

EXPERIENCE
 EX MATERIAL
 LITY / ARTI
 CULATION

05.2016

Vol 14

Studies in Material Thinking

EXPERIENCE/MATERIALITY/ARTICULATION

PAPER 04

**The aesthetics of form
knowledge: Embodied
knowledge through
materialization**

AUTHOR(S)

Astrid Heimer

ABSTRACT

This article demonstrates an aesthetics of form knowledge, in the sense of knowledge that comes to us through the senses. The role of the body and material in understanding form are described from an inside perspective. Embodied knowledge of form and form processes in clay are localized and articulated. My own experiences from modelling are connected to embodied knowledge from five phenomenological concepts: animated organism, zero-point, Leib, body-scheme and kinaesthetic, which are based on theories developed by Edmund Husserl and Maurice Merleau-Ponty. These concepts, together with reflections of material agency discourses from various disciplines, form a theoretical framework to propose and give access to subjective, embodied experiences in order to develop new form knowledge. I argue that clay itself has agency, meaning that it reacts and responds to the body's movements: therefore, form processes in clay are described as a dialogue between body and material. Phenomenological concepts and reflections about material agency are valuable in that they give perspective to, and anchor personal knowledge of form from, here-and-now experiences in a more general understanding of form. The aim of this research is to imbue subjective knowledge about form with a more general meaning so that it can be fundamental to developing an aesthetic embodied theory of form.

KEY WORDS

Form, aesthetics, clay, embodied knowledge, material agency

INTRODUCTION

The complexity of three-dimensional form cannot be understood completely from purely abstract concepts. Only when abstract knowledge about form connects with experience can we achieve form knowledge as a whole.

When modelling an object with my hands, I sense the interrelation between form and body through the clay. Every movement is connected directly to my body and, gradually, my experiences of form develop into embodied knowledge. This article defines form both as concrete, finished forms and as forms that evolve in form processes. The title, 'The aesthetics of form knowledge', refers to how we perceive form here and now with our sensing bodies and how this experience influences our understanding of form generally. Edmund Husserl distinguishes between *aestheta* and the aesthetic body. By *aestheta*, Husserl refers to material, or 'things as such in their aesthetic structure' (Husserl, 1913/1998, p. 55). However, the features of things as such change when they are experienced in various lights or from various distances. To expand the understanding of perception and embodied knowledge, this article relies on the notion of haptic perception.

My here-and-now experiences are registered and connected to a theoretical framework built of five phenomenological concepts of the sensing body: the *animated organism*, *zero-point*, *Leib*, *body-scheme* and *kinaesthetic* (Husserl, 1913/1998; Merleau-Ponty, 1945/2012). My analyses emphasise movement, which gives a more dynamic understanding of form. I define hands as form and living tools. I give them a certain role and a perspective, from which I study form as action. *The grip as a core-point* is the primary concept of my form investigations and refers to both three-dimensional orientation and a starting point for form explorations. This article discusses both embodied knowledge of form and the effect clay has on understanding form through materialization. From that perspective, the research question is: How can interaction among form, body and material (clay) articulate three-dimensional form knowledge?

I propose knowing through making. Future acts are affected by form insight based on my personal knowledge related to practice. Knowledge is here understood from four categories, defined by Grete Refsum as: explicit (content, localized and expressed); process (confident in skills, partly expressed and partly unarticulated); tacit (unarticulated); ineffable (values and beliefs—unarticulated) (Refsum, 2009, p. 5). Peter Jarvis describes personal theory as 'integrated knowledge that combines learning from doing and thinking about practice with learning from other information sources' (Jarvis, 1999, p. 145). I argue for a specific way of knowing, meaning that the skills of the researcher make her aware of, and able to register, the complexities in the making as intertwined components processing agency. 'Agency is a property or possession neither of humans nor of nonhumans. Agency is the relational and emergent product of material engagement' (Malafouris, 2013, pp.147-148). Material-agency is rather something 'between' than 'within persons and things. Not only does the researcher have engagement, but the material and the forms to come are seen as part of 'the acting ensemble'. She is not the only 'author of the act' (Malafouris, 2008, p. 23). When artists and designers research through making, the product as artefact and the process are not only data, but also part of the articulation. Within art and design discourses, both the product and the product to come can be 'a method of collecting and preserving information and understanding' (Mäkelä, 2007, p. 157).

In this article, knowledge is developed by reflection in action, but also by describing and coding the experience with forms after the process. The way I articulate my own experiences is by searching to open readers to their own experiences of having a body and to make sense of the aesthetics of form knowledge. The five phenomenological concepts, all of which are related to perception, are general—developed as an embodied theory that others can relate to. Descriptions of my experiences of form are crucial. They are coded by formal terms, such as positive and negative form and convex and concave form, and are argued for here as embodied terms and concepts.

STUDIES IN MATERIAL THINKING
www.materialthinking.org

ISSN: 1177-6234

Auckland University of Technology
First published in April 2007,
Auckland, New Zealand.
Copyright © Studies in Material Thinking
and the author.

All rights reserved. Apart from fair dealing for the purposes of study, research, criticism or review, as permitted under the applicable copyright legislation, no part of this work may be reproduced by any process without written permission from the publisher or author. For permissions and other inquiries, please contact the Editor at <materialthinking@aut.ac.nz>

STUDIES IN MATERIAL THINKING
is a peer-reviewed research journal supported by an International Editorial Advisory Group. The journal is listed in the Australian ERA 2012 Journal List (Excellence in Research for Australia) and in the Norwegian register of approved scientific journals, series and publishers.

As scientific research, the making disciplines are an ‘emergent field of study’ that distinguishes itself from other disciplines, for example, by being ‘intentional but engag[ing] the skilled body; that forms’ and ‘transforms materiality’ (Tin, 2013, pp. 1 & 4). A form theory built on personal knowledge will always include a tacit dimension, but there are increasing numbers of great examples that show how personal knowledge—labelled tacit by many—is expressed and communicated (Groth, Mäkelä & Seitamaa-Hakkarainen, 2015; Lee, 2014; Nimkulrat, 2009; Schön, 1995, pp. 82-87). In artistic and design research, the critical point is how to enable access to knowledge embedded in action. ‘Only when practitioners have an intrinsic motivation to research and make their practice explicit can their embodied experiential knowledge reach an outside audience’ (Groth et al. 2015, p. 57)

To document my reflection in action, I have used quick sketches and photos, added with comments and short reflections. For me it is important that the photos not only are illustrations for the text but also grant crucial access to the subject matter. The photos and the process of taking them works both as an explorative and analytical tool and sharpens my understanding for three-dimensional spatial form. I become more aware of the variety of expression within a form, how different a form appears, changing the angle of the camera lens. I here argue that photos can be multisensory and not only communicate visually. They are visual articulations on an equal basis as the materialized forms. The photos are both ‘mode’ and ‘media’, which here means that they are carriers of the forms as well as distributing these in a way that they communicate meaning from an aesthetic approach (Pink, 2011, p. 262).

This research is part of my PhD project, *Three-dimensional form, positive and negative form exploration: Interrelation between form, body and movement*. Empirical data is based on modelled clay objects created at the Department of Ceramics at San Diego State University between August 2012 and June 2013. The data represents interpretative experiences which, later in my research, will be developed as fundamental to a form theory that will provide a deeper understanding of embodied form knowledge that is useful in practice.

1. PERCEPTION: SENSING AND REFLECTION

From a phenomenological perspective, it is important to free oneself from what one already knows in order to perceive without the preconceptions that render here-and-now experiences obscure. To quote Maurice Merleau-Ponty: ‘Let us return, then, to sensation and examine it closely enough such that it teaches us the living relation of the one who perceives with both his body and his world’ (Merleau-Ponty, 1945/2012, p. 216). This is a method for setting change of habit, thoughts and actions and, to quote Ulla Thøgersen: ‘It is through the phenomenological reduction we reveal our commitment to the world’ (Thøgersen, 2004, p. 93). This perspective results in an understanding of form as always situated, based on interaction. However, our understanding is developed from earlier experiences, stored in our active bodies, and conceptualized as embodied knowledge. The five phenomenological concepts here chosen to describe and explain parts of our embodied knowledge are all related to perception. To understand form is perception. Aksel Øijord refers to Aristoteles’ definition of perception as ‘sensing and the combination of thinking and sensing’—when we first articulate what we are sensing, meaning is created (Øijord, 1994, p. 80). For purposes of this article, aesthetic refers here to the knowledge that comes to us from the senses and, therefore, is connected directly to experience. In contrast, concepts are shaped from our experiences in the physical world and structured in our ‘embodied mind’ (Lakoff & Johnson, 1999; Pallasmaa, 2009). It is not only from visual perception that we perceive forms: the whole sensing body interacts with and registers forms to which we relate. The maker must be more aware of his/her aesthetic body and take advantage of it during the whole form process. It is important not to limit aesthetics to a design tool for styling a form after it is constructed, as some last step of a form process, giving a certain character or expression to a form. Making a form, like experiencing a form, is aesthetic, a back-and-forth action during the entire form process and afterward.

The five phenomenological concepts describe the active body in time and space, emphasize perception of the whole body and

Husserl’s concept of *Leib* is described as ‘the living body’. Leib differs from the term *Körper*, which means the physical body as an object that can be moved only mechanically. The living body, Leib, has its own will and is free to move itself. It is through the living body that we first interact with our environment (Tin, 2010, p. 119). This is crucial for the understanding of the aesthetic interrelation between form and body, as well as that between material and body. Leib has its own will that removes the distinction between body and mind. Merleau-Ponty describes spatiality as both positional and situational. Experiences always are situated, relate to specific tasks and registered in our bodies as actions. Originally, the meaning of the concept *body-scheme* was ‘a summary of our bodily experiences’, while Merleau-Ponty uses the original Greek definition of scheme as an approach or a view, allowing body-scheme to be understood more precisely as ‘a bodily view to a specific situation’ (Thøgersen, 2004, p. 111). This also means that when the body registers a form, it not only registers it in its specific environment, but also against a background. The body takes part in the form here and now:

My body is polarized by its tasks, insofar as it exists toward them, insofar as it coils up upon itself in order to reach the goal, and the body-scheme is, in the end, a manner of expressing that my body is in and toward the world. (Merleau-Ponty, 1945/2012, p. 102)

The perceptual concept *kinaesthesia* means ‘the sensing body’s movements’. This is an important concept in phenomenology and it is of importance not to reduce the body to a passive receiver of stimuli from the environment: Thøgersen describes the interaction between ‘material things’, body and movement according to Edmund Husserl’s approach to perception as an activity. As she states: ‘It is because of the body’s spontaneous movements that I can situate material things in the space in my perception’ (Thøgersen, 2004, p. 86). Embodied knowledge, grounded in perception, develops from the body’s actions on and interactions with the environment. All the body’s movements and tactile experiences, touching a form or working with form processes, register in our bodies. According to Merleau-Ponty, not only are those registrations stored within our bodies as ‘associations...constantly submitted to a unique law The spatiality of the body must descend from the whole to the parts’. As parts of form and movement, each sensation ‘must be implicated in an overall bodily plan and must have their origin there’ (Merleau-Ponty, 1945/2012, pp. 101-102). This description inverts the more common way of explaining understanding of form, which shows parts in relation to the whole. The five phenomenological concepts are vital to exploring embodied knowledge in form processes, for they explain the body’s interrelation with its surroundings. Merleau-Ponty describes the spatial, sensing body as ‘inhabit[ing] the world and time’ (Thøgersen, 2004, p. 113). Experiences from any given time and place during movements in form processes will become embodied experiences.

give aesthetic a more complete meaning. Dancer and researcher Maxine Sheets-Johnstone argues ‘the primacy of movement’ for kinaesthetic consciousness as the basis for all perception. (Sheets-Johnstone, 1999). She refers to Husserl’s concept of *animated organism*, which describes all living organisms, including humans, as part of everything that is living and experienced. Movement is something in itself, *sui generis* and prior to everything else:

In the beginning, after all, we do not try to move, think of movement possibilities, or put ourselves to the task of moving. We come straightaway moving into the world; we are precisely not stillborn. In this respect, primal movement is like primal sensibility: it is simply there. (Sheets-Johnstone, 1999, p. 136)

I understand this as a concept that frees us from the impulse or burden of controlling our actions. To take part in movement in actions, one has to go with the flow. Movement is important not only to dancers creating new forms of movement, but also to artists and designers experimenting with and exploring new forms.

In basic geometric form theory, forms are described as two dimensional or three dimensional. To experience form, we move our bodies in space and interact as three-dimensional bodies with forms. Our movements add another dimension to the understanding of form. Therefore, our experience of a three-dimensional form is four-dimensional (Tin, 2010). A crucial concept for three-dimensional perception is *the zero-point*, how the body orients itself in relation to form in space. Husserl describes the body as:

... the bearer of the zero-point of orientation, the bearer of the here and now, out of which the pure Ego intuits space and the whole world of the senses. Thus, each thing that appears has *eo ipso* an orienting relation to the Body and this refers not only to what actually appears but to each thing that is supposed to be able to appear. (Husserl, 1913/1998, p. 56)

2. MATERIAL AGENCY: INTERACTION BETWEEN BODY AND FORM THROUGH A MATERIAL

Various disciplines discuss agency, and many discourses accept that agency exists not only in humans, but also in non-humans. Among others, the 'Actor Network Theory', developed within social theory by Bruno Latour, deconstructs the barrier between subject and object and makes objects actors. Latour uses the term 'actant' for anything that has agency (Latour, 2005). There is a difference between 'actor' and 'actant'; while an actor has character, an actant operates on a more functional level. An actant can be understood as a medium for an actor's 'half-formed ideas to be expressed and to be reflected upon' as, for example, the sketch for a designer or an artist. (Cross, 2007, p. 53) To artists and designers with skill in materialization, it is evident that there is a dialogue between the maker and the material. Sometimes this is expressed in ways that can be experienced by others. Eva Hild's sculptures made of clay are described as bodily movement we can relate to: 'all seem to grown from the same root and in the same earth...bodily movements form a natural foundation for how we experience and understand the work' (Jönsson & Eklund, 2009, p. 25). For Paulus Berensohn the interplay between body and material when forming a clay object is 'a meeting between body (finger), clay and the mind's eye' (Berensohn, 1987, p. 40). Barbara Bolt refers to Edward Sampson's term 'acting ensemble' when discussing how humans think through a material: 'The acting ensemble takes in the totality of the acting environment' (Bolt, 2007, p. 2), meaning that creativity and results from it are interwoven with the material used, the environment and the context as a whole. As opposed to an instrumental use of tools and material with the artist or craftsman exercising mastery in making an object, material-agency 'enables us to revisit the relationship between the artist, the tools of production and the materials of production' (Ibid., p. 2). This perspective on knowledge is not new. John Ruskin described material agency as poetry, rhythmic interaction, as the pulse beat and crafting hands movements in response with the stone material, when the stonemasons chiseled the sculptures. According to Ruskin, vitality in form can be seen where:

The sculptor must paint with his chisel: half his touches are not to realize but to put power into the form: they are touches of light and shadows; a rise and ridge, or sink a hollow, not to represent an actual ridge or hollow, but to get a line of light, or a spot of darkness. (Ruskin, 1849//2011, p. 163)

In 'At the potter's wheel: An argument for material agency', Lambros Malafouris describes his experiences in working on the pottery wheel (Malafouris, 2008). For him, pottery is a way to think through clay, a material that responds during the making. He describes it as a dynamic, complete action in which the potter and the clay meet in an idea in which body and material take part. Malafouris uses 'material agency' to describe a materialization process that makes no clear distinction between where, who and what; we cannot know if it is the body or the material that begins, continues or concludes the process. To throw clay on a wheel is an open process that removes the distinction between subject and object. With this phenomenological approach, Malafouris sees that the body and the material are two interactive phenomena, each with its own agency. The condition of the potter is described as if within the process itself. There is an interaction between the potter and the clay, rather than a causal relationship in which the potter's intention to create a form is a clearly-directed, one-way action. The potter alone is not 'the author of the act' (Ibid., p. 21). The clay unfolds through the phenomenological body.

2.1. PLASTICITY IN CLAY, BODY AND FORM

As a ceramicist, I understand form through and with my body. I sense the plasticity of the clay and through the forms that evolve. It makes my body feel close to the forms. The plasticity of clay is a driving force in my work. The role of the material in the form process is central to my research. In creative form processes in clay, there are no clear distinctions between subject and object. The clay has agency. The roles of the body and the material are interwoven. Experiences from various forming processes have given me a nuanced sensation for three-dimensional forms in growth, an awareness of the interrelationship between form and body through the plastic clay. The clay seems for me to be alive—a dense, moist, pliable material—and the plasticity is a character within the material that triggers movements. The clay gives in to pressure, but simultaneously offers resistance to my movements with a kind of gravity as a positive resistance during the forming process. To work with the clay is about balancing the dense and the pliable in addition to finding movement and rhythm in the making. The body transfers into the material and the clay responds to each and every little pressure. I experience the process as movements between the clay and me rather than as my initiating the act. It is as if the movements of the body are released by the plasticity in the clay. Malafouris gives the clay material a certain role and character: It is 'one of the earliest truly neuro-compatible materials in the history of humanity' (Malafouris, 2008, p.22). Neuro-compatible refers to 'material that affords the flow of noetic activity beyond skin and skull, bridging neural and cultural plasticity' (Ibid., p. 22). In the creative processes presented below, I am not 'outside of the assemblage directing the proceedings' (Bolt, 2007, p. 2). Instead of intentionally directing the form process, I become a 'material-semiotic actor engaged in complex conversation with other players' (Ibid., p. 2). I let the clay, as another player, involve my thinking and actions.

3. THE GRIP AS A CORE-POINT FOR FORM EXPLORATIONS

To create a spatial, three-dimensional form takes more than creating depth in the form itself. A three-dimensional form must connect; get a grip on its surroundings. An interplay between positive and negative form must take place and be sensed as unfolding in all directions. This section describes experiences from three modelled form series of positive and negative form exploration, based on my main concept for experiencing three-dimensional form, which I describe as 'the grip as a core-point'. Positive and negative forms are defined thusly: Positive form is concrete physical mass, while negative form is the demarcated void in relation to the mass. This formal interrelation is also described as 'filled and unfilled space activated by the piece' (Zelanski & Fisher, 1987, p. 94). Themes of the form series are Hand-Sketches, Handforms and Body-Shells. Positive and negative form are in the three form series problematized as 'double directed actions', 'negative form as traces of human form and movements' and 'embodied convex and concave forms'.

The concept of 'the grip as a core-point' evolved from working with modelling objects and finding my forms not three-dimensional enough and from aiming for the clay body to free itself from its mass. The isolation of mass was locked up in the form rather than activated in space. A form develops from a core-point as a center or a structure. When exploring forms with departure in the grip, the hand becomes the core-point. The grip, as composition and structure of the hand, is set as a core-point, a place and form of departure that connects the clay and me during the modelling form processes. Similar to the phenomenological concept of 'zero-piont', the 'grip' gives presence in the forming process. The plasticity in the clay implies that the grip is realized as shaping the hand and clay simultaneously. The two hands have different roles. The left hand is the grip, while the right hand does the modelling. Forms appear as traces of human forms. We mirror ourselves in forms and understand them in ways that touch us.

I take part in form processes with my body as positive and negative form. In my research, I register my own interaction between form and body through clay material. Photography takes place during the modelling process and of the finished forms. Some of the photos taken are reconstructions to capture specific formal issues from the framework and criteria for the form explorations and from what comes to my mind during the modelling process, for example: the position and orientation of my hands; form, direction and depth in the negative forms (external and internal) (figure 2, left and figure 3). I also use photos to explore the forms from different angles in order to catch gestures and interaction between form and body that I am still not aware of during the forming process (figures 1 & 4). Some photos are of the finished forms, searching for angles that best capture the form expression I want to emphasize (figure 2, right). The view of the skilled people I have chosen to help with the photography will always be somewhat different from mine, and they therefore take series of photos, from which I can choose to capture what I want to articulate with the picture. To emphasize the form and action of the hand/arm in the photos, I have used a neutral background to remove interfering details. My arms are stretched out from the body and have therefore another position than being in the act of modelling. In the beginning, I thought of the photos mostly as documentation. I now see that the reconstructions also work in a hermeneutic, reflective way. By changing the position of my hands while searching for a good photo angle, I recall my memory for the specific form issues—but from other both embodied and conceptual perspectives.

Examples are taken both from experience of plasticity in forms that are yet to become and from finished, dry clay forms. The acting ensemble is the clay and me, and I use no other tools than my hands. The complexity lies within the movements of the making, released from form knowledge stored in my body-scheme and how I sense the forms visually and haptically. The agency of the clay changes during the process. The most obvious state of agency is when the clay is plastic. Still, there are many stages of plasticity, from wet to leather-hard. Stiff clay acts from a character of the material other than plastic, such as dry, smooth, course, or rough. Always, the form affects how we experience its material agency.

3.1. HAND-SKETCHES, DOUBLE DIRECTED ACTIONS

Hand-Sketches are forms made intuitively. When making Hand-Sketches, the grip enters the clay as an imprint, and the clay simultaneously presses outward to fill all the negative space of the grip; a double directed action begins. Besides action, the concept of the grip implies both the form and structure of the hand and the hand's movement to shape the grip. The grip becomes the core-point when the hand is shaped into a grip in the clay. The grip already is charged with the force of being active, and the charge then is released with the plastic clay. I continue the shaping process by modelling some parts of the clay form that have been pressed outward, between the fingers, as negative forms of the grip. The clay forms are pressed, stretched and pinched. Sometimes, new clay is added to extend the form. The plastic clay engages my body; it gives me a feeling of being present within the form process. The Hand-Sketches spatially activate the way the form spreads outward in various directions. During the form process, I experience the different orientations of the form and the interaction with myself as form and movement.

Figure 1 illustrates the connection between hand and object while making a Hand-Sketch. Here, the clay form is finished and stiff. The porcelain clay is dry, but the form feels smooth because of movements in the form. The photos show how different positions of the hand give various visual impressions, described as 'dynamically outward' in many directions, 'toward my body' and 'diagonally outward'. My sensed experiences are both visual and haptic. Not everybody has or realistically can have the particular experience of the moving, plastic clay, but anyone can relate physically to the grip.

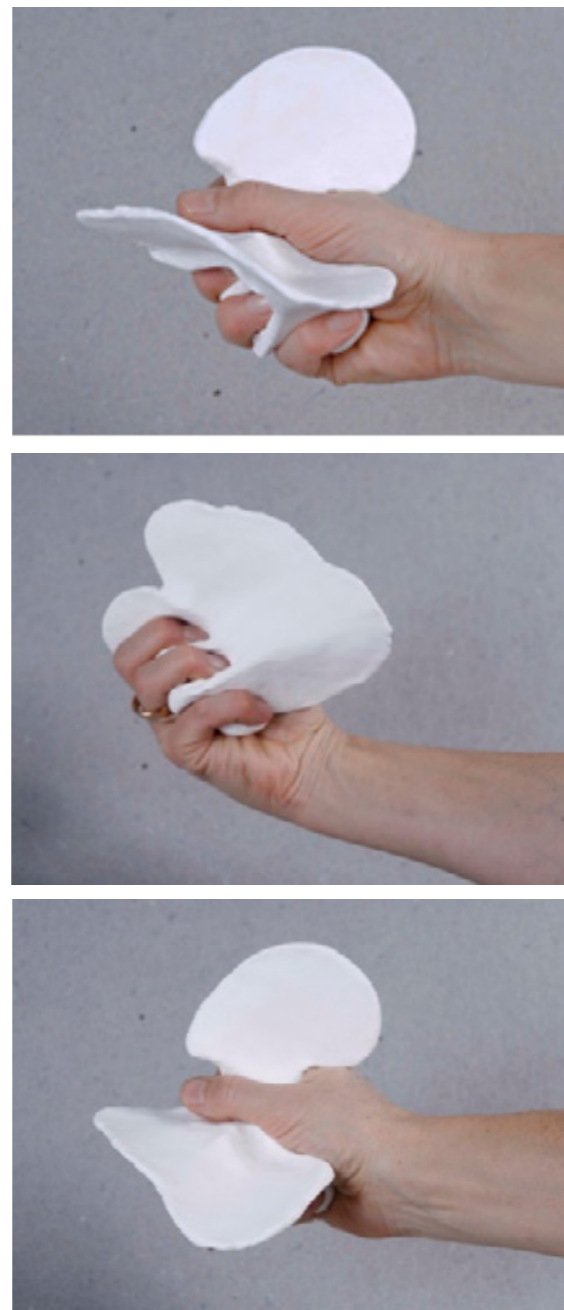


Figure 1 /
Hand-Sketch, illustrating how the grip is used to explore
interaction between form and body from different positions.
Photos by Astrid Heimer, 2012

3.2. HANDFORMS, NEGATIVE FORMS AS TRACES OF HUMAN FORM AND MOVEMENTS

Every form, pressed into wet, plastic clay, remains as an imprint. The clay is both distinct and flexible. In Handforms, the grip is constant and similar to Hand-Sketches in that the negative form of the grip is significant. In addition, a negative form is modelled into the clay form toward the grip (Figure 2). This form series explores interaction between positive and negative form. I am aware of the left hand's grip as a positive form and the shaped, clay grip as negative. That works as a counter-mould for the right hand's form and directions in modelling movements when making the internal form. The experience of modelling the negative form toward the firm grip increases the feeling of being and moving asymmetrically. The hands are juxtaposed, but dynamic positions and movements create a feeling of growth inward into the form. In Figure 2, the photo on the right shows the negative form of the grip as an imprint in the clay, a record of the action of gripping. Negative form is created in the material as a sign of human movement. Within the form, something is left behind from both form and movement. The forms are abstract, organic, rolling forms that seem familiar as universal expressions having a connection with the body. The imprint is static, a frozen movement of the hand as action. This form as movement also is stored in my body-scheme. The negative form of the grip in the clay is not the concrete hand. It stirs a vague image of something familiar, yet not easy to identify.



Figure 2 /
Photos of Handforms: from the form process and the finished object.
Photos by Richard Burkett (top) and Astrid Heimer (bottom), 2013.

3.3. BODY-SHELLS, EMBODIED CONVEX AND CONCAVE FORMS

Body-Shells are modelled by hollowing and extending a spherical clay form to become thin, clay walls (Figure 3). In this series of forms, the grip still is fundamental, but in comparison with Handforms, it is related more to the palm of the grip than to the distinct imprint of the fingers on the outside of the form. In this form series, I investigate the interrelation between convex and concave forms as experiences of the body's movement through the clay wall. From long experience in modelling, I understand convex and concave forms as directions within my body. While positive and negative forms are filled or empty forms, convex and concave are terms for curved planes of a form; 'convex pushing outward and concave pulling inward' (Akner-Koler, 1994; Hannah, 2002). Body-Shells are shaped more intuitively than Handforms, and they relate to larger forms and movements of the body. The shapes of Body-Shells drape more; they are experienced as moving walls, as an extension of the arm's movement. When modelling a form of plastic, flexible clay wall, it is directed as much from inside outward as from outside inward. At any given time, the walls have a direction. The modelled clay wall is concrete, and I can feel the plasticity of the clay with my body. The grip still is a fixed core-point when modelling the moving clay wall, alternating outward and inward in different directions. I take part in the development of the form and can bodily feel the expansion of the curves. The experience of the rhythmic movements of the modelling alternates between being in my body and in the form. After a while, the body becomes part of the form in a spatial manner that makes the form become embodied movements. My experience of modelling through and with the concrete clay wall makes me understand more deeply the interrelation between convex and concave forms. The finished forms appear more as frozen movements, forms of growth that have no clear demarcation.

Figure 4 illustrates my experiences of finished, dried clay forms—the photos showing various positions and movements of the hands, arms and form, and how all interact and relate to one another. I perceive the form in relation to my body as: above-and-away; emerging-from-enclosing; toward-overlapping; undercover-straight-out and from-above-and-beyond. Sometimes, the difference between what is inside or outside the form disappears. This is similar to my experience of interaction between form and body through the clay during the shaping process. The interplay between convex and concave forms takes place in my body as a continuous movement.



Figure 3 /
Photos showing the form-process of a Body-Shell, a stage from the hollowing and extending of the spherical clay form.
Photos by Ryan Gray, 2013

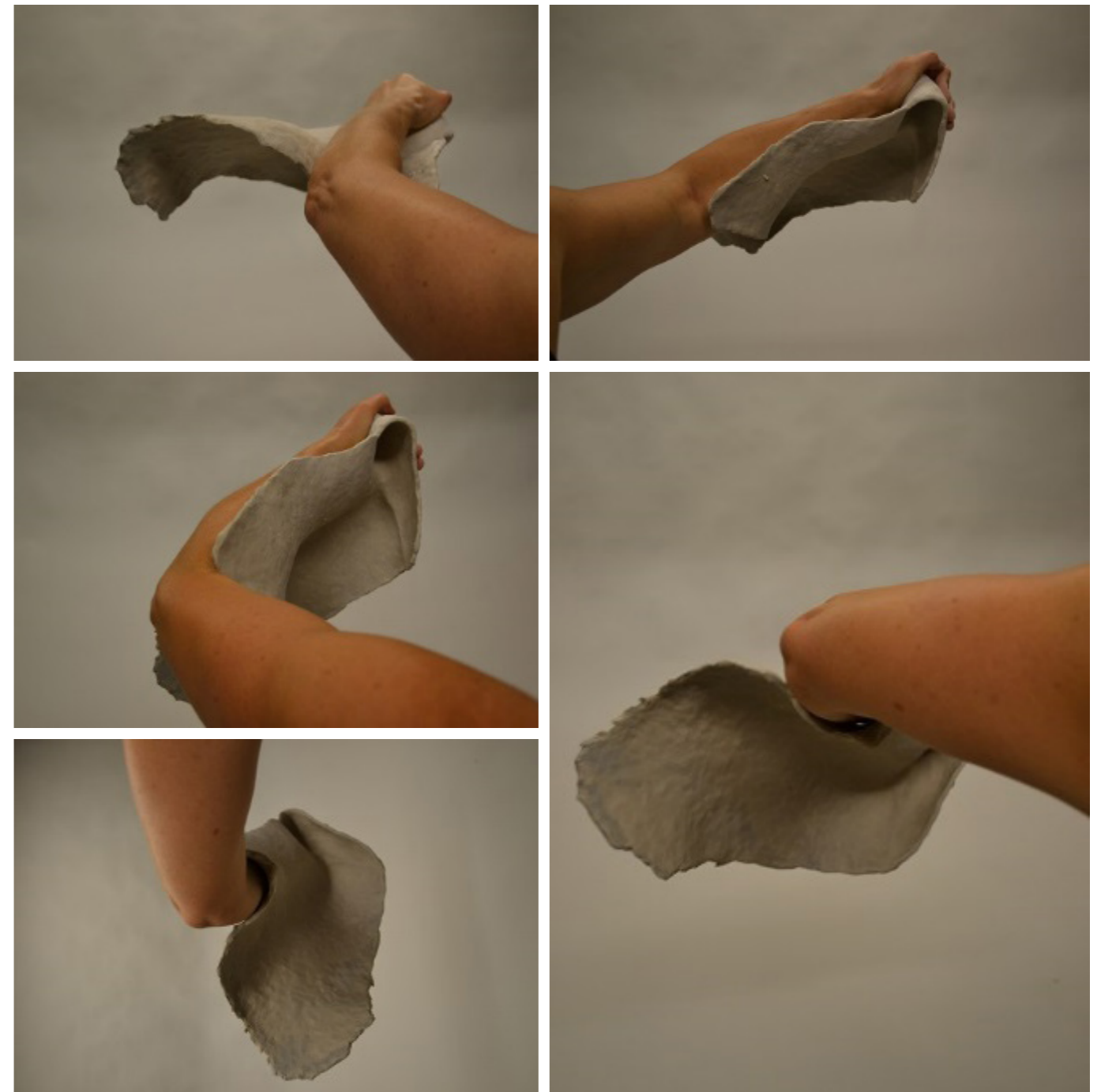


Figure 4 /
Photos showing activated forms from of the series Body-Shell.
Photos by Ryan Gray, 2013

CONCLUSION

Knowledge of form is based on its specific ‘aestheta’, such as inherent features, proportions, structure etc., but how we perceive form depends on our aesthetic body. We need to be bodily involved in a form before fully understanding it. This article demonstrates an awareness of three-dimensional form from how movements within form, body and material are sensed and articulated. From a phenomenological perspective, neither three-dimensional form nor our bodies are in space—rather, they ‘inhabit’ it (Merleau-Ponty, 2012, p. 140). Articulating the three series of form exploration describes how I understand form as a phenomenon, by ‘integrating its significance within a bodyspace’ (Thøgersen, 2004, p. 120). My personal knowledge of form is here developed as a hermeneutic process within the process of making, as interaction between form, body and the clay and gradually interpreting the forms. Both reflection in action and retrospective reflection are used. The crucial point is to anchor personal insight (theōría) from the experience with the forms and forming processes with general information from research (theōresis) (Refsum, 2009; Jarvis, 1999). According to Nigel Cross (1982, p. 5), inherent in the designer is a particular designerly way of knowing the process and the products themselves. This article demonstrates a particular aesthetic way of knowing inherent in the forms and the body, released through the clay. As an experienced ceramicist, I possess a high skill level and substantial experience working with clay. It is important to emphasize that these reflections are inside perspectives, stored in the body-schemes as professional, embodied knowledge. This knowledge should not be confused with spontaneous feelings about form processes.

I offer a short description of how the five phenomenological concepts are incorporated into my reflections. The hands are the place where form as action is studied. The concept of the grip is problematized and gives concrete perspective to the concept of zero-point that shows interaction between form and body. The grip works as orientation in the form process. The perspective of material agency gives the concept of animated-organism a new dimension about how plasticity of clay triggers to movements. It is not conceptually controlled movement, but evolved from the rhythm of the making, as interaction between body and clay. Movements foster new movements, back and forth between the body and the clay. I understand ‘animated movement’ as a concept that frees us from the impulse or burden of controlling our actions. To take part in movement in actions, one has to go with the flow. Movement is important not only to dancers creating new forms of movement, but also to artists and designers experimenting with and exploring new forms. To understand three-dimensional form is largely to be aware of the activity in forms; for example, how interaction takes place between positive and negative forms. Understanding also is about sensing forces and directions in forms (Hannah, 2002). It is clear that this form of knowledge is based on earlier experiences stored in our body-schemes and developed as skills. From my experiences, a sensitivity is developed for form as curves, form-joints and the like, and this sensitivity remains in traces within the body. This sensitivity has given me a certain ‘Fingerspitzengefühl’, an ‘embodied judgement concerning material handling and manual execution’ (Tin, 2013). Together with here-and-now experiences, sensed with our living (Leib) and kinaesthetic bodies, this insight releases the interaction that makes it possible to go with the flow in the making. The understanding of forms evolves through and with the body. I have confidence in the making. I know both ‘how’ and ‘how to do’, and the movements in the making start before ‘knowing that’ (Jarvis, 1999). Rhythm and flow are vital for getting the design to work. It is like playing music; everything must be in tune with every single element and with the piece as a whole. The challenge in such repetitive work lies in the tuning and in improvising around the underlying rule (Refsum, 2006, p. 168).

Naturally, form analyses are dominated by visualized representations, meaning that only part of our perception is articulated. It is vital to gain access to haptic experiences from form processes in order to take advantage of embodied knowledge and understand the complexity of the three-dimensional form. The photos as visual mood and media are here crucial to communicate the haptic as well as visual dimension. Compared to other visualized methods for capturing knowledge and information about forms and embodied knowledge (for example using video, to record consecutively everything that can be observed through the video lens), the frame of the photo is more likely ‘to give space for contemplation for the reader, to go into the text with closed eyes’ (Barthes, 1980/2001, pp. 68-70). When artists and designers use their high professional skills in visualization, they have another platform for communicating tacit knowledge. Similar to those in other disciplines of practice-led research they achieve great, embodied understanding from how visual and haptic senses are interweaved in practice. What distinguishes them from others is that artists and designers have specialised visual knowledge and methods to articulate beyond what can be said by words. The increasing interest in practice-led research, of which the material-agency discourse is an important part, shows how different approaches and use of methods communicate tacit knowledge and materiality in new ways (Groth et al., 2015; Berg, 2014; Lee 2014; Nimkulrat, 2009). New methods and ways to communicate meaning developed within art and design-disciplines can be valuable to all kinds of research. Perception is also used as descriptive tool in other fields of study, to communicate and give access to a field of study, for example in social science (Bruke, 2008, pp. 112-114). The key to communicating the aesthetics of form knowledge is to articulate ways that open readers to their own experiences of having a body and to make sense of the aesthetics of form knowledge.

Understanding form from experience always is situated, but there is a deeper embodied knowledge that is general, more or less activated and developed. Therefore, it is of great importance to open up to experiencing forms through our sensing bodies. Material agency is discussed to demonstrate how humans think through a material and how the concept of an ‘acting ensemble’ removes the distinction between subject and object. From reflections and descriptions of form and form experiences, it is obvious that clay works as an agent in the form process and that forms take part in the active, moving body. This article demonstrates the complexity of, and ambivalence in, how I understand the forms. My experiences sometimes seem contradictory. For example, the description of gripping into the plastic clay when creating Hand-Sketches simultaneously describes opposite movements. In this example, positive and negative forms are experienced as each other’s equivalents. Similar descriptions are given of the convexity and concavity of Body-Shells. To articulate the complexity of this embodied knowledge, it is important to describe the many layers of information that can be perceived simultaneously when experiencing a three-dimensional form—figures 1 and 4, for instance, show a form seen and experienced from various perspectives. Not every angle is visually articulated, but it is important to simplify and remove details from the experience to make it clearer. It is the structure that is most important, rather than the amount of visual information (Tufté, 2003).

My here-and-now experiences are presented to invite others to open up their sensing bodies, to become more involved in the experiences of form and form processes in order to achieve a more aesthetic understanding of form. In the process of articulation, I have become more bodily aware and conscious about three-dimensional form, what is here and now. To communicate this awareness, the articulation must show how mind and body are interweaved and not separated. Thøgersen points out that reflection is meaningful because it is rooted in a pre-reflective experience, with the experience simultaneously becoming greater along with reflection about it. She refers to Merleau-Ponty when describing reflection as something that ‘sharpens the consciousness about being rooted in the current, [rather] than giving true answers’ (Thøgersen, 2004: 33). It is less important whether my experience is right or wrong; it is more important to understand form as embodied. Compared with a more instrumental, technical perspective, this outlook embraces art and design as aesthetic disciplines. To articulate experiences based on findings from form processes too strictly risks losing the connection to the aesthetic in experiences.

References

- Akner-Koler, C. (1994). *Three-dimensional visual analysis*. Stockholm: Department of Industrial Design, University College of Arts, Crafts and Design.
- Barthes, R. (1980/2001). *Det lyse rommet: tanker om fotografiet* [Camera Lucida: Reflections on photography] (Vol. 6). Trans. K. Stene-Johansen. Oslo: Pax.
- Berensohn, P. (1987). *Finding one's way with clay: creating pinched pottery and working with colored clays*. New York: Simon & Schuster.
- Berg, A. (2014). *Artistic research in public space: participation in material-based art* (Doctoral dissertation). Helsinki: Aalto University publication series, Doctoral Dissertations 33/2014. Retrieved April 2016 from <http://urn.fi/URN:ISBN:978-952-60-5602-9>
- Bolt, B. (2007). Material Thinking and Agency of Matter. *Studies in Material Thinking*, 1(1). Retrieved March 2016 from www.materialthinking.org.
- Bruke, P. (2008). *What is cultural history*. Cambridge: Polity.
- Cross, N. (2007). *Designerly ways of knowing*. Basel: Birkhäuser.
- Groth, C., Mäkelä, M., & Seitamaa-Hakkarainen, P. (2015). Tactile augmentation: a multimethod for capturing experiential knowledge. *Craft Research*, 6(1), 57-81.
- Hannah, G. G. (2002). *Elements of Design: Rowena Reed Kostellow and the structure of visual relationships*. New York: Princeton Architectural Press.
- Husserl, E. (1913/1998). *Ideas Pertaining to a pure phenomenology and to a phenomenological philosophy* (Vol. 3). Trans. R. Rojcewicz & A. Schuwer. Netherlands, Dordrecht: Kluwer Academic Publishers.
- Jarvis, P. (1999). *The Practitioner-Researcher: Developing Theory from Practice*. San Francisco: Jossey-Bass Publishers.
- Jönsson, L., & Eklund, P. (2009). *Eva Hild*. Stockholm: Carlsson Bokförlag AB.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*. New York: Basic Books.
- Latour, B. (2005). *Reassembling the social: an introduction to actor-network-theory*. Oxford: Oxford University Press.
- Lee, Y. (2014). *Seaming, Writing, and Making Strange: between material and text*. Paper presented at the The Art of Research V; Experience, Materiality, Articulation Conference, Helsinki: Aalto University, School of Arts, Design and Architecture. Retrieved March 2016 from http://designresearch.aalto.fi/events/aor2014/papers/Lee_Seaming.pdf
- Malafouris, L. (2008). At the Potter's Wheel: an argument for material agency. In C. Knappett & L. Malafouris (Eds.), *Material Agency Towards a Non-Anthropocentric Approach* (pp. 19-36). New York: Springer.
- Malafouris, L. (2013). *How things shape the mind. A theory of material engagement*. Cambridge, MA: MIT Press.
- Merleau-Ponty, M. (1945/2012). *Phenomenology of perception*. London: Routledge.
- Mäkelä, M. (2007). Knowing Through Making: The Role of the Artefact in Practice-led Research. *Knowledge, technology and policy*. 20(3), 157-163.
- Nimkulrat, N. (2009). *Paperness : expressive material in textile art from an artist's viewpoint*. (Doctoral dissertation). Helsinki: University of Art and Design. Aalto University publication series. Doctoral dissertations. Retrieved April 2016 from <http://urn.fi/URN:ISBN:978-952-60-3661-8>
- Øijord, A. (1994). *Se: persepsjon, erkjennelse og vitenskap i kunstfagene* [See: perception, recognition and science in the arts]. Vollen: Tell.
- Pallasmaa, J. (2009). *The thinking hand: existential and embodied wisdom in architecture*. Chichester: Wiley.
- Pink, S. (2011). Multimodality, multisensoriality and ethnographic knowing: social semiotics and the phenomenology of perception. *Qualitative Research* 11(1), 261–276. Retrieved April 2016 from <http://qrj.sagepub.com/content/11/3/261.full.pdf+html>
- Refsum, G. (2006). Å formgi en kant. Bidrag til utvikling av teori for tingmakere [To design an edge. Contributions to the development of theory for 'thing-makers']. In O. Eikeland & E. Askerøi (Eds.) *Som gjort, så sagt? : yrkeskunnskap og yrkeskompetanse* [As done so said?: Professional knowledge and vocational qualifications]. Lillestrøm: Oslo and Akershus University College of Applied Sciences.
- Refsum, G. (2007). *Personal theory Towards a model of knowledge development for design practioners*. Paper presented at the Nordes 2007, Design Inquiries, University of Arts, Crafts and Design Conference, Stockholm, Sweden, May 27, 2007–May 30, 2007 [PDF]. Retrieved March 2016 from <http://www.nordes.org/opi/index.php/n13/issue/view/8>
- Ruskin, J. (1849/2011). *The Seven Lamps of Architecture*. E-book, Project Gutenberg. Retrieved March 2016 from <http://www.gutenberg.org/files/35898/35898-h/35898-h.htm>
- Schön, D. A. (1995). *The reflective practitioner: how professionals think in action*. Aldershot: Arena.
- Sheets-Johnstone, M. (1999). *The primacy of movement*. Amsterdam: John Benjamins.
- Thøgersen, U. (2004). *Kropp og Fænomenologi, en introduktion til Maurice Merleau-Pontys filosofi* [The Body and Phenomenology, an introduction to the philosophy of Maurice Merleau-Ponty]. Copenhagen: Hans Reitzlers Forlag.
- Tin, M. B. (2010). *Tredimensjonale skulpturer i fire dimensjoner Husserls kinestoser og Calders kinetiske skulpturer* [Three-dimensional sculptures in four dimensions: Husserl's kinetic theses and Calder's kinetic sculptures]. *Agora* 03/2010, 116-139. Retrieved March 2016 from www.idunn.no/agora/2010/03
- Tin, M. B. (2013). Manifesto: Making and the sense it makes. *Studies in Material Thinking*, 09. Retrieved March 2016 from www.materialthinking.org
- Tufte, E. R. (2003). *Envisioning Information*. Cheshire, Connecticut: Graphics Press LLC.
- Zelanski, P., & Fisher, M. P. (1987). *Shaping space: the dynamics of three-dimensional design*. New York: Holt, Rinehart and Winston.

About the Author(s)

Astrid Heimer
Productdesign
Oslo and Akershus University
College for Applied Sciences
Oslo, Norway
astridmaria.heimer@hioa.no

Astrid Heimer is a ceramic artist and assistant professor at Productdesign, Oslo and Akershus University College of Applied Sciences in Norway. A cross-disciplinary background in art, craft and design has given her a wide perspective on perception in aesthetic practice. She is currently a PhD candidate at the University College of South East Norway—the topic of her research being embodied knowledge in three-dimensional form theory, with both the human body and the materiality of clay being given a significant role. In turn, this reflects a comeback for formgiving as a core-knowledge within the wider field of artistic research.