea of art making into a much more distant past, and see this in Near Eastern (or specifically Egyptian - maybe Nubian) in origin: well beyond the boundaries in space and time that would normally be associated with this kind of art production.

I say the beginning of the Opening of the Mouth Ceremony coincides with the early use of Hieroglyphic characters, and that the word is essential in the ritual itself.

I say the shift from orality to literacy required the word as a part of the creation of statues. But not just any kind of statues, but precisely statues that at the point of the encounter or application of the word cease to be representations and become the thing or person it was meant to stand for.

I say here the ritual word facilitates an excess by determining the representation as the thing itself.

I say I wonder if this shift from representation back to the represented – also then used to animate the corpse, the mummy – is not also imaginable in the Hieroglyphic sign itself?

She says I should explain this more.

I say what is also fascinating is that the descriptions of the rituals were written down, over centuries and by different priests. An early collection of manuscripts describing in words how to use words. As if the word is not only the tool for animating the thing, but also the way this animation is mediated.
She says she wonders how I use words in relation to processes, or sculpture. I say a sign – whether linguistic, material or visual – comes into being to mediate something else. We, that is human beings like you and me, enter into a contractual consent that something we both agree upon will from this moment forth stand in for something else in different capacities or sensorial regimes.

We, that is, humanity has developed the capacity to not only mark that relationship and make it visible through signs, but far more importantly than creating visibility for relational networks, humanity has – in the invention of signs – made these relationships communicable and exchangeable as well, and so created the possibility to mediate the sensation as something that can be shared and exchanged. What was my own private and individual experience could now be shared and experienced together, with you, with others.

The material and visual potency of sculpture has, like the linguistic sign, the capacity to create visibility. But it does to and for someone else as well. It has the potential to give the experience of relations a direction, make it exchangeable. It has the potential to become a communal and shared experience. The word, to return to cash, is replaced with community, and the present moment is experienced within a network of others, spaces, and participants.

I say what makes the Opening of the Mouth Ceremony so relevant is that here the linguistic sign of the word, the visual sign and the material sign of sculpture come together. The word, created through the human capacity to control neck muscles, and so modulate the air of the breath into sounds, enters through the opening of the mouth into the thing and brings life and grants survival. The word – a breath rider – animates the material as sculpture, which starts to be, with and for us.

Torsio

At the beginning of the fifteenth century, on a property belonging to the aristocratic Colonna family, a piece of marble was discovered, 1.59 metre high and weighing 2.2 tons. The Italian word, and in plural, initially referred to the useless parts of vegetables: cabbage stalks for example. This initially probably scornful description of the unearthed piece quickly established itself as acceptable art-historical terminology.

In a film produced 400 years later, a voice-over written and spoken by Roland Schaer describes both the Belvedere Torsio, displayed since 1520 in the Papal collections, now in the Vatican Museums, as well as a description of another torso, the Belvedere Apollo.

For a transcript of the voice over, see Le corps en morceau (1990), Paris: Musée d’Orsay.
Between the sixteenth and nineteenth century, the most famous antique works in Italy were restored, and it was common practice to supplement missing parts with new additions. The Renaissance artists were busy replenishing legs and feet, adding new heads, arms and hands. At the same time, scholars provided new identities: to complete the figures, names were added and the fragments were given new narratives. And so one fragmented torso received new parts, bodily or otherwise:

A new left hand
and
a new right arm
and
a new name (word)
became the Belvedere Apollo
and
entered a new life proliferating as an entirely different entity.

The other torso remained a fragment as nobody added narratives or body parts, and is still to this day known as the Belvedere Torso – its name and story never went beyond a description of its body in situ.

Stalk vegetables; zime di rapa, not cauliflower but maybe asparagus?

Assemblage

Roland Schaer’s twentieth century description sees the torso in relation to August Ro
din’s working methods, which he relates to three distinct procedures, or practices of the fragment:

From parts to a whole, which is the practice of composition, and which might never be fully finished. Instead, the completion might be postponed to a later moment.

From a whole to parts, which is the practice of mutilation, and which does form a completion. Instead of being a transitional step, the partial body is the endpoint.

From parts to parts, which is the practice of assemblage, and which always remains fragmentary. Instead of re-forming unity, assemblage invents an embrace through connecting disparate parts.

I start with a distinctive act performed by a particular person. Clearly under specific circumstances, and to a certain end. Deliberate. Intentional. And, without doubt, not done out of habit.
But one is not enough and I need a process of combining different materials. What is being produced is made up of natural matter or manufactured materials, often with their own conflicting motivations and intentions. Can this already be seen as repair, remake or reconfiguration, an extension of one material through another?

What happens in this space where two entities meet and are made to embrace each other? What takes place when they start to complement each other, or contradict each other? When they have oppositional tendencies and pull and tear? A moment of over spill, over determination, and contamination. A kind of impurity and imperfection – one infects the other and continuously spoils the advent of a resolution. Any kind of logic is reversed, or circumnavigated, pushed to extremes or turned on its side.

Composite creatures:
- A bird man;
- A human head with antlers;
- A god with a lion’s head and human limbs;

Marcel Duchamp

In a side note, written while compiling Marcel Duchamp’s papers, Michel Sanouillet observed an “affinity” between the use and depictions of all sorts of moulds in Duchamp’s work and “the sportswear presentation” found in a 1913 catalogue from the company Manufacture Française d’Armes et Cycles de Saint-Etienne.


Or in this case: a clay body held by paper.

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Absence

I’m wondering what holds up these shirts, if nobody is underneath? Or another way: whose torso does the shirt mould itself around, if there is nothing but air inside? If it’s not air, the answer is: the torso of an invisible dummy. The shirt becomes a virtual lineament describing a missing part. Outlining it. Delineating it.

Marking it.

Something is indicated, even though the part that does the indicating is missing. Or just not quite present; absence depicted as a temporary or spatially material property.

Back in five minutes.

This then outlines the possibility of an assemblage, a flow between scattered parts; parts that are inconsistent to the point of missing entirely; more the materiality of a hole can consist of anything that is not the hole.

The economy of the hole.
The governance of the hole.

Or more precisely: there is an awesome paradox in how a cast can mould the absent body, can surround it, and in this embrace, produce it, call it forth.

And it’s not just specific materiality that indicates and marks this journey. This is to say, there are specific narratives as well as practices of the imprint that allow the arrest and fixation of the hole to be postponed as sculpture.

Body

A sheet of paper is laid flat on a ground. It is a sheet with specific size: perhaps DIN A0, 841 mm by 1189 mm. But it is also possible that the sheet of paper corresponds to the circumference and height of my torso, is named UK size M. I start to build myself a body. The sizes then are as follows:

when I exhale:

Shoulders: 107 cm.
Chest: 92 cm.
Waist: 87 cm.

when I inhale:

Shoulders: 114 cm.
Chest: 99 cm.
Waist: 94 cm.

My breath accounts for seven centimetres more paper.

I’m building myself a body.

Over several weeks, the clay starts to evaporate and shrink by seven centimetres. The clay evaporates my breath and exhalation.
Another sheet of paper is laid flat on a ground. This is a sheet with specific size. 25 kg of clay is used to cover the surface of the paper. The clay is spread from the centre outwards. Over several days, the paper covered in clay rests in its place. Water evaporates. The clay starts to shrink. Paper and clay start to fold in on themselves. When most of the water is evaporated, the paper and clay folded in on themselves are turned and lifted upright. It is now positioned on one of its sides that forms an edge similar to a horse shoe. The weight of the clay presses this edge against the ground on which it is standing. The weight of the clay presses against the ground stops its edges from changing its shape any further. Because of the new position of the paper covered in clay, the stresses and tensions between paper and clay is redistributed and gravity starts to have a very different effect on the folded ensemble. The new forces start to work on both paper and clay. Conversely, the edge that is now on the top starts to unfold again and open up. This is similar to the consequences visible in the shoulders and upper chest of someone taking a deep breath: both shoulders and upper chest expand and open up; the new arrangement appears even more upright, the lack of the paper seems to curve even more like a spine. The ensemble seems to stand to attention.

The simple adjustment from a horizontal orientation of the ensemble on the floor to an upright orientation has material, visual and topological consequences:

I am raising the ensemble.
I am no longer looking down.
I am lifting the ensemble.

I'm seeing eye-to-eye / the ensemble is seeing eye-to-eye / we are both seeing face-to-face.

I thought I was building myself a body.
But I was really building another body.

Roithmayr, Florian (2016)
studio works
clay, paper, each ca 130 x 40 x 40 cm. Wysing Arts Centre, Cambridge
I still do not see where I am looking.
I still cannot speak when I am doing.

These are blindspots, in my vision or when putting the pen onto paper and forming a spot of the un-known.

In these blindspots, something can become sculpture, but does no longer need to be named.


Vasari, Giorgio (1960) On Technique, being the introduction to the three arts of design, architecture, sculpture and painting; prefixed to the lives of the most excellent painters, sculptors and architects. Maclehose, Louisa S. (trans.): New York: Dover Publications.


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