Making / Drawing with words: form as text, text as form
(un-writing and re-writing of form)

Abstract

My experience of the digital shift as a maker started with an approximation of form-making in clay through drawing. (1) The experiment considered the possibility of forming clay as a digital exercise using the Rhino programme as a drawing tool by way of adopting drawing into a craft-based process. This paper reflects on the nature of digital drawing as a word-led rather than bodily-led process in generating three-dimensional form - a method of hand-making or hand-writing in ceramic craft. It therefore explores form-finding by means of a drawing process of composing and crafting with words.

The paper examines the physicality and meaning of words derived from actions related to hand-making and the sensorial nature of a written, embodied language. As such it considers the translation of three-dimensional form from performative word-acts of hand-making (rolling, folding, bending, twisting, splitting, wrapping, binding, joining, bonding, stretching, etc.) into a digital vocabulary of drawing commands (rotate, curve, arrange, expand, cut, multiply, etc.) (2) The project signals the difference between sensorial renderings and digital readings in craft and drawing practice, contemplating the role of the language in-between. And it questions the significance of digital drawing in the context of ceramic craft as an approach to generating three-dimensional physical form.

Keywords:

three-dimensional forming
clay
digital drawing
word-led making
sensory language
physicality
hybrid practice
text-form

Notes on drawing and craft draughtsmanship

The current hybridity of practice in the arts and crafts - engendered by the technical and conceptual methodology of the digital - continues to mutate the notion of the hand-made, the relevance of skill and process, with substantial changes in the thinking and production of craft objects. (3) Significantly, traditional drawing and craft reoriented (during the progressive periods of Modernism and Postmodernism) toward artistic contexts, expanding the semantics of their practice to conceptual and experimental models (from *product* to *process*; from *representation* to the *dematerialisation* praxes of the 1960s or 70s). In elevating the hand-made from draughtsmanship to artistic status, drawing and craft (related to material and the physicality of making) shifted their gestural and performative qualities, adopting process-based, modern expressions of draughtsmanship (whereby hand-skills transferred into a different kind of performance) (4). As a result, their craft-based vocabulary of praxis -

composed of words related to the body and bodily acts of making bound to a specific lexicon of practice - is contemporary redefined. Since drawing and ceramic craft have also reconsidered the notion of process using a data-driven production, the terminology of *digital making* becomes the common ground and language for contemporary production / manufacture.

Currently, digitally-driven processes (digital mapping, CNC patterning and milling, stereo-litography, 3D-scanning and printing; laser-etching, etc.) redefine drawing and form-making in ceramics as technologically-sophisticated models of draughtsmanship, introducing logistic methods of visualisation and production. Notably, in ceramics drawing has shifted its role from a supportive, accessible means of visualization - a "primitive" technology - to a primary process of form-making, central to form-development. Having become integrated into craft as an originator of form, drawing becomes a creative site in terms of concept and fabrication. It becomes relevant therefore to look at how a change in (material) practice alters the performance and vocabulary of drawing and ceramic craft.

The body: Sensorial thinking - making

What I attempted to consider in this exercise of form-making is the vocabulary of drawing digital form generated by words which left behind the signifier of physicality. There are things so intimate, so familiar to our bodies: food, clothing, odours and words - all so closely related to our senses. Words are inherently sensorial and, like food and odour, they come out of, and go inside bodies. Marcel Proust's onomatopoeic (or onomatopoetic) analysis of 'names' (of places) in the *Search for Lost Time* (1919-1925) reveals how the pronunciation and sounding of words evokes images, ideas and imaginings; and the fact that language conveys sensory-founded interpretations: '[…] the stable identity we ascribe [to things] […] is purely fictitious, a convenience of language.' (Proust, 2003 [1923]/ [1925]: 55) (5) In this view, Benjamin Lee Whorf (1956) points out that in language significance is bound to 'modes of interpretation' therefore, words are essential agents in the production of meaning. (In this sense Edward Sapir (1949) speaks of 'language habit', referring to a collective understanding of words). The sounds of words, involving the movement of the organs of speech in their forming suggest a range of possible identities for things, a nuanced understanding. By virtue of their haptic nature the sound of words when pronounced implies probable forms for things. In literature poems are "crafted" considering the modulatory nature of sound; and there are intangible liaisons between the spoken and written word and forms of representation: William Blake's poetry for instance intertwines word and (its) image:

Tyger, Tyger, burning bright
In the forest of the night,
What immortal hand or eye
Could frame thy fearful symmetry?

or

He sits down with holy fears
And waters the ground with tears:
Then Humility takes its root
Underneath his foot. (Blake 2007 [1927]: 113 and 120)

Blake's or Yates' poems, Shakespeare's sonnets, among all others, echo the bodily-bound sensation of words (understood and felt with – through – the body). Their oral communication

relays on the varied expressions of the body through ge sture, opening the meanings of language (before writing, stories were told gesturally). According to E. T. Hall (1990 [19660]: 94) writers communicate beyond descriptive linguistics (literary conventions): through the use of visual, sound and tactile connotations a text reconstructs for readers the perception (sensation) of things. Words come to be perceptual entities, referents of sensory data enabling a blended understanding of a text. A text then is read as an associative interrelation of senses rooted in past experiences. A text acquires a (physical) form – a form of sounds (and images) - as clay embodies form. Although relaying on acts embedded in words, forming clay is performed bodily, without words. Neil Cummings (1993: 15) asserted that '[…] all objects can be brought to the level of speech' – yet the sensory process of their making is often imprecise as discourse. Clay-forming is mute, a sensory making rather than a word-initiated process; the performance of hand-drawing is mostly sensate, silent. As Ben Highmore (2009: 209) observed, 'Although the senses are a social and collective institution like language they are not reductable to language.' Juhani Palasmaa (2012: 64) noted in this view the importance of skill '[…] learned through incorporating the sequence of movements refined by tradition, not through words or theory' - a 'lived' rather than 'known' experience (see Richard Lang 1982). Indeed, the performative acts of hand-making involved in traditional drawing and ceramic craft externalise visceral, kinaesthetic dimensions and sensations of making. These establish transactions between body, material and the senses, within a physical encounter, where the 'sense organs' become 'tracks' (Serementakis, 1996). In this sense, Palasmaa speaks of 'the wisdom of the body stored in the haptic memory' (2012: 64) and the 'incarnate memory of our body' (2012: 76) – by virtue of which words acquire and assimilate sense. Whilst the making process in clay or drawing may have no apparent equivalence in language (but an equivalence and resonance within the body), it happens through a sensory memory of words. Words carry within sensorial experiences, characteristics which persist or are traced in communicating any language (spoken, drawn, tactile). As such the body - language somatic connection is meaningful to the concept of making. As bodily-bound practices, drawing and clay-forming engage a variety of *body-words* to refer to a whole register of gestures related to making. For example, Richard Serra's *Verb List, 1967-68* (1994) associates various actions to transitive verbs, recognising the function of language as material. Richard Serra's, Neill Cummings' or Pamela Lee's and Brian Dillon's word-lists offer a sense of the complexity of drawing/making**:**

- '… to roll, to crease, to fold, … to bend, to twist, … to tear, to split, to cut, to rotate, to lift, to inlay, to curve, to tighten, … to arrange, … to repair, to surfeit, to enclose, … to cover, to wrap, to tie, to bind, to join, to laminate, to bond, to hinge, to expand, … to stretch, to bounce, …to cut, to trim, to slide … (Richard Serra, *Verb List 1967-68)*

- '… to dapple, to drop, to remove, to spill, to splash, to mix, to smear, to spread, to layer, to scatter, to mark, to dilute, to light, to modulate, to erase, to spray …' (Neill Cummings 1993)

- '… splashing, hanging, rolling, scattering, dropping.' (Pamela M. Lee 1999: 26)

- '… scratching, erasing, smudging and staining …' (Dillon, 2009: 12).

These verbs (making acts) reveal their physicality. Although contemporary ceramic craft is defined beyond hand-skill, hand-made and tradition, the tacit, sensory-based knowledge of form-making remains embodied (in-body, full-bodied). And so the act of making remains paralleled in a "textual", discursive context (a 'textual appendage' says Cummings, 1993) by which it becomes framed in the physicality of language. In this sense, Benjamin Lee Whorf (*Language, Thought, and Reality*, 1956) suggested that language is shaping perception, and

that meaning is conceived through a 'linguistic system' out of a complex amalgam of impressions; that significance is created by way of organising perceptions into concepts, which are further codified in the patterns of language.

However, the craft verb-based vocabulary common to both ceramics and drawing altered considerably within the digital context – through a subtle transition from a physical to an abstracted language. The physicality of making, the tacit and experiential knowledge of forming materials - central in craft practice – are progressively replaced by the logical rationale of digital processes. Although software programmes operate with words (with what words suggest physically) as a means of image production, the bodily-bound connotation of words is often replaced, reinterpreted, re-appropriated. (Tania Kovats (2007: 8) refers to the translation of words into drawing as a '[…] positive act of displacement […]') Since on-screen the materiality of making/drawing is suspended, the word-commands in different programmes become an approximation of a making-process - intangible, insubstantial, imaginary. By associating the physicality of words (see Serra above and Smithson below), software commands attempt to translate corporeal acts of making/drawing, simulating a shaping of form. However, bodily-referred words become un-fixed in this process of form reiteration – in a sense they are 'extra-linguistic' (6). For example, in Rhino software (7) the drawing of form becomes a making with words - "curve", "slide", "trim", "expand" (some derived from initially bodily-bound actions). The bodily act of shaping clay may become an on-screen line - that can be curved, rotated, multiplied, cut, joined, etc. in a series of algorithmic "movements" (commands). In digital translation, words undergo a mutation of meaning and the language becomes the medium by which one senses (reconstructs) form. The digital line-drawing becomes a narrative: form becomes text and an association of words/commands - "curve", "array", "trim" become shape/ shaping (Fig. 1, 2 and 3). Form comes to be an expression of words, a landscape where space is constructed through an interpretation of a coded language; the visualization of a digital transcript. The set of computer word-commands (in place of a somatic set of making techniques) making-up a digital text transcribe the hand-making's lexicon of movement into a language. The ensuing drawings, tracing a virtual movement into form come to be '[…] dematerialised gestures, compressed images disconnected from materiality'; they are 'passive carriers of meanings, […] pure signs […]' (Cummings 1993: 18). Yet the words (mute, abstract signs) provide a reconnection with the body (in the body), bringing back the sensory sense of things through a relational understanding and interpretation. Unlike sensate bodily hand-making, digital drawing is measured by the eye alone - nevertheless a measure acquired from a corporeal experience: Gaston Bachelard (1971:6) referred to the interconnection of the eye to the other senses as a 'polyphony of the senses'. In any case, an (sensory / somatic) understanding of words and their transcription into a digital format is relevant (Ben Highmore (2009: 210) speaks of a 'sensory memory'; which can be said to be apprehended, held in words). Since there is no responsive, bodily-bound interaction with a material - no weight, no tactility, no resistance - the making of form can be only approximated through a digitally-approximated vocabulary (curve, rotate, multiply, cut, join, etc.) In attempting to reproduce the materiality of craft-making, the digital drawing-making is configured through a bodily memory of language (action-terms, remembered verbs); where words codified as substitutes for making acts still carry a physical memory.
Software offers an infinite possibility of combinations of word-commands which bring about a multitude of differences in the construction of form, depending on the reading of the digital text. This algorithmic text is a coded form of (programmed) writing (an encrypted language, as Egyptians used) where the connotation of words is representative rather than sensory (or descriptive). If the vocabularies of human speech are extensive: 'Writing in a human language allows the author to utilize the ambiguity of words and to have great flexibility in constructing

phrases […]' (Reas and Fry 2007: 17), computer programmes operate with a restricted syntax in terms of communication - a 'symbolic way of representing the world.' (Reas and McWilliams 2010: 17). The transfer into coded writing, comparable to the change and difference from an oral (sensory, multi-dimensional) to a written (two-dimensional, flattened) culture of communication is significant in terms of human perception (see E. T. Hall above) (8). Similarly, in a computerised (compressed, compacted) language, words change their three-dimensional, sensorial dimension. In the way words shift their sound and meaning in the reading of the same text in different languages, the transcription of a virtual drawing into form requires a procedure of translation. And there are ambiguous interstices of translation.

Technology thereby disconnects the sensory perception of drawing/making/writing with words: like the majority of software programmes, the Rhino programme operates on appearances of matter (Erwin Panofsky's (1999) term "pseudo-morphology" is fitting here). Hall (1990 [1969]: 60) observed earlier that in modern times the world of touch came to be subordinated to the visual world; and David Harvey spoke of 'a loss of experiential depth' (1992: 58). This extricated approach to the craft of drawing/making brings forth and favours the visual pleasure of the image (symptomatic in contemporary culture) which Frederic Jameson (2012) qualified as a perception reduced to 'appearances' and 'surfaces'. Pallasmaa restated a loss of the sensorial in the practice of contemporary culture stressing the centrality of 'retinal art' (2012: 33) brought about by technology.

Inexorably, in a hi-tech context, the physicality of traditional hand-making becomes replaceable, the performance of the maker being translated into a digital semantics through the mathematical logic of numbers translated into words. As a word-formatted image, a word-constructed spatial notation, drawing with words mutates into a visual metaphor. Conversely, the drawing/making of form becomes the on-screen embodiment of a text, a sensing of words. This crafting works within an articulated structure, with the signifiers of language, abstracting its meaning – a poemic rendition. Once these visualised texts translate through code into a digitally-controlled three-dimensional fabrication and are cast in material, the corporeal, sensorial feel (of words) resurfaces. The objects can only then be re-measured bodily reconstructing a haptic experience.

Reflections: drawing as digital craft (what can be done with words)

This digital-drawing exercise was considered as a form of making in ceramic craft by way of exploring how the physicality of craft mutates inside a digital drawing process. As the semantics of current craft practice emphasizes the role of digital drawing, it is relevant to consider how software influences a ceramic craft process which starts with drawing as an approach to form-giving and fabrication. Tania Kovats (2007: 9) observed that drawing is, for artists working in three dimensions '[…] an extension of *the process of making*, more about *construction* than visualisation' (my emphasis); Pamela Lee speaks of drawing as a '[…] process of mediation' (1999: 33) In this sense, this experiment regarded the craft of digital drawing as an integrated process to clay-forming – a *making* process which starts with drawing as an approach to form-finding. In this process language becomes a flexible but elusive material enabling linguistic diversity and legibility; words are a potent, tangible, active material pertaining the process of form-making. They operate on a sensorial, material, symbolic metaphoric but also on emotional levels; and their representative function (saying what they do) cannot be separated from their ideatic value.

There is an equivalence of words in form and an equivalence of form in words. In the most literal sense, Graham Collier (1972: 61) pointed out the graphic translation of written language

seeing it as a form of art distinguished in its linear characteristics. But the drawings of Mel Bochner (e.g. *Wrap: Portrait of Eva Hesse*, 1966) Robert Smithson and Sol LeWitt's transfigure the function of language and the formality of legibility, by using words to render visual image. Referring to *A heap of language*, 1966 (a pyramidal form made of written words mapped on a grid) Smithson stated the duality of words as substance and information: 'My sense of language is that it is matter and not ideas […]' (1999: 104) From this perspective, in a set of LeWitt's drawings composed of geometric figures articulated by verbal descriptions (*The Location of Geometric Figures: A Blue Square, Red Circle, Yellow Triangle and Black Parallelogram*, 1976), words become one with the drawing, its structure and act of communication; (a recording process: 'We use one thing to describe another' says Kovats (2007: 8).) Following yet a different approach, various concept or process-based works in the 60s and 70s (including drawings) were made by scripting instructions: Sol LeWitt wrote sets of rules for the production for some of his drawings. Rather than acting as "recipes" for a drawing's production, these "commands" actuate the performative element in the making of a drawing. Similarly, Yoko Ono's short texts of instructions for everyday activities and performance of tasks (a form of programming) are artworks where words return to a bodily activation. In an analogue manner, the potential of drawing form in written code enables different kinds of representation, since '[…] each programming language is a different kind of material to work with and think with.' (Reas and McWilliams 2010: 17).

Therefore, the territory of practice opened by computers in all creative disciplines enables changes of practice and new types of exploration in form-making which question the notion and terminology of *making* / drawing. Still, in a digital context drawing remains a language that expresses form through words; it only assumes a new semantics of writing form.

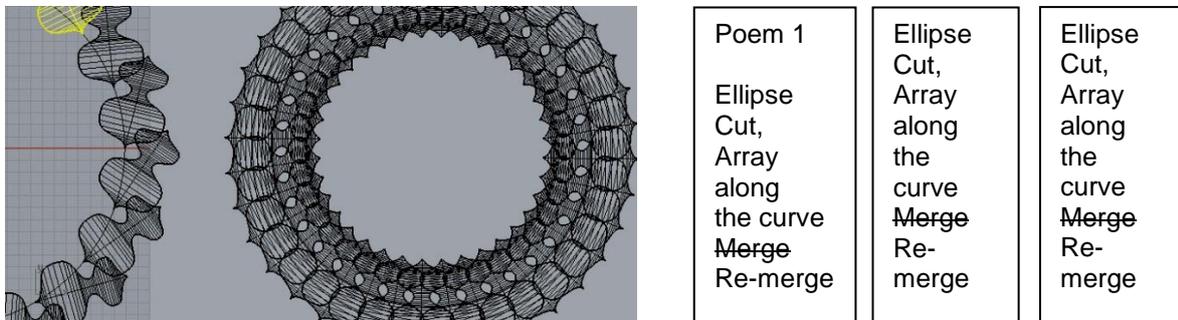| Poem 1	Ellipse Cut,	Ellipse Cut,
Ellipse Cut, Array along the curve ~~Merge~~ Re-merge	Array along the curve ~~Merge~~ Re-merge	Array along the curve ~~Merge~~ Re-merge

Fig. 1 A. Ionascu. Poem 1 (recipe 1 - rewording (subtext): Ellipse/Cut/Multiply/Array along the curve/Merge). Non-linear narrative. Rhino software. Author's copyright

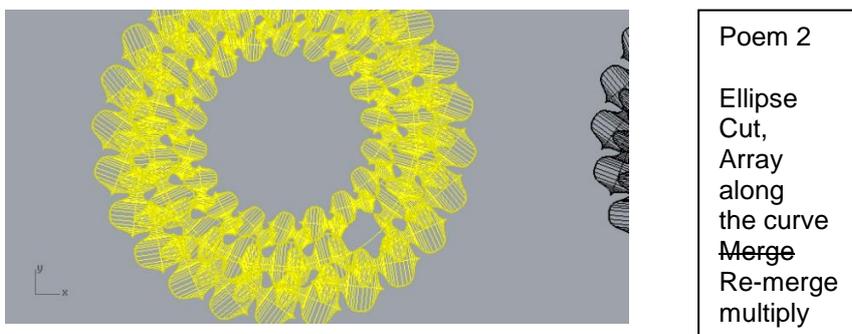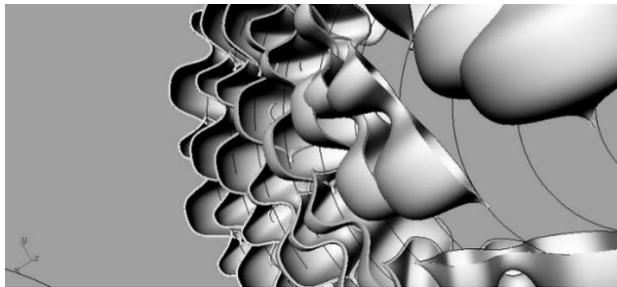| Poem 2 |
|---|
| Ellipse Cut, Array along the curve ~~Merge~~ Re-merge multiply |

Fig. 2 A. Ionascu. Poem 2 (recipe 2 re-wording (subtext): Aligning/Rotating/Splitting/Curving/Copying/Grouping/Trimming/Slicing/Transforming/Sliding/Reverting). Non-linear narration. Rhino software. Author's copyright

Poem 3

Ellipse
Cut,
Array
along
the curve
~~Merge~~
merge

Fig. 3 A. Ionascu. Poem 3 (recipe 3 rewording: multiply, array along the multiple curve and merge. Rhino software. Non-linear narrative. Author's copyright

Notes

(1) A follow up of the FabLab Made@EU project, at Plymouth College of Art / IAAC, Barcelona / ENSCI, Paris.

(2) The word-actions listed here are inspired by clay-forming in studio and paralleled to Richard Serra's list.

(3) Events like 'Craticulation' or 'Interaction design', exhibitions like *Lab Craft* (2010), *Power of Making* (2011); events like *Make: Shift* and *Make: Shift: Do* (2014); 'Challenging Craft'; 'New Craft Future Voices' (2007) propose inventive uses of craft and digital intersections. See for example Tavs Jorgense and Michael Eden parametric drawings.

(4) See a comprehensive discussion on collage, assemblage, installation, mixed-media in Tania Kovats, 2007; Laura Hoptman, 2002 and Jody Hauptman, 2004

(5) '[…] certain towns, Vezelay or Chartres, Bourges or Beauvais […] This habit of synecdochism has the result, if it concerns towns where we have never been, of sculpting broader meaning of the name, which, when we attempt to fit the image of the whole unknown town back into it, will shape it like a mould […]' (Proust, 2003 [1919]: 237)
And '[…] it felt as though, by going there, I had broken open a name which should have been hermetically sealed, and into which, through the breach which I had been ill-advised enough to make, replacing all the images I had allowed to escape from it […] had rushed into the vacuum left in the syllables, which had now closed upon them […]' (Proust, 2003 [1919]: 239)

(6) I borrowed this term from Ben Highmore's book, *The Design Culture Reader* (2009: 209)

(7) Rhino is a 3D modeling software programmed to create, edit and manipulate form. A geometric model constructed in Rhino can be exported to laser cutters, milling machines or 3D printers for manufacturing.

(8) See further Edward T. Hall (1990), Chapter 8, The language of space (p.91 and Literature as a key to perception (p.94-100) in *The Hidden Dimension*

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