

Embodied Making

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Perception is often understood as an individual's mirroring of the objects in the world 'out there'. The influential ecological psychologist James Gibson (1904–1979) wanted to avoid such a division between subject and object. He developed a new account of the perception of the environment that breaks with the idea of static mirroring and rather makes activity central. According to Gibson, daily life entails moving around, engaging with and enacting the 'action possibilities' of the environment, which he calls *affordances*.¹ Affordances are possibilities for action offered by the environment – an environment which, in the case of humans, is to a large extent *man-made*. The action possibilities people have, do not only depend on the way our environment has been formed materially by earlier activities, but also on people's *abilities* and thus on the patterns of activity that have been cultivated by socio-cultural practices.² The affordance of sitting on a wooden chair created by a carpenter, for instance, exists only against a wider background of socio-cultural practices of sitting on chairs, rather than say sitting on the floor or perhaps living in a non-sedentary way altogether.³

Making can transform the meaning of materials. Once the carpenter has transformed a heap of wood into a chair, this new constellation of wood can be experienced by a person as offering an attractive possibility to sit. Integrating the concept of affordances, the increasingly influential paradigm of embodied/enactive cognition has changed the way science understands the relationship between people and their social and material surroundings (Chemero 2009; Di Paolo *et al.* 2010; Thompson 2007; Rietveld 2008a; Noë 2012; Malafouris 2013; Varela *et al.* 1991; Dreyfus 1972). Embodied/enactive cognition takes seriously the fact that people come to acquire skills and abilities by actively engaging in socio-cultural practices. Such embodied skills in turn structure the way they engage with or 'enact' the *action possibilities* offered by the socio-material environment.

The implications of this new paradigm in cognitive science for making meaningful art and architecture are under-explored. In this chapter, we will show how it can offer a *philosophical framework* for understanding the process of making that takes affordances as well as the embodiment and experience of

skilled makers seriously. This means that this chapter zooms out from (material) mimesis to get a somewhat more general phenomenon in view, namely the skilled embodied engagement of makers with materials. We are aware that in what follows the philosophical background necessary for this may sound quite abstract to non-philosophers, but the advantage of developing this conceptual framework is that we can connect insights on material engagement with the state-of-the-art in the philosophy of embodied cognitive science. Below we will make the abstract concrete by means of examples of skilled material engagement from an actual practice of making.

1 Selectivity in Making

In her work on material engagement, Ann-Sophie Lehmann (2015) has suggested that the material turn in art history 'is still in need of a coherent theoretical framework in order to analyse how concrete materials and techniques make and achieve meaning'. In our attempts to do justice to the contributions of materials, we should not forget the situatedness of the maker in socio-cultural practices if we want to understand both the 'why' and the 'how' of material engagement (see also Smith 2004, 240). One way to improve our insight in material engagement is by focusing on the skilled maker's *selectivity* in dealing with materials. In earlier work (Rietveld & Brouwers 2016; Rietveld 2012a, Rietveld 2008) we have shown that the relation between skilled makers their materials can be characterised as skilled intentionality and can be understood in terms of selective engagement with 'affordances'. (See Figure 16.1 and Text box) More precisely, skilled intentionality is defined as coordinating with several affordances simultaneously (Bruineberg & Rietveld 2014).

To illustrate concretely the potential of the concept of skilled intentionality for understanding embodied making, we will discuss several aspects of skilled material engagement at RAAAF (Rietveld Architecture–Art–Affordances). RAAAF is a multidisciplinary studio working at the intersection between visual art, architecture, and philosophy. It was founded by the architect Ronald Rietveld and philosopher Erik Rietveld, the two partners leading the practice. What interests the makers at RAAAF, to use the words of the late Lebbeus Woods (1940–2012), is 'what the world would be like if we were free from conventional limits [...] what could happen if we lived by a different set of rules'.⁴ Showing these visions is the aim of each of RAAAF's art installations and interventions.⁵

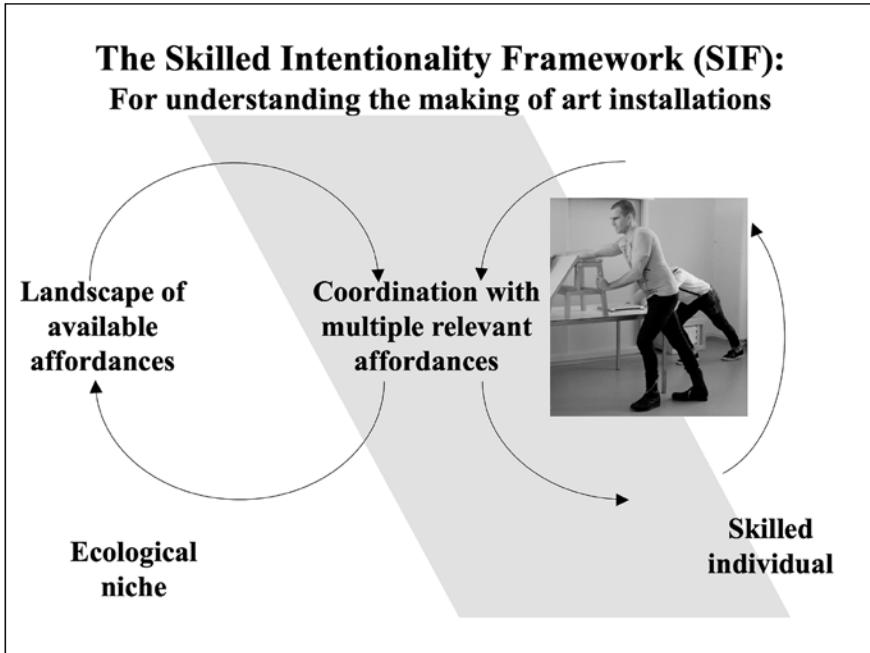


FIGURE 16.1 *The Skilled Intentionality Framework (SIF)*, adapted from Bruineberg & Rietveld (2014, fig. 1)

PHOTO: BARBARA VISSER

2 Affordances and the Skilled Intentionality Framework

Via the notion of *affordances* (Gibson 1979), Lambros Malafouris's (2014, 2013) work on creativity in material engagement (e.g. in making pottery) may be linked to work on embodied/enactive cognitive science (Rietveld *et al.* 2017). He notes that 'to understand the dynamics of making, we need to rethink what happens in the brain when people are acting creatively in terms of the radical embodied cognitive science that aims to integrate *the whole system "brain – body – landscape of affordances"* (Bruineberg & Rietveld 2014; Rietveld & Kiverstein 2014)' (Malafouris 2014, 147, my italics). Once we understand concrete situations of material engagement as a kind of skilled action (Rietveld 2008), this opens up the perspective of using a proven conceptual framework from the philosophy of embodied/enactive cognitive science: The Skilled Intentionality Framework

(henceforth SIF) (fig. 16.1; Rietveld *et al.* 2018). The SIF opens up a new perspective on all kinds of cognition (broadly understood, so including creativity, making and reflecting) by making the individual's (self-organised) engagement with affordances central. Using this, we can understand the selectivity of material engagement theoretically as an aspect of *skilled intentionality* (Rietveld & Kiverstein 2014; Bruineberg & Rietveld 2014, fig. 1; Rietveld & Brouwers 2016; Rietveld *et al.* 2018; Malafouris 2014). Skilled Intentionality is coordination with several affordances simultaneously. In practice, a situated and embodied maker responds in an integrated way to various affordances. The SIF provides a very simple yet elegant understanding of situational context as the multiple relevant affordances that are in play, and of context-sensitivity as selective openness to a multiplicity of relevant affordances simultaneously. So, in the SIF, context turns out to be 'just more affordances' (Rietveld 2012a).

This does not mean that 'affordances' is just another term for 'context'. Whereas context is broadly understood as the 'external circumstances' – in a social, cultural, economic, physical, historical, environmental, or any other sense – for someone or something, affordances are a primarily *relational* concept. We have defined them precisely as relations between aspects of the socio-material environment and abilities available in an ecological niche. So the available affordances for humans are dependent on both the environment *and* many abilities available, which enriches the concept (Rietveld & Kiverstein 2014). Any given person is necessarily only open to a small number of all the affordances that are available in the rich landscape of affordances, a phenomenon that we have called *selective openness* to relevant affordances (Rietveld 2012a; Bruineberg & Rietveld 2014). Selective openness to affordances is dependent on the individual's exercise of abilities and skills (for engaging with or 'enacting' these affordances), and thus limited, fragile and fallible. The relevant 'context' for a particular individual in a particular situation we call the dynamically changing *field of relevant affordances*.

Humans and non-human animals alike restructure their shared material environment to create ecological niches, which in turn shape the affordances and behaviour of the other animals in these niches. Architects are niche creators by profession; what they build tends to contribute for long periods of time (typically decades) to the structure of the human ecological niche.

3 Skilled Intentionality and Creativity in Making

Before we turn to the practice of making, first a few words on (skilled) intentionality to avoid misunderstanding. For philosophers, intentionality is the technical term characterising the *relation* between person and world. However for art historians, as Kitty Zijlmans (2018, chap. 4) notes, intentionality is a word that easily creates the wrong associations, since the meaning of artworks has often been reduced in the past to the artist's intention as reconstructed, for example, from what the artist has said about the work and/or their biography. This conflicts with a relational approach to the meaning of artworks that allows for a given work of art to possess a multiplicity of meanings, depending on observers and their particular situation. In SIF, the meaning of the world for the person is also understood relationally and seen as having multiple sources, because the *relevance* of affordances to which the individual is selectively open can be influenced by:

- bodily processes that might make certain aspects of the environment relevant (think for example of how hunger can make food attractive);
- other things the person cares about; and
- the person's abilities, acquired through sociocultural practices.

Relevant affordances are lived as invitations to act; their significance has an affective dimension. Sociocultural practices are a source of meaning because in practice we develop our abilities, and learn to distinguish better from worse in a way that takes the point of the given practice seriously (Rietveld 2008). For example, in current academic practice, publishing is valued more than study solely for the sake of the acquisition of personal knowledge.

Another traditional reason why historians interested in the history of materials and techniques might be suspicious of intentionality has to do with the mind's intentions being presupposed as the source of creativity. The intention in the head of the artist-maker is then seen as the source of creativity, which instructs the artist's ("mechanical") body to shape materials in a novel way according to this prior creative idea (Ingold 2013).⁶ As Withagen & Van der Kamp (2018) have noted, the artwork is then supposedly finished when the material form matches the prior intention. Interestingly, we encounter a philosophical notion of mimesis here: the resulting materialised artwork "mirrors" the prior intention of the artist. Withagen & Van der Kamp describe how popular this problematic idea still is in current mainstream (i.e., cognitivist and intellectualistic) work on creativity:

Although cognitive theories of creativity can be rather diverse, they share, arguably by definition, the assumption that creativity resides in the mental realm – the formation of novel ideas occurs in the head. And when the idea concerns a novel object or product, the idea can (or cannot) be materialized through a process of making, but this latter process is not considered to be constitutive of the creativity. Indeed, the idea emerged prior to the construction of the product, the latter being a mere materialization of the mental idea.⁷

This mainstream cognitivist perspective has rightly been criticised by others as well, such as Tim Ingold (2013) and Lambros Malafouris (2014). For readers with a justified suspicion of the terms ‘intentions’ and ‘intentionality’, we want to make explicit that not all forms of intentionality embrace or presuppose a notion of (mental or prior) intentions. The notion of intentionality that we build upon in this paper does not depend on such ‘intentions’ or ‘ideas’, but rather develops a relational, wholly dynamic and material notion of intentionality: skilled intentionality.

As we have argued elsewhere, the fact that makers often “represent” a design by means of drawings and other visualisations should be understood as part and parcel of the process of making, rather than *preceding* its execution:

Trying to express the “image”, by drawing on a piece of paper, by writing or sketching, contributes to the process [of making], which is determined further yet again. Thus, these explicating activities, themselves invited by the pieces of paper and people encountered in the unfolding process, are not merely about the process, but they are *of* the process – enabling it to continue by contributing new affordances ready to be enacted [...].⁸

In skilled intentionality, the maker “joins forces” with affordances in flux which are offered by the sociomaterial environment (Ingold 2013, Van Dijk & Rietveld 2018). So skilled intentionality (and creativity and material engagement as particular kinds of skilled intentionality) is not something pre-planned or in the head, but evolves in the agent-environment system as a whole during the *process of making*.

4 Aspects of Embodied Making at RAAAF

Starting from skilled intentionality in concrete situations of skilled material engagement at RAAAF will help us to avoid creating a new dichotomy between

form and material in practices of making. Ethnography conducted at RAAAF (Rietveld & Brouwers 2016; Van Dijk & Rietveld 2018; Bruineberg *et al.* 2018) clearly shows that both matter in the actual process of skilled creation.

Affordance-based

RAAAF actively *experiments* by making material models and mock-ups scaled to the body, in order to explore the affordances of their art installations under construction freely, and to foreground unorthodox action possibilities.⁹ The work of RAAAF is centred around engagement with affordances. In 2010, RAAAF's founding partners were responsible for *Vacant NL*, the Dutch contribution to the Venice Architecture Biennale. The art installation called attention to the enormous potential of temporarily reusing the 10,000 public and government buildings standing vacant in The Netherlands.

Traditionally, affordances are understood as possibilities for motor behaviours like grasping something or sitting on a chair. Our enriched concept of affordances starts from a much larger set of skills than motor skills, because people have developed many different *abilities* (e.g. for surgery, for cooking, for imagination, for language use, for long-term planning, for reflection, for learning about cultural history, for social interaction, etc.) in many different practices (Rietveld & Kiverstein 2014). Moreover, it takes seriously the enormous variety people encounter in their (socio)material environment: a savannah, a study room, or a back alley in a large city, to name just some random examples, all have wildly different *aspects* particular to those surroundings. Given this variety of abilities and environmental aspects, it follows from our definition of affordances (see Section 2) that the variety of affordances available in the human ecological niche is staggering, forming an incredibly rich "landscape of affordances" (Rietveld & Kiverstein 2014; Van Dijk & Rietveld 2017 and 2018; Bruineberg *et al.* 2018). Crucially, artistic makers have the ability to create new affordances by transforming the local sociomaterial environments in which people are situated (Van Dijk & Rietveld 2017; Rietveld & Kiverstein 2014, 2022). Above, the importance of understanding the selectivity in material engagement was mentioned. The person's selective openness makes certain affordances stand out as relevant and affectively solicit action, thereby rendering them especially inviting to the particular individual according to their current needs or concerns (Rietveld 2008; Rietveld & Kiverstein 2014; Dreyfus & Kelly 2007; Withagen *et al.* 2012). People's *experience* of their situations thus always already has an affective dimension, related to the *multiple* relevant affordances they care about in their situation. Architects and other artists can disclose qualities that are already present in the world and open these up to people. These qualities can be present, for example, in the



FIGURE 16.2 RAAAF, *Vacant NL*, 2010. Dutch contribution to the Venice Architecture Biennale 2010

PHOTO: ROB 'T HART

(built) environment, in ‘underground’ or remote socio-cultural practices, or in largely forgotten historic practices. At the Venice Biennale 2010, RAAAF’s *Vacant NL* exhibition (fig. 16.2) had the aim of increasing temporary access to 10,000 unused (vacant) public and government buildings. This art installation disclosed the potential of vacant buildings, and the blue foam from which it was made highlighted an experiential quality of the Dutch pavilion designed by Gerrit Rietveld in Venice: its beautiful light. The exhibition is also an example of how RAAAF does not work against the dynamics of the world, but rather joins forces with these dynamics. In the Venice case, this joining of forces was understood as opening up possibilities for physically accessing and “surfing” the existing “sea of vacancy”, by calling on the government to allow temporary reuse of their empty buildings (Rietveld *et al.* 2014).

More generally, RAAAF’s experimental explorations of the world of affordances translate its philosophical worldview into art installations, and these artworks in turn inspire the reflections of visitors. The makers’ experiments explore the potential of sometimes surprising possibilities for action (Rietveld & Brouwers 2016; Van Dijk & Rietveld 2018). An example of this is the



FIGURE 16.3 RAAAF | Barbara Visser, *The end of sitting*, 2014
PHOTO: RICKY RIJKENBERG

installation *The end of sitting* by RAAAF | Barbara Visser (figs. 16.3, 16.4). This installation presented a vision for the office landscape of the future, of 2025. This is a world without chairs or tables, in which many different affordances for supported standing and leaning were incorporated. It invited people to move around more and explore a variety of healthier working positions (Rietveld *et al.* 2015; Rietveld 2016). It also made people aware of their taken-for-granted sitting habits, and invited reflection on how the material environment could help them to break these.

The Role of the Body

The body is a multifaceted aspect of the world: it is skilful yet limited, a locus of lived experience, a physical body of flesh and blood with a certain size and age, a body marked by certain abilities (including language and imagination) and inabilities, an encultured and gendered body. Embodied individuals are characterised by variety and diversity in all these dimensions (Mol 2002). RAAAF's approach to making art installations starts by taking seriously the diversity of what bodies can do and experience. It strives to offer a wide variety of affordances that do not merely cater for a stereotypical "human" or "user",

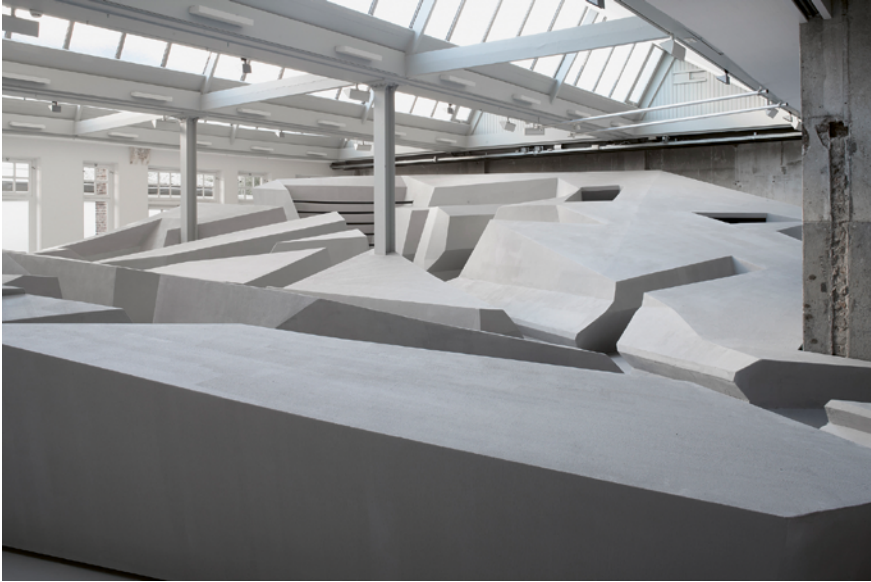


FIGURE 16.4 RAAAF | Barbara Visser, *The end of sitting*, 2014
PHOTO: JAN KEMPENAEERS

but rather create a landscape of possibilities for a multiplicity of bodies with a wide range of abilities.

One central ability people have is that of *experiencing* the world, the self and others. In the process of making, it is crucial to anticipate how different people might experience the site-specific installation, and might be invited to experience various “layers” of the intervention over time. *The end of sitting* (figs. 16.3, 16.4) materialises a philosophical worldview: the idea that people are *embodied minds situated in a landscape of affordances* (Rietveld 2016). This vision of the office of 2025 makes people aware of the way their bodies normally take certain environmental regularities for granted. By radically doing away with all chairs, it also creates a lack of grip and related experienced tension (discussed in more detail below, in the section *Tendency towards grip*) that motivates self-reflection and discussion. For example, the installation’s peculiar tilted floor, optimised not for walking but for foot support while standing, has a perturbing effect on embodied experience, and foregrounds the way the environment normally supports the body by means of horizontal floors and chairs (Novak 2010; Van Oosterwyck 2018). The installation allows people actively to *explore* alternatives to the physical supports they normally take for granted. The supported standing positions offered by the installation are meant to be only *temporarily comfortable*, in order to increase the likelihood

that people will move around and explore other possibilities. The material structure of *The end of sitting* (which rises from a relatively low height at one end to a 2.5 metre-high enclosure on the other) can match a variety of different body lengths, and invites people to use existing bodily abilities for standing, leaning and reclining in a context of work where these abilities are normally not used, because office workers spend most of their working lives seated.

Embodied cognition emphasises the importance of skills, situatedness, and lived experience for making in practice. Makers are always engaging with their situation on the basis of skills they have acquired by engaging in activities in sociocultural practices, such as the practice of visual art or the practice of architecture. By means of a history of interactions with the given practice, the maker's body has been transformed. According to embodied cognitive science (Thompson 2007), makers do not need to mirror or represent the world in their head, because they are situated in the world itself. Over time, activities by other people and ourselves have transformed these environments in which we are situated into places that provide most of the things we care about. What the embodied individual cares about in a given situation determines to a large extent which action possibilities show up as inviting or soliciting to him or her (see Section 2). Care shapes selective openness and makes an important difference in how situations are lived. The body of the maker is not just a system of possible actions, but a *concernful* system of possible actions.¹⁰

In the practice of making *The end of sitting*, the makers at RAAAF use their own body continuously to *feel* whether the structures they are designing can work as affordances for supported standing (fig. 16.5). One of the best ways to appreciate in a bodily sense (or 'through the body') what they are about to build is by working with adjustable mock-ups the same size as the body itself, i.e. on a scale of 1:1. Often these are made of wood, because the skilled carpenter would be able to make immediate adjustments on the spot, like a tailor, on the basis of feedback received, but working with wood around the feeling bodies of the architects. At many moments in the process, such bodily experiences were used to give direction to – i.e., constrain – the process of improvement of the installation, and they thus contributed to improving the artists' and architects' grip on the design.

Interestingly, these materialised mock-ups literally provided a common ground for the collaborative making by the different specialists involved. Experiencing supported standing in such a wooden mock-up together allowed them to discuss how this felt, and – using the affordances offered by language – share in an explicit way what potential problems might occur once the mock-up was integrated in the large installation (e.g., whether people would be able to step inside, whether they would be able to pass other people also within it, whether



FIGURE 16.5
RAAAF, Mock-up used for
experimentation in the
process of making *The end of
sitting* (figs. 16.3–16.4)
PHOTO: MAARTEN COOLS

elderly people would be able to access it, etc.). The test models were also used to seek feedback from external specialists with different backgrounds (e.g. experts in interior architecture).

Situatedness and Sensitivity to Context

Cognition and action are not free-flowing or unconstrained, but situated: an individual is situated in a certain way at a certain place, in the wider socio-material environment, and within a certain ecological niche. Affordances are aspects of this niche. Moreover, affordances are typically “nested”. A building, for example, offers certain possibilities for action as a place (e.g. in its function as a restaurant or library), but within this building many other affordances are nested (e.g. of floors, rooms, daylight, chairs, books, coffee, etc.).

Behaviour and cognition of humans and other animals should be understood as an aspect of an integrated individual-environment system, or better still, using the phrase introduced above, as a *complex system ‘brain-body-landscape of affordances’* (Rietveld *et al.* 2018; Bruineberg & Rietveld 2014; Malafouris

2014). Cognition is not something that takes place purely in our heads, but is rather an aspect of this complex dynamical system. Both behaviour and cognition are therefore inherently context-sensitive. Cognition – and action more generally – are made possible and supported by the affordances available in a certain form of life.

An example of a context-sensitive approach to material interventions is the employment of the possibilities offered by cultural heritage, not only to preserve objects, but also to invite people to disclose histories relating to specific objects and places (including the more troublesome histories of cultural heritage, such as those related to the slave trade, Nazi structures like the Atlantic Wall, vacant nuclear power plants, apartheid, weapon industry, etc.) Precisely chosen interventions (Rietveld *et al.* 2014, chap. 3) can invite people to experience cultural heritage that might otherwise be taken for granted and go unnoticed, by presenting these objects in a certain artful manner. RAAAF's Hardcore Heritage approach does exactly that by means of so-called built manifestos; it makes heritage something that people can experience, and that triggers the imagination. Examples of this include RAAAF projects such as *Bunker 599* and *Deltawerk //*.

It takes one month to cut through meters of reinforced concrete. Bunkers are a synonym for indestructability. *Bunker 599* (fig. 16.6) affords surprise, satisfying one's curiosity and experiencing the cramped insides of normally inaccessible bunkers (by walking through one). It also draws attention to the historical defense mechanism of inundation (by adding water behind it and allowing people to walk over shallow water).¹¹ Taken together, these aspects allow people to experience the intervention's context – the history of the New Dutch Waterline and the Second World War – in a unique way. *Bunker 599* affords thinking with the installation, imagining, and a sense of contact with history, thereby ensuring that people won't forget. Note that it is thanks to our rich notion of affordances (see Section 2) that we can say that the artwork affords, for example, engaging in reflection on the history of the New Dutch Waterline and World War II.

Monuments are typically regarded as immutable and untouchable, but as a result they sometimes fade from public imagination and memory (Rietveld & Rietveld 2017). In these cases, merely preserving works does not create sufficient engagement, which will in the end undermine their meaning. It is through deliberate destruction, radical changes in context, and seemingly contradictory additions that a new field of tension between present, past and future can then be realised, as *Bunker 599* shows.



FIGURE 16.6 RAAAF | Atelier de Lyon, *Bunker 599*, 2013
PHOTO: ALLARD BOVENBERG

Anticipation

In embodied making ‘action’ should be understood in a very broad sense: moving, reflecting, perceiving, imagining, and using language, are all forms of action. Crucially, we act by being responsive to relevant possibilities for action (i.e., affordances) offered by the situation, which can include possibilities for imagining, for thinking, for self-reflection, for perceiving, for feeling, for talking, for changing the environment, etc. (Rietveld *et al.* 2018). One single art installation can offer multiple affordances, and thus generate multiple anticipatory states of readiness for doing things. It is this multiplicity of states of action-readiness that contributes to the richness or depth of a person’s experience of a strategic intervention. The cut-through *Bunker 599* (fig. 16.6) for example, can, at one and the same time, give a visitor a sense of awe, invite tactile responses to its materiality, afford insight into various similar bunkers as well as Dutch military history at large, and make them become aware of the landscape surrounding the object, all through just one precise and carefully executed intervention.

Being skilled in a certain practice (for example the practice of architecture), allows a maker to *anticipate* the unfolding process of making on multiple timescales, including relatively long ones. In the case of the eight-month-long

process of realising the art installation *Breaking habits* (fig. 16.8) (Van Dijk & Rietveld 2018), as soon as RAAAF's chief architect was asked if he could make an art installation based on an earlier work in the waiting room of the Dutch Mondriaan Fund for Visual Art, he immediately responded to this action possibility affirmatively. Embracing that large-scale action possibility makes smaller scale affordances become inviting (e.g., possibilities for selecting the right location, finding the right materials, etc.). Engaging with these smaller-scale affordances, on the other hand, concretises the larger-scale affordances of making the art installation over time. In this unfolding process, affordances invite skilled participants at RAAAF to act further. Affordances that matter more to the artists will invite engagement and thereby the continuation of certain courses of further action, and affordances that mean less to them may become ignored. Via these invitations, one situation develops into another. In the process, affordances thus *set up the conditions for their own continuation* by inviting participation. Situated anticipation, at any temporal scale, is then part and parcel of keeping attuned to the movement of the different unfolding affordances to which the maker contributes, by sensing how engaging with one affordance also enacts the others, and vice versa (Van Dijk & Rietveld 2018).

The Tendency Towards Grip

The way in which the process of making unfolds, from the affective point of view of the architects, can be understood as a *tendency towards an optimal grip* on the situation. Ethnographic studies into the practice of making at RAAAF (Rietveld & Brouwers 2016) have shown how a tendency towards grip plays a role in many concrete episodes of material engagement. During the design of the moving sculpture *Secret operation 610* (fig. 16.7) for the former Soesterberg air base, two collaborating architects at RAAAF were under pressure to finalise a design element for which several options were available. Experiencing discontent (or its inverse, satisfaction), they experimented on how to advance the design by exploring multiple ways in which the sculpture's wheel could be made. In order to get more grip on the situation, they took a multiplicity of perspectives on what they would actually be making if they were to build it by making many different kinds of visualisations: sketches, cardboard models, drawings, 3D computer drawings, collages, etc.

In an anticipatory sense, the possibilities for action introduced by visualisations were also appreciated in the context of the future real-world settings: how press photographers, researchers working in the object, or people moving around the airbase and observing it would engage with the mobile sculpture. The artists achieved harmony with the situation when, considered from the



FIGURE 16.7 RAAAF | Studio Frank Havermans, *Secret operation 610*, 2013
PHOTO: RAYMOND RUTTING

multiplicity of perspectives they cared about, the design of a given aspect, such as a wheel, was collectively experienced by them as “right” in its context: a kind of satisfactory grip achieved by materially exploring future possible scenarios through experimenting with possibly relevant affordances. The architects moved towards an optimal grip on their design step by step (Rietveld & Brouwers 2016, 557). For dealing with interventions situated in complex real-life settings, this method of iterative improvement by tinkering with various aspects is a typical way of dealing with complexity (*cf.* Knorr 1979).

More generally, the kind of tension experienced when a person’s grip is insufficient can be understood as a sub-optimality in the ‘person-landscape of affordances’ relation. In various ways, the affective tension that fuels a self-organising tendency towards grip is also encountered in complex processes of making. A disattunement in the relation between individual and world – i.e. a situation of insufficient grip – can be affectively perturbing and, crucially, make one *selectively open* to affordances that can reduce such a disequilibrium. The phenomenon and concept of the tendency towards improved grip allows us to avoid presupposing an ‘idea’ or ‘intention’ or ‘goal’ in advance of the process of making. It emphasises how skilled intentionality is about self-organised responsiveness to multiple relevant affordances.

Strategic Interventions

When engaging urgent and complex societal issues such as climate change, flood risks, public health, or social cohesion, RAAAF strives for *strategic interventions*: precisely chosen and well-crafted interventions that can set developments

that the architects desire in motion. (Rietveld *et al.* 2014, chap. 3). They give the architects a grip on the world's complexity. Strategic interventions start from the makers' own concerns and fascinations to inspire others and contribute to realising effective change in a world of complexity. By inviting participation, they set up conditions for their own continuation (Van Dijk & Rietveld 2018). The *Vacant NL* contribution to the Venice Biennale, for example, set a desired development in motion: it made people aware of the enormous amount and potential of vacant cultural heritage in The Netherlands. Within a few years after RAAAF first raised this issue in Venice, it had become a top priority of the Chief Government Architect of The Netherlands, who invited RAAAF to visualise potential imaginative ways of dealing with vacancy.

When planning strategic interventions, it is helpful to distinguish between phenomena at different spatial and temporal scales. On the largest scale of an animal's existence we find its ecological niche. The human ecological niche consists of many different sociomaterial practices. When we zoom in on these practices, we find individuals engaged in situations in a given practice (Van Dijk & Rietveld 2017). Similarly, we can distinguish between the landscape of affordances that we find on the scale of the ecological niche of a kind of animal, and the engagement with a field of relevant affordances on the scale of a single individual. This means that the maker should be aware of the fact that an intervention can correspondingly be analyzed on different scales: on the local scale one can focus on the details of the work, or on its relation to buildings around it, but an intervention might also have meaning on a regional or national scale.

The aforementioned *Bunker 599*, for example, can be seen, entered and touched, but it also makes a statement about the larger New Dutch Waterline (which, at 80 kilometres long, is on a regional scale). The national and worldwide meanings of *Bunker 599* have to do with the way it provokes national and UNESCO policies on monuments, which, unlike *Bunker 599*, tend to focus purely on preservation, rather than imagination and meaning as experienced by people. Art, architecture and other kinds of making can focus on transforming a local environment, but they can also try to be an exemplar for changing an entire practice (like *The end of sitting*, which tries to change the practice of sitting to one of supported standing). In the process of making it is always important to reflect on the way different scales are connected, and the meanings an intervention has on different scales (as we saw in the case of the processes of making *Breaking habits* and *Secret operation* above).

By means of imaginative exploration in the process of material engagement, one can radically innovate, and stretch the borders of an entire field like (interior) architecture, installation art, or cultural heritage preservation. In making something, experimentation and skill are key to achieving a strategic

intervention. Skill-based intuition overcomes the limitations of propositional deliberation in the process of making, because the skills of the maker can be simultaneously responsive to a multiplicity of affordances (including those on different spatial and temporal scales) so that the maker is moved to improve by the solicitations of the material/work under construction. Still, reflection is crucial along the way to explore different perspectives and open up to hitherto neglected affordances.

The makers at RAAAF refrain from pre-programming or prescribing specific forms of use. By creating installations that offer a large variety of affordances they strive to leave room for spontaneous and playful ways of acting (Rietveld & Rietveld 2011; Rietveld, 2016). Not only does this approach to making try to do justice to the immense heterogeneity of the social world by leaving space for spontaneity and improvisation, it also effectively employs the insight that the rich landscape of affordances itself is a place of variety that offers many different affordances to many different individuals.

5 Mimesis in Context

The tendency towards grip on several affordances simultaneously provides a general characterisation of the skilled intentionality of all kinds of making, including material mimesis, but importantly it also encompasses other types of mimesis, material engagement in craftsmanship, and skilled activity more generally. As we have seen above, when things are not going well, a skilled maker will experience disattunement and develop a selective openness to possibilities that might improve the situation. At RAAAF there was a sequence of mimesis of supporting standing in the process of creating *Breaking habits* (fig. 16.8). Whereas *The end of sitting* was created in wood, its follow-up *Breaking habits* was made to support standing by means of similar positions created with carpet. However, the aim was not so much to imitate the earlier positions but to *improve* the overall art installation in some dimension (the flexibility of carpet allows the material to move more with the different bodies standing in it) and in a different context: whereas *The end of sitting* was a vision of the office of 2025, *Breaking habits* was a vision of the living room of the future.

In the case of the carpet in *Breaking habits*, some of the qualities of the particular carpet used were valued by the makers (its softness to the touch, its “homely” feel, its cleanability, the fact that it showed marks of movement, its adaptation to the shape of the body), whereas other aspects of it (its tendency to tear easily, the way it folded) were less appreciated, and had to be adapted.

Earlier tests had shown that the carpet could tear if too many people were straining it without spreading the stress over larger surfaces. A first solution was to make the most successful positions for supported standing – built in wood in the earlier *The end of sitting* – in a material that had the required strength: black rubber. The carpet would then be glued onto a basic rubber structure to give it the living-room feel that the makers appreciated in the carpet. However, this solution had some disadvantages. Rubber is quite an expensive and heavy material, and more importantly, the smell of rubber, though liked by the artists, interfered with their concept of the ‘living room of the future’, which can be understood as a constraint on this process of making. In the end, after testing different options, the artists were attracted by the possibilities offered by another material: the required structural integrity was attained by a combination of lining the carpet with dense felt (which looks just like the reverse side of the carpet itself), and installing metal bars and thin steel cables that together ensured that, as far as possible, the stress was spread over the width of the carpet.

As we have explained above, a maker’s skilled practice – including practices of material mimesis – should always be understood as situated. This means that what he or she cares about might sometimes happen to be improved by material mimesis, but is also dependent on many other factors such as socio cultural practices and physical constraints. From *Breaking habits*, for example, it becomes clear that the material that might be seen as mimetic (the felt looking like the reverse side of the carpet) can only be understood in the wider context of the relative unfamiliarity of people with the reverse sides of carpet, and the way the artists expect that people will engage with it. Had people been more familiar with the reverse side of carpets (which typically are not made of felt), then they would have noticed the “unexpected” felt-like properties of *Breaking habit’s* carpet, which would likely have changed their engagement with the installation (e.g. drawn their attention to the process of making, distracting them from reflections on the challenge of transforming the sitting society). The artists’ anticipations in turn are partly based on their earlier experiences with the wooden construction, but also by the wider materiality of the installation as a whole (thin steel cables, stainless steel rods, and an additional wooden floor that allows the carpet and cables to be secured to it), the site where it was to be installed and situated, as well as, crucially, the makers’ own fascinations and aesthetic preferences. We see them tending towards a grip *on the situation as a whole*, which goes much further than just imitating some material.



FIGURE 16.8 RAAAF, *Breaking habits*, 2017. A site-specific artwork commissioned by the Mondriaan Fund for Visual Arts
PHOTO: JOHANNES SCHWARZ

6 Conclusion

This account of Embodied Making allows one to move from a conceptual framework that sees the created work of art as imitating some intention in the head of the artist, to a situated perspective on the process of making artworks in which coordination with the affordances offered by the socio-material environment is central. Affordances are the possibilities for action provided to us by the environment (Gibson 1979). The selectivity that is characteristic for material engagement, including the realisation of mimesis, can be understood as a selective openness to the relevant affordances for the maker. Recent work on creativity and material engagement (Malafouris 2014; Lehmann 2014) can, via the notion of affordances, be linked to state-of-the-art work in ecological psychology and embodied/enactive cognitive science.

The intentionality of skilled makers – skilled intentionality – can be understood in terms of engagement with several affordances simultaneously. If we understand concrete situations of material engagement as a kind of skilled action (Rietveld 2008), this opens up the perspective of using a proven conceptual framework from the philosophy of embodied/enactive cognitive science:

the Skilled Intentionality Framework (SIF). Using SIF, we can understand the intentionality of material engagement, including material mimesis, theoretically as a form of skilled intentionality. The concept of skilled intentionality helps us to move beyond the problematic divisions between mind and matter, individual and social, because skilled intentionality is always situated in (and attuned to) sociomaterial practice. In skilled intentionality, the maker 'joins forces' (Ingold 2013) with the affordances in flux offered by the sociomaterial environment (Van Dijk & Rietveld 2018). So skilled intentionality (and creativity as a particular kind of skilled intentionality) is not something pre-planned or in the head, but evolves in the agent-environment system as a whole during the process of making.

Any given person is necessarily only open to a small number of all the affordances that are available in this rich landscape, a phenomenon that we have called *selective openness* (Rietveld 2012a; Bruineberg & Rietveld 2014). Selective openness to these affordances is dependent on what the maker cares about and the exercise of abilities, habits and skills. More and more work within radical embodied cognitive (neuro)science emphasises the fact that bodies are anticipating, i.e., continuously preparing themselves for what is relevant next: for multiple action possibilities (Bruineberg & Rietveld 2014; Van Dijk &



FIGURE 16.9 RAAAF, *Pretty vacant*, 2013, A vertical equivalent of the Dutch contribution to the Venice Architecture Biennale 2010 (fig. 16.2), a site-specific artwork commissioned by the Centraal Museum, Utrecht
PHOTO: ROB 'T HART

Rietveld 2018; Rietveld *et al.* 2018). Being skilled in a certain practice of making can allow one to *anticipate* the unfolding process of making on longer timescales of many months.

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Endnotes

- 1 Gibson 1979; Rietveld & Kiverstein 2014.
- 2 Abilities are the capabilities that allow one to get a grip on one's situation (*cf.* Noë 2012), or in the words of Tim Ingold (2011, 5), 'the capabilities of action and perception of the whole organic being (indissolubly mind and body) situated in a richly structured environment'.

- 3 There is a reciprocal relationship between affordances and sociocultural practices. On
the one hand, affordances enable and constrain the patterns of behavior that make up
practices, but, on the other, the abilities on which affordances depend are maintained,
formed and transformed by the activities of people who make up sociocultural practices.
4 Quoted in Ourousof 2008.
- 5 There is a tradition in design theory (e.g. Norman 1988) that emphasises the importance
of creating unambiguous affordances, so that it is clear how something should be used.
This is different from the artworks by RAAAF, which embrace ambiguity and typically
generate an entire landscape of multiple possibilities for action, so that individuals have
the freedom to engage with the affordances that matter to them.
- 6 To use Ingold's words: 'This is to start with an idea in mind, of what we want to achieve,
and with a supply of the raw material needed to achieve it. And it is to finish at the
moment when the material has taken on the intended form' (Ingold 2013, 20).
- 7 Withagen & Van der Kamp 2018, 2.
- 8 Van Dijk & Rietveld 2018, 19.
- 9 Note that other works of art offer affordances as well: 'An artwork offers several afford-
ances. This multiplicity contributes to the depth of a person's overall experience of the
artwork, which may even be a "total experience" of its many layers. We use the term "total
experience" to refer to the person's rich experience of this entire situation. Crucially, a
person engages with an artwork by being open to the relevant affordances it offers, like
possibilities for imagining, touching, conversing, feeling, and for reflecting on what is
taken for granted' (Rietveld & Rietveld 2021, 8; Rietveld & Kiverstein 2022).
- 10 For my discussion of 'concernful', see Rietveld 2008b.
- 11 Flooding (i.e. inundating) areas of land in order to render them inaccessible is a Dutch
military defence practice dating back to the 17th century. Various structures – forts,
shelters, bunkers, etc. – ensured that strategic inundation locations could be properly
operated and defended.