The Memory Model Project

An investigation of three-dimensional models as triggers and documents of recall

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Version April 2018

Part II (a): *Models*: Enchantment, Utility, and Art

Physical models have fascinated people for thousands of years. The history of model *buildings* – the category most relevant to the intended investigation – can be traced back at least 6.000 years.[1] They have served for ritual purposes, the study of construction techniques, and the communication of architectural ideas. They have also been used as decorative objects and playthings.[2] In this working paper, I will argue that it is possible to distinguish three broad realms of physical models: *Artisan miniatures*, *applied models* (*models as tools*), and *models-as-art*.[3] Not included in this taxonomy are models made for ritual purposes, toys, and souvenirs. The epistemic, pragmatic, and phenomenological qualities of *artisan miniatures*, *applied models*, and *models-as-art* will be discussed and, following this, related to the specific case of the *memory model*. I will close with a brief discussion of how the memory model may be defined in relation to other types of models. This working paper does not claim to present a conclusive scholarly argument (this will be done later as part of the research project), but to present a number of preliminary thoughts, and to gather different perspectives on the subject.

Dollhouses and model railways are compelling for both children and adults alike. Miniature parks and exquisitely crafted miniatures in museums attract millions of visitors each year, and model making is one of the most popular hobbies to be found. Plenty of magazines (such as *Artisans in Miniature*, *Dolls House World*, or *Miniature Collector*) are available for enthusiasts, along with countless internet

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[1] Scale-models were popular in many ancient civilisations as gift items or burial objects. A very early example is a <u>fired clay model from around 4.600 - 3.900 BC</u> discovered in the Danube valley. For details see Gimbutas (2007, pp. 68–69).

[2] Mass-produced toys (like the *Barbie Dream House* or buildings for model railways), souvenirs (like the Eiffel Tours for the keychain), and modelling kits are excluded from this discussion.

[3] See *Part II (b): Models of Homes in Contemporary Art.*

forums and youtube channels. However, the appeal and aesthetics of miniatures – their *enchantment*[4] – has rarely been the subject of systematic inquiry. The accounts which exist are almost exclusively 'one-off' essays and book sections by writers with backgrounds as diverse as the fields of archaeology (Kohring, 2011), anthropology (Lévi-Strauss, 1966; Krasniewicz, 2015, 2016), poetry and prose (Stewart, 1984; Millhauser, 1983; Purpura, 2006), literary studies (also Stewart, 1984; King, 1996), psychology (Pollard and Carver, 2012, 2016), and psychiatry (Mack, 2007).[5] In effect, there is no such thing as a *discourse* of miniature appreciation.

In design, science, engineering, and education, models are qualified by their *utility*. Many attempts to theorise these *applied models'* use value are bound up with their specific domain of application. Contributions relevant to the concept of the memory model mainly come from, but are not limited to, architecture (e.g. Echenique, 1970; Smith, 2004; Moon, 2005; Mills, 2011) and the reception of architectural models in cultural and design theory (Busch, 1991), art history (Bredekamp, 2005; Wendler, 2013), anthropology (Yaneva, 2008) and visual art (Frampton and Kolbowski, 1981). Apart from architecture theory, the utility of three-dimensional models has also been discussed within the realm of science (Chadarevian and Hopwood, 2004). Models of buildings are furthermore covered implicitly (or treated as being a special case) in general *model theory* – a discourse mainly concerned with the intangible models of mathematics and science (e.g. Black, 1962; Stachowiak, 1973; Wartofsky, 1979; Mahr, 2003; Monk, 2003; Toon, 2012; Weisberg, 2013; Gelfert, 2016). [close]

Amongst the three types of model discussed here, their sculptural application in visual art has received the least scholarly attention. *"While there are many theories and discourses both within and outside art history that are relevant to this topic,"* Ladislav K. observes, *"no comprehensive theory of models exists in contemporary art or cultural theory"* (ref). Yet it is the one with the clearest disciplinary affiliation. Most of the relevant contributions are published in exhibition catalogues and derive from curators (Gear, 1989; Kesner, 2015), art and cultural theorists (Wendler, 2013; Krasny, 2009) and artists themselves. Artists' views on the subject are mainly to be found in interviews, however, some on-topic essays by artists are included in anthologies that connect perspectives on models from various disciplines (Reichle, Siegel and Spelten, 2008; Floris and Bill, 2011).

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[4] The term enchantment is used here in agreement with Jane Bennett's definition as being *"something that we encounter, that hits us, but it is also a comportment that can be fostered through deliberate strategies ... To be enchanted is to be struck and shaken by the extraordinary that lives amid the familiar and the everyday. ... The mood I'm calling enchantment involves, in the first instance, a surprising encounter, a meeting with something that you did not expect and are not fully prepared to engage. Contained within this surprise state are (1) a pleasurable feeling of being charmed by the novel and as yet unprocessed encounter and (2) a more unheimlich (uncanny) feeling of being disrupted or torn out of one's default sensory-psychic-intellectual disposition"* (Bennett, 2001, p. 4,5).

[5] It is interesting to note that 'home disciplines' often say little about the theoretical or methodological approach these scholars take in their writings about models. For instance, Susan Stewart, James King, and John Mack (who have provided the most comprehensive treatises on the subject), all follow broad, rather philosophical, avenues.

Miscellany books such as the edited volumes by Reichle et al (2008) or Chadarevian and Hopwood (2004), and interdisciplinary initiatives such as *A Working Model of the World* by the University of New South Wales, Sydney (2017) highlight the fact that there are many different kinds of physical models, and theoretical approaches to them that overlap, which can be brought into contact and mutually illuminate one another. Such interdisciplinary agendas seem especially apt considering the scattered and largely unconnected theories regarding both the enchantment and the utility of models. In this vein, the distinction suggested here between *artisan miniatures, applied models,* and *sculptures* is not posited as narrowly focused. The same could be said about miniatures in history parks, museum dioramas, many architects' models, dollhouses, and other types of models (Lee, 2014; Mikula, 2017). Very many models are, in fact, best viewed as being in between *"between art and science"* (Wendler, 2013), and memory models, as will be argued below, are an especially salient example of an ambivalent type of model. Before turning to this particular case and other examples of hybrid model categories, however, it needs to be pointed out that artisan miniatures, applied models, and models-as-art, emerge in different contexts and follow different agendas.

Artisan Miniatures (Models as Craftwork)

Miniature has been defined as a sub-category of the physical model which is characterised by being "*the result of a conscious effort to attain complete realism*" (Pattinson, 1982, p. 6; see working paper Part I, Definitions). Steven Millhauser agrees that the miniature holds the viewer's attention *"by the quality of precision"* and *"strives toward the ideal of total imitation"* (Millhauser, 1983, p. 132). The intrinsic fascination of such objects is employed by model-makers in applied contexts (e.g. architectural modelling) as well as in some contemporary visual art; however, *miniatures* are more than anything else, associated with artisan craft.

Artisan miniatures are models that are made, first and foremost, to please and captivate their viewer as opposed to, say, promote an idea, yield certain insights or raise questions. Rather they invite reverie or explore the limits of craft by reproducing real world phenomena at a tiny scale. Examples range from dollhouses, model railway accessories and all kinds of small-scale replicas made by hobbyists (e.g. of vehicles, food, or animals) to the work of professionals making demonstration pieces and curiosities for museums[6] to material-specific peculiarities.[7]

The Appeal of Miniature Contemplation

Flora Gill Jacobs, an authority on dollhouses, notes: *"Miniature things cast a sort of spell, and not all spells can be explained"* (Jacobs, 1965, p. 13). In the same vein, John Mack concludes his book on *'The Art of Small Things'* by saying that the miniature's „*capacity for continuing enchantment lies in its ability to evade complete comprehension*" (Mack, 2007, p. 207). Nevertheless, attempts have been

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[6] See, for example, Narcissa N. Thorne's reconstructions of living spaces from eight centuries, Dan Ohlmann and others' work for the Musée Miniature & Cinéma in Lyon, or Dieter Cöllen's *phelloplastics*.

[7] See, for example, Matthew Simmonds' marble models or the tradition of peach pit carving (Dietrich, 2009).

made to do so. In her book *'On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection'*, Susan Stewart assumes a close relation between the appeal of miniatures and a sense of nostalgia.[8] Her main thesis is that people enjoy miniatures because they stage and idealise what has been lost in real life, in the past, or is otherwise unattainable: our childhood, a collective history, traditional handicraft, unaffordable items (including homes). Especially the evocation of childhood memories has also been expounded by other authors (Gear, 1989, p. 1; King, 1996, p. 183; Lee, 2014) and by extension one may think of the *cute appeal* (or *enchantment*) of dolls' houses and many other miniatures which compels our affection. Such works, curator, David McFadden argues, *"engage us visually and intellectually by suspending our disbelief, and so position us somewhere between the theatrical and cinematic experience"* (ref). However, this experience is counter-balanced by our knowledge about the mise-en-scène of these realities as McFadden elaborates: *"[T]hey amplify our awareness that our perceptions are being manipulated by the visual clues presented. These are miniature worlds in which the phenomenon of seeing transports us mentally (and to some extent physically) into spaces and situations that we know do not truly exist"* (McFadden, ibid). [close paragraph]

One obvious reason why miniatures affect us is their scale/size (refs). Any object whose features and relative proportions we recognize, but which do not match our expectations in terms of size, evokes our attention (Millhauser, 1983; Stewart, 1984; Mack, 2007; Wells, 2016) [elaborate]. However, this alone does not suffice to enthuse us, because the eye will *'blaze down'* as Steven Millhauser puts it, *'in an act of fierce attention'* and *'hungry for detail'* (Millhauser, 1983, p. 131). *"This is a point of utmost importance"*, he continues, because *"the eye seized by the miniature will quickly tire if it does not perceive thoroughness of execution, richness of detail"* (ibid.). Thus, according to Millhauser, fine craftsmanship is another reason for the allure of the miniature; in fact he argues that it is *"the relation between smallness and the amount of precise detail"* that *"is the measure of our wonder"* (Millhauser, 1983, p. 132). A similar view is expressed by Sheila Kohring who elaborates that *"[i]nvestment, labour, choices and care all contribute to making an object that transcends the mundane, or the life-sized in this case, as though the object appears only to have come about through magic"* (Kohring, 2011, p. ?). In a similar vein, John Mack associates the enchantment of miniatures *"with the fact that it hardly seems possible that these are created things"*; there are things within the miniature world *"that are thrilling to contemplate, but part of the thrill is the awareness that, despite its reduced scale, it possesses dimensions that escape me, one of which is how it came to be in the first place"* (Mack, 2007, p. 47).

If the *"confrontation with the process of creating wonders in miniature"* is one kind of *"aesthetic perception"* (Mack, 2007, p. 47), another, is likely to be the simultaneous and transcendent overview they provide to the viewer. According to Claude Lévi-Strauss, this even constitutes the miniature's most germane enchantment: Contrary to "*what happens when we try to understand an object ... of real*

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[8] The book's second chapter, *'The Miniature'*, could well be the most frequently quoted reference on the subject.

dimensions”, he concludes, *“knowledge of the whole precedes knowledge of the parts”*, and even if readily comprehending an entirety is an illusion, the impression *“gives rise to a sense of pleasure which can already be called aesthetic on these grounds alone“* (Lévi-Strauss, 1966, pp. 23, 24). The instant overview makes miniatures *‘less formidable’*, Lévi-Strauss argues, and creates an illusion of authority and control over the little world. Susan Stewart agrees: *“The miniature, linked to nostalgic versions of childhood and history, presents a diminutive, and thereby manipulatable, version of experience, a version which is domesticated and protected from contamination”* (Stewart, 1984, p. 69).[9] Millhauser brings this argument to a head as he suggests that *“under the enchantment of the miniature we are invited to become God”* (Millhauser, 1983, p. 135).

Although the fact of the viewer observing the miniature, and feeling like a ‘giant’, is a widely accepted explanation of its allure (see also Busch, 1991; Purpura, 2006; Reichle, Siegel and Spelten, 2008), there are also several arguments which relativise it. Artist David Eastwood, for example, argues that *“the space of the model can transcend its miniaturization, intimately coaxing the viewer toward a visually immersive or voyeuristic experience, like peering through a keyhole”* (Eastwood, 2017, para. 11). Poet Lia Purpura elaborates on this kind of experience: *“In dollhouse land, you can walk through the kitchen, living room, bedroom with your three inch high friend, and, face pressed to the window, feel the cushions of the thumbnail loveseat hold you”* (Purpura, 2006, para. 3).[10] Such impressions may fully determine the appreciation of miniatures or mix with the competing experience of omnipotence. This result in the uneasy impression of *‘not fitting’*, which results in an *“unfulfilled yearning to be part of that world”* (Millhauser, 1983, p. 135). Stewart agrees that the *“transcendent and simultaneous view”* leaves the observer *“trapped outside the possibility of a lived reality of the miniature”* (Stewart, 1984, p. 66; similar in Mack, 2007, pp. 75, 207). Another factor mitigating the viewer’s position of control, is the experience of awe related to magnificent craftwork. The viewer may feel superior to the miniature world, yet humble compared to its skilled and patient creator. Mack concludes: *“I can indeed possess aspects of it* [the miniature world] *... but I am not in control of it”*; it makes me aware,,*”that I live in a world that, if I had to create these aspects of it for myself, would defeat me”* (Mack, 2007, p. 47). Whilst these arguments challenge the assumption that miniature appreciation is bound up with a feeling of control, one may also take into consideration a possible co-existence of authority and empathy. Richard Pommer suggests in this vein: *“The spectator stands or soars far*

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[9] Similarly, Ralph Rugoff argues that dioramas form *“an isolated and inviolate space that is profoundly remote from that of the viewer, they call to mind Platonic archetypes rather than actual physical specimens. In effect, they function as images of themselves, dematerialized signs which we consume with a distanced fascination.”* (Rugoff, 2000, p. 13)

[10] Artist David Rushton confirms, that viewers of his interior models enjoy projecting themselves inside them: They *“are almost climbing inside the model ... as their own metaphor for interpreting it“* (Rushton and Elms, 2010, 8:03 Min.). A process of ‘projection’ has also been observed by architect Albert C. Smith in the process of working scale-models in design: *“The architectural small-scale model ... serves as a surface on which to project thoughts in an attempt to develop the perfect design (an attempt at a true definition of invisible things). The scale model provides architects a mechanism with which they can test and re-examine their ideas in this attempt. Sometimes, however, the projection of thoughts makes the scale-model ... appear to take on a life of its own. This life is a reflection of an individual’s imagination”* (Smith, 2004, p. 123).

above, as powerful as a god; but in his imagination, he shrinks to Lilliputian scale to enter these structures" (Pommer, 1981, p. 13; see also Kesner, 2015, p. 17; Gear, 1989).

Considered from this perspective, the miniature appears not so much as a whole preceding knowledge of its parts, but rather as conveying a *"sense of secretiveness"* that the viewer is invited to unravel, one *"of sharing private visions",* as Josphine Gear (1989, p. 1) suggests. Stewart, however, is sceptical about whether this is possible. Such assumptions, she argues, bear a promise that is not kept but eventually only enforces our exclusion: *"That the world of things can open itself to reveal a secret life – indeed, to reveal a set of actions and hence a narrativity and history outside the given field of perception – is a constant daydream that the miniature presents"* (Stewart, 1984, p. 56). This pessimism is intrinsic to Stewart's general critique of the miniature as an object that evokes nostalgic sentiments, and hence something that many viewers consider to have a distinct quality. In particular, regarding dollhouses and historic situations re-staged in miniature parks, Stewart proposes that models are critically separated from their original contexts. The function of miniature parks is, *"to bring historical events 'to life', to immediacy, and thereby to erase their history, to lose us within their presentness."* (ibid., p.60). Similarly, the *"dollhouse-maker's relative inattention to the exterior"* (ibid., p.61), and the creation of an idealised, *"perpetual and incontaminable"* space (ibid., p.62), creates an *'interiority'* that inevitably frustrates the observer's nostalgic longing (the very *"locus of the miniature is nostalgia"*, p. 60). Lia Purpura agrees, and claims that miniatures *"don't need us"*, but contrary to Stewart, she identifies, within this frustration, the miniature's very attraction: *"[W]e are drawn to them as any smitten lover might be, to a beloved who remains so close and yet just out of reach"* (Purpura, 2006, para. 10).

The Appeal of Miniature Making

Whatever the reasons for the appeal of miniatures (an empirical investigation has, to my knowledge, not been conducted yet), it is reasonable to assume that their production amplifies experiences of *mere* contemplation. The model maker engages with the miniature for a longer period of time, choses an object according to her/his own interests, and tackles the material not only visually but also haptically. In his book *Remaking the World: Modeling in Human Experience*, James Roy King lists a number of reasons why people enjoy making miniatures:

> *[T]he desire to bring a strange, confusing, interesting, or even beloved object within their own control; to gain or impart some understanding of an object that is too complex to be readily understood; to create some ideal situation; to celebrate something; to facilitate the connection and display of objects; to confront challenges that the modeler believes can be met; to reconstruct some segment of the past or the faraway; to enjoy new forms of physical activity; to promote buying, selling, and trading; to encourage contacts with other individuals; and even to give full rein to the imagination.* (King, 1996, p. 228)

It is possible to expand the list of common motivations that drive miniaturists,[11] but what King's account sufficiently shows is that some ambitions are germane to the making of models, whilst others conform to the reasons why people spend time looking at them.[12] This seems natural, as the maker of a model is, of course, also its first viewer. In this vein, Stewart's psychoanalytically inspired explanation of the appeal of model contemplation may also be expanded to describe their creation. With her original claim that *"the interiority of the enclosed world tends to reify the interiority of the viewer"* (Stewart, 1984, p. 68), Stewart argues that the viewer finds personal (in her view, particularly *nostalgic*) phantasies embodied and affirmed by the miniature object. If one agrees with Stewart's point of view, it is reasonable to assume that the nostalgic gratification is amplified by the production of miniatures. Louise Krasniewicz interprets her as implying exactly this: *"she is saying we make miniatures to enact or reenact in tiny, enclosed, static spaces the traumas and chaos of our lives",* and further explains that Stewart's use of the Freudian concept of *"interiority"* as refering to *"things we repress and which can get expressed safely in miniatures"* (Krasniewicz, 2015, para. 6). Along the same lines but less charged runs Phillippa Perry's explanation in the BBC documentary *The Private Life of a Doll's House*: *"If we have a doll's house",* the psychotherapist explains, "*we can make it a sort of mirror for our internal life. We have our internal life and – 'is it real?', 'is it fantasy?' – but we can make it real in the doll's house."* (Hencken, 2015, 23:20 Min.). This interpretation expands the 'giant's perspective'–explanation of miniature appeal to their production.[13]

For Stewart it stands to reason that the appeal of creating miniatures is rooted in a self-therapeutic effect. Although such an effect has indeed been observed (e.g. Aite, 2008, pp. 51–52; Pollard and Carver, 2012), making a generalisation proves problematic. Since most miniaturists are unlikely to agree that they essentially embark on some kind of cathartic exercise, therapeutic merits are a contentious and, at most, subconscious factor in their work. Moreover, the actual pervasiveness and relevance of self-therapeutic effects is difficult test [discuss]. Certainly, exploring the potential of miniature-making in therapeutic contexts seems worthwhile[14], but this kind of investigation does not respond to the question of the common motivations that drive miniaturists. An answer more likely to be supported by practitioners is to view miniaturisation as a form of *serious play*. As such, its joyful aspects are closely related to the various insights it yields and thus to what can be called *miniature epistemology*.

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[11] For a similar account see Jordanova (2004, pp. 448–49).

[12] The first two reasons on King's list accord with why people look at miniatures: The idea of control over an object has been discussed in the previous section; *gaining understanding* will be treated below.

[13] This view is also shared by miniature artist Thomas Doyle who elaborates: *"The creation of small worlds gives us the illusion of control. In a world that grows ever faster and more chaotic, in a world in which we are bombarded with imagery, artworks in small scales allow us a place of retreat, where time has stopped"* (cited by Nuwer, 2015, p. 3).

[14] See working paper xy.

Miniature Epistemology

The understanding of model making as a form of serious play implies its utility for exploring our environment and occupational relationships within it (King, 1996, Chap. 3; Kohring, 2011; Pollard and Carver, 2012) [elaborate]. According to Krasniewicz, and in contrast to the idea of it being a form of self therapy, miniature making as play *"comments on, highlights, or rehearses aspects of the everyday, not escapes them [sic] "*(Krasniewicz, 2016, para. 9). From this perspective, modelling is a self-rewarding and instructive activity as many have argued. Philosopher Gaston Bachelard, for example, is convinced that *"[t]he cleverer I am at miniaturizing the world, the better I possess it"* (Bachelard, 1994, p. 150).[15] Pablo Picasso likewise believes that *"[t]o model an object is to possess it"* (quoted by Root-Bernstein and Root-Bernstein, 1999, p. 230) and miniature artist Tracey Snelling explains (similar to Lévi-Strauss' above quoted view on the whole preceding knowledge of the parts in models) that working in small scale allows her *"to capture an entire place or location"* (cited by Chung, 2015, para. 10).

The epistemological merits of both miniature contemplation and creation are bound up with the experience of the omnipotent giant. The experience of miniatures as procuring in the viewer a feeling of exclusion (the locked-out giant), however, also has epistemological implications. In this vein, Millhauser argues: "*Under the sway of the miniature I contemplate my isolation and my contemplation is clean, uncorrupted by the impurity of terror"* (Millhauser, 1983, p. 135). Such a response is reminiscent of what has been called *psychical distance* – a mode of engaging with artworks that is removed from practical concerns, and thus enables viewers (in the absence of any threat) to better understand their own ways of reacting in specific situations (Bullough, 1912; Funch, 1997, pp. 188–194; Cupchik, 2002).[16] [elaborate] In this mode, (frustrated) nostalgic longing can become a gateway to greater self-awareness. In Stewart's opinion, the yearning for a return to some kind of ideal situation in the past blocks one's experience of the present: the miniature creates *"a type of transcendent time which negates change and the flux of lived reality"* (Stewart, 1984, p. 65). Consequently, miniature appreciation is meaningful only in so far as it brings to awareness that it is indeed a symptom of escape. It has the *"capacity to make its context remarkable"* (Stewart, 1984, p. 46), rather than, as others would argue, to preserve the memory and history of objects.(e.g. Lee, 2014). From this perspective, it is necessary to recognise that miniatures provoke a kind of reverie which is appealing, because our alienated, over-mediated, post-modern existence, does not provide us with the kind of 'authentic' experience we see reflected in the 'good old times' staged in miniature parks, dollhouses,

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[15] Bachelard is refering to literary miniatures, but his conviction also applies to physical models.

[16] *"[Psychical Distance] has a negative, inhibitory aspect – the cutting-out of the practical sides of things and of our practical attitude to them – and a positive side – the elaboration of the experience on the new basis created by the inhibitory action of Distance"* (Bullough, 1912, p. 89). An exhibition context can foster such experiences. curator Ladislav Kesner elaborates: *"Artistic models ... are, by default, encountered by their viewers in the space of museum and gallery settings. Thus, the space the model depicts or implies with its contextual association is, in the viewer's mind, juxtaposed with the safe and neutral gallery space in which the viewer sees the work"* (Kesner, 2015, p. 19).

model railways, etc. Further epistemological consequences could be, for example, that we turn to the ideology and history embedded in *genres* such as the dollhouse,[17] or, as Lévi-Strauss (1966, p. 24) suggests, we might contemplate alternative solutions that the miniaturist has excluded from his creation.[18]

These all constitute interesting theories about which kinds of insights miniatures might yield. However, these perspectives describe possibilities, rather than empirically verified effects. In fact, *"[t]he realm of the miniature* [still] *awaits its passionate and scholarly explorer"* as Millhauser observed three and a half decades ago (Millhauser, 1983, p. 128).

Applied Models (Models as Tools)

According to philosopher Max Black *"the model is intended to be enjoyed for its own sake only in the limiting case where the hobbyist indulges a harmless fetishism"* (Black, 1962, p. 220). Although such disparagement ignores the fact that the construction and contemplation of models also promotes an understanding of the objects' technical principles and structural relations (King, 1996; Pollard and Carver, 2012, 2016)[19], the hobbyist's and even the artisan's miniatures are indeed mainly cherished for aesthetic reasons and as entertainment. In contrast, in the applied contexts of design, engineering, science, and education, it is the entire *raison d'étre* of models to facilitate insights. To assume by implication that their aesthetic aspects are merely corollary to applied models, would be a misconception. The enchantment of the model world intrigues audiences ranging from pre-school children to building contractors and facilitates a focus of attention in situations ranging from the contemplation of ancient life in front of a museum diorama to the presentation of a city development plan. Thus, models' intrinsic appeal must be regarded as part and parcel of their use value. One quality can be seen to stand out in this respect: simultaneous oversight. As is the case with artisan miniatures, applied models yield a comprehensive view of whatever they are a model of and it is this feature that is probably their most important epistemic merit. As opposed to written and two-dimensional representations, the viewer of a model can choose her/his own vantage points whilst contemplating it. Moreover, models allow for the observation of objects from perspectives otherwise impossible or difficult to adopt (like a view through a building's ceiling). Instant overview (the *'giant's'* perspective) is thus not only an aesthetic quality but also a key aspect of models' utility.

Three-dimensional models supplement verbal and expand visual representation as they provide spatial information simultaneously and holistically: *"The longing for the dimensionality of understanding is*

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[17] Compare: *Part IV: Home: Domestic Space 'through Memory through Model'*, section *Model Homes: Social Aspects of the Home, Remembering, and Modelling.*

[18] Lévi-Strauss states generally: *"The intrinsic value of the small scale model is that it compensates for the renunciation of sensible dimensions by the acquisition of intelligible dimensions"* (Lévi-Strauss, 1966, p. 24).

[19] Artist Edwin Zwakman argues: *"Children playing, architects planning, grown-ups building model railways in the attic. They all reconstruct life in order to anticipate, control, learn. The scale of the reconstruction determines whether it is a micro- or a macrostructure they try to understand."* (Galerie Krinzinger / Bergen Kunsthall, 2005, p. 65)

stored up in the model", as cultural theorist Elke Krasny puts it (Krasny, 2009, p. 49). Contrary to textual descriptions, models do not translate visual cues into non-visual language and they do not deliver information seriatim (according to an author's preferred order). Compared to two-dimensional depictions such as drawings or plans, physical models have the advantage of not being limited to a fixed number of perspectives. They allow for a visual exploration that is akin to how we perceive spaces in *real life*. Over and above this, the 'supernormal' oversight that models enable expands the normal options of observation available. It provokes an increased response, by exaggerating natural, visual, or other kinds of cues, as is frequently the case in art (Ramachandran and Hirstein, 1999).[20] If one adds further qualities, usually associated with artworks, such as many models' *"play between representation and objecthood* [that] *has also been of explicit interest in Modernist painting and sculpture"* (Hubert, 1981, p. 20; similar in Kesner, 2015, p. 12), or simply their beauty (King, 1996, pp. 196–206)[21], even those models conceived merely as representational tools can be attributed manifold aesthetic qualities. However, there are of course a variety aspects that distinguish applied models from artisan miniatures and works of visual art, and most of them revolve around the difficult question of representation.

Applied Models' Epistemology: Issues of representation

If a model fails to portray its referent accurately in a hobby or craft context, there will be no further consequences than to possibly excite a critique of the artisan. In contrast, in applied contexts, the referent's accurate rendition becomes the model's benchmark. The small-scale replica of an ancient landscape in a museum diorama is justified by the suggestion of how this scenery *actually* looked, the model of a molecule is worthless if it does not demonstrate its *actual* structure, etc. Models portray, concretise, exemplify, symbolise, simplify, idealise or otherwise *represent* their referent. Although these are distinct functions, they all, in one way or another, lead to the claim : *"This is how the original is"* (Black, 1962, p. 221), or, as John Monk argues, that a model is an object *"that stimulates people to give accounts that could also be triggered by the object being modelled"* (Monk, 2003, p. 40).

The expectation that they represent some reality *out there* has been *the* standard for models,[22] but the fact should not be disregarded that they also have an unfolding life of their own. Models are physical artefacts distinguished by all kinds of (inevitable and strategically employed) abstractions and

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[20] Neurologist Vilayanur S. Ramachandran and philosopher William Hirstein see this so-called *'peak shift effect'* at work if, for example, artists abstract the female body shape, alter the hue of skin colours, or try via new art forms to amplify the essence of a previous art form (Ramachandran and Hirstein, 1999).

[21] King's categories of model beauty are *'Beauty derived from Prototype'*, *'Beauty and Fine Artisanship'*, *'Beauty and the 'Folk''*, and *'Abstract Beauty'* as well as the *'Picturesque'* that he discusses earlier in his book (King, 1996, pp. 29–35).

[22] The *"topos of representation, which is used in numerous varieties and variations"*, Reinhard Wendler observes, marks *"the grand constant in the history of 20th century model theoretical discourses"* (Wendler, 2013, p. 166, translation mine).

omissions. Building materials, textures, colours, presentation contexts, specific scales, the carefulness of execution, etc. all influence *how* a model provides access to the object being modelled. King thus describes it as a *"psychic/physical space ... that operates by its own rules, and is compact, self-defining, and clean-edged"* (King, 1996, p. 47), and Lévi-Strauss concludes that models are never *"just projections or passive homologues of the object: they constitute a real experiment with it"* (Lévi-Strauss, 1966, p. 24). Although both authors refer mostly to artisan miniatures, their arguments spill across to applied models. Hubert thus argues, in the same vein, that a model must be posited *"somewhere between actuality and illusion"* (Hubert, 1981, p. 22; also Topalovic, 2011, p. 38), and Krasny elaborates that if a model represents or vouches for some reality, *"it at once always also clearly represents to us that its failure to adhere to this reality is inscribed upon this very representation or vouching"* (Krasny, 2009, p. 46)[23]. In other words, a model *shows* and *creates* reality; it must be seen as a *"site of transfer"* that emerges in an *"encounter between realities and projections, between powers of imagination and dimensions of reality"* (ibid, p. 49).

None of the arguments invoked so far dismisses the representational paradigm altogether. Rather they draw attention to the fact that models' own materiality *competes* with their claim to represent an object. A more fundamental critique might argue that models do not escape the doubts raised by philosophers such as Jacques Derrida and Michel Foucault, regarding the determinability of reality and the possibility of its representation altogether [refs]. Such a critique would expound that nobody has privileged or objective access to *how the original is*. Rather, any approach taken, with which to understand reality, inevitably gets caught up in acts of description, and these acts are necessarily conditioned by interests, viewpoints, power relations, language games and all sorts of other conventions [refs]. Modelling, according to this perspective, is – just like verbal or graphic representations – first and foremost a *way of describing* [elaborate].

Although this line of critique is not frequently used to raise doubts about models' representational function,[24] the post-structural and constructivist legacy has almost certainly influenced contemporary model theorists who relativise the representational paradigm. Michael Weisberg, for example, regards models as *"potential representations of target systems"* (Weisberg, 2013, p. 171) and Bernd Mahr posits that they are *"usually related to pragmatic contexts"* and *"can be understood as embodiments of an hypothetical beind-so (Sosein)"* but cannot *"be assigned any truth"* (Mahr, 2008, p. 193, translation mine). Therefore, models must be regarded *"always only"* as a *"mode of a possibility"* (ibid.). Certainly, the mode of possibility is relative to the model's use. Any *model of* something is also a *model for* someone and some purpose. To convince potential commissioners, an architect may build a more detailed and perhaps *prettier* model than that he would offer for sharing her/his vision with colleagues. A model of a human organ, for example the heart, will be designed differently when its purpose is for the education of pupils than for students of physiology. At times, target-group-

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[23] Although published in a catalogue for an art exhibtion, Krasny talks about models in general here.
[24] For an exception see Krasny (2009, pp. 48–49).

specific designs can even become highly ideological and manipulative. Jean Baudrillard observes that in Disneyland an *"objective profile of America ... is drawn"* and *"[a]ll its values are exalted by the miniature"* (Baudrillard, 1994, p. 12). In other contexts, models offer administrators, educators, and specialists, a confined terrain in which the number of variables and the degree of unknowns is under their control (Scott, 1998, pp. 257–258; Kryder-Reid, 2015). One consequence of this is that a trial judge can exclude scale models presented as evidence or to illustrate testimony on the grounds of their misleading or prejudicial effects (Pitre, 2017, p. 575)[25].

However, only very few models are designed with the intention of misleading viewers. Being a *model for* (as opposed to being merely a *model of*) mostly involves a specific heuristic situation (Mahr, 2008, pp. 202–206). Particularly in research and education, a *model for* is in the first place a model for further thinking; *"the form mediated by the model marks the point of departure for our approach to a given problem",* as Ingeborg Reichle and colleagues (2008, p. 10, translation mine) point out. For example, the small-scale replica of an ancient settlement can cause us to think about the conditions of life at a particular time and in a particular space, atom models allow for the development of theories about the structure of matter, and architects' models disclose potential static and aesthetic issues that need to be resolved before a building is constructed. Nevertheless, it is important to be aware of a potential *'epistemic switch'* (Wendler, 2013, p. 152) that might occur. We expect models to represent reality but they also shape how we imagine this reality. We *know* that molecules do not look like braced billiard balls and that the interior of the earth is not a succession of coloured spheres, and yet, as Wendler (ibid.) argues, these visual forms have a powerful influence on how we think about those structures. Wendler describes the epistemic switch as taking what is in fact a *Vorbild* ('pre-image', pattern) for thinking as an *Abbild* (likeness, portrayal). Such mistakes add another aspect to the dubiousness of the premise that models show *'how the original is'*.

Despite these problems with the representational paradigm, it cannot be discarded altogether. Clearly, models do *not 'not represent'* something. The core epistemological value of models lies in the elucidation of otherwise hidden phenomena and thus in a (however tendentious) quality of representation.[26] As a way of recouping the notion of model representation, Wendler suggests distinguishing between three distinct epistemic situations in which models are used. Firstly, models may be developed in research contexts characterised by a *lack* of information. A famous example of this is Frances Crick and James Watson's *playing* with cardboard models, which led to the discovery of structure of DNA (ref); another example (not mentioned by Wendler), is Michael Avi-Yonah's *Model of Jerusalem in the Second Temple Period* [elaborate]. Adopting a term from Hans Vaihinger's

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[25] Pitre talks about California...

[26] Herbert Stachowiak summarises this function: "*Models of originals are constructed if the latter require enlargement or downsizing to become ostensive, if the modelling concerns an object that is too remote or accessible only under great danger (or in very long periods of time or by too expensive means, etc.), if confusing and embroiled events should be clarified, simplified, [or] concretised, if it is important to reduce the multifariousness of properties to a few basic relations, to explain [or] to anticipate [these properties] by [these basic relations]"* (Stachowiak, 1973, p. 139, translation mine).

The Philosophy of 'As if', Wendler calls the representational function of these kinds of models a *"pragmatic fiction"*.[27] As such, the representational function may be confirmed, modified, or abandoned, by further empirical or theoretical evidence. The second epistemic situation is one in which an abundance of information requires the *"interpretation of jumbled, onrushing sense data"* (Wendler, 2013, p. 158, translation mine). In this case, representation can be described as an *"apprehending sensemaking"* (*"wahrnehmende Sinnstiftung"*, ibid. p. 160), and the model's representational function as being one of filtering information to reveal an object's basic features or mechanisms. What these essential features or mechanisms are is determined by the model making researcher.[28] This category of models – that could also be described as *selective concentrations* of information – pertains mainly to theoretical models in science[29], but the [San Francisco Bay-Delta Model](#) (a landscape model with the purpose of being able to study various scenarios for a reliable freshwater supply in the San Francisco area) may serve as an example of a physical model (discussed by Weisberg, 2013, pp. 7–9). Thirdly, models can be used for didactic (as opposed to heuristic) purposes. In this case, their function is not to generate, but rather to illustrate, information which is already available. What is being included in the representation is what the model maker or commissioner considers instructive for a particular audience. Salient examples of this are museum dioramas, others are architectural display models.[30] All three epistemic situations maintain a representational claim, but at the same time they also emphasise this claim's relativity to the model maker's premises. [close]

Epistemology and the design experience

The interplay of aesthetic appeal and utility is perhaps nowhere as evident as in design practice. Instant oversight, for example, is one of the reasons why 3D-software has not fully replaced physical models in architecture and design. These tend to afford a better perception of scale (Yaneva, 2008; Sun *et al.*, 2014), and counteract the fact that designers loose themselves in irrelevant detail (Janssen, 2014, p. 80/81). This is important, for example, when architects manufacture *display models* in order to present their vision to potential clients or to a broader public audience. However, it is perhaps even more important when they use models as a tool for generating this vision. Other than display models, *study models* are provisionally rendered, and for the eyes of the designer and her/his peers only (Pattinson, 1982, p. 5). These types of models are, as Criss Mills elaborates, *"intended to be cut into and modified as exploration proceeds"*; they are three-dimensional sketches for examining *"qualities of alignment,*

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[27] The notion of the model as a pragmatic fiction has also been suggested by others; see for example Stachowiak (1973, p. 133) and Kuuttila (2005, p. 1268).

[28] In his summary of *"how representing using physical models works"*, Ronald N. Giere also stresses the importance of *"selective similarity, where the selecting is done by the agent employing the model"* (Giere, 2011, p. 212).

[29] Wendler quotes historian and philosopher of science Gerald Holton: *"In science the problem is compounded by the technique of dealing with reality quite generally by transposing our interest from the awesome, confusing, dispiriting multiplicity to another plane, that of a simpler model."* (Wendler, 2013, pp. 158–159)

[30] For a discussion of manifold examples see Chadarevian and Hopwood (2004).

proportion, and spatial definition" (Mills, 2011, p. 12). Apart from yielding a comprehensive vantage point concerning the emerging work, study models afford the designer, as Albena Yaneva points out, *"a rich sensual register: tactility, visual richness, corporal accessibility and easy manipulation"* (Yaneva, 2008, p. 85). All this makes the study model, according to Albert Smith, "*a machine for imagining, for developing the free associations needed to develop new ideas"* (Smith, 2004, p. 123). Unquestionably, laser cutting, 3D printing and other digital technologies are vital for the production of architectural models today. But in terms of generating ideas, the tactile, 'hands-on' experience is still considered very helpful by many designers. Architect Mark English, for example, observes: *"Model making allows for 'happy mistakes', breakthroughs that originate in the non-verbal part of the mind. That just doesn't happen when using a computer"* (English, 2015, para. 1) and, in fact, plenty other practitioners are in agreement with this.[31]

The role of *knowledge* that derives directly from physical activity and becomes embodied in physical artefacts has been much debated (refs). This often tacit knowledge is crucial to the practice of designing. The designer, as philosopher Donald Schön observes, *"shapes the situation, in accordance with his initial appreciation of it, the situation 'talks back', and he responds to this situation's back-talk"* (Schön, 1983, p. 79).[32] Similarly, King observes that model-makers *"have little doubt about the significance of hands-on activity and the real knowledge it brings"* (King, 1996, p. 1; also Yaneva, 2008, p. 85; Kohring, 2011; Wendler, 2013, p. 84). Certainly, designers as well as model makers also reflect on and evaluate their non-verbal intuitions and it is only through reflection, Schön emphasises, that the practitioner

> *can surface and criticize the tacit understandings that have grown up around the repetitive experiences of a specialized practice, and can make new sense of the situations of uncertainty or uniqueness which he may allow himself to practice.* (Schön, 1983, p. 61)

[...] On the website of the American *Association of Professional Model Makers*, Hal Chaffee agrees that *"model building is best when practiced at the intersection of both thinking and doing"* (Chaffee, 2010, para. 4). This does not only characterise the epistemic situation of model making, but also indicates its particular challenge. Model making requires knowledge of the relative strengths and weaknesses of different mediums, as well as a capacity for analogising, abstracting and dimensional thinking. The combination of tacit and explicit knowledge, respectively of physical and cognitive skills, which are needed for a model's production, renders it a *"higher-order thinking tool"* (Root-

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[31] Architects *Leth & Gori* answer the question of how they see physical models as being relative to virtual methods by explaining that *"it is our experience that the scale model addresses issues like ... relationships between inside and outside, front and back, structure and detail, darkness and light far better than any rendering or 3D model"* (world-architects, 2014, para. 4). The American *Association of Professional Model Makers* assures that *"[o]nce someone starts using materials and fabrication techniques they are able to refine their ideas to make them work"* (APMM, 2016, para. 1). See also Yaneva's study at OMA / Office of Rem Koolhaas (Yaneva, 2008) and Vincent Fecteau's views cited in *Part II (b): Models of Homes in Contemporary Art*, section *Building Materials, Analogy and Abstraction*.

[32] The practical implications of this will be further discussed in *Part VI: Methodology*.

Bernstein and Root-Bernstein, 1999, p. 230).[33]

Models-as-Art

Visual artists have used physical models for centuries to stage and study vantage points, perspectives, spatial arrangements, lighting and other aspects of scenes they intended to paint or sculpt.[34] William Gainsborough, for example, is reported to have *"framed a kind of model of landscapes on his table; composed of broken stones, dried herbs, and pieces of looking glass, which he magnified and improved into rocks, trees, and water"* (Sir Joshua Reynolds cited by Eastwood, 2017, para. 7).

 [insert paragraph] Artists today use models for the planning and preparation of installation works or to project large-scale objects into galleries and other spaces. Although such models are occasionally presented as art objects (see section xy), they are essentially applied models. By contrast, if Ilya Kakakov recasts what is allegedly his *Father's House* (2002) in the shape of a model home resembling a stylised wolf's head or Antony Gormley fills a gallery with doll-like figures made of little iron blocks (*Memes*, 2015), the model becomes a sculptural object in its own right.[35] As such it is not only distinct from applied models but also from artisan miniatures. Again, there is some overlap (see section xy) but, arguably, most contemporary visual artists would reject to be praised in the first place for the artisan qualities of their work. Keith Cummings suggests to differentiate between "fine art" and "craft" by arguing that the former possesses a *"threshold"* which the viewer *"is taken through and beyond"*; whilst a craft object *"acts more as a destination; its properties hold the viewer firmly within its spatial remit and aura."* (Cummings, 2003, p. 82). In this vein it was argued above that the artisan miniature is content with its decorative and often domestic function as well as foregrounding craftsmanship, enchantment and, at times, nostalgic sentiments. By contrast, the model-as-art, takes the viewer *through and beyond* this world by presenting her/him a variety of challenges. *"Models and model-based works"*, Ladislav Kesner summarises,

> are often made by contemporary artists in order either to advance our reflection of
> issues, in and beyond the arts, such as the relationship between representation and
> reality, the duplicity of images, and the constructive nature of our perception, or the

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[33] See also *Ten Talents of a Model Maker* on the *Association of Professional Model Makers' website* (Chaffee, 2010)

[34] More than 700 of such maquettes can be seen at the Museo dei Bozzetti in Pietrasanta, Italy.

[35] In the last decades, this format has become increasingly popular in contemporary art. Noteworthy exhibitions dedicated to the theme of models in visual art include (but are not limited to): *Miniature Environments* (Whitney Museum of American Art, New York, 1989); *Small World: Dioramas in Contemporary Art* (Museum of Contemporary Art, San Diego, 2000); *Model World* (Aldrich Contemporary Art Museum, Ridgefield, 2002); *Post_Modellismus - Models In Art* (Galerie Krinzinger, Vienna, 2005); *Miniature Worlds* (Jerwood Space, London, 2006); *Otherworldly: Optical Delusions and Small Realities* (museum of arts and design, New York, 2011); *Small Worlds* (Toledo Museum of Art, 2011/12), *Speculative Spaces* (Robin Gibson Gallery, Sydney, 2013), *Dream no small Dreams* (Ronchini Gallery, London, 2013), *Was Modelle können* (Museum für Gegenwartkunst, Siegen, 2014); *Feel Big Live Small* (apexart, New York, 2015); *Model* (Galerie Rudolfinum, Prague, 2015), *Small Stories: Dream House* (National Building Museum, Washington DC, 2016/17); *A Working Model of the World* (UNSW Galleries, Sydney, 2017).

relationship of the body to space, or to advance an ironic or critical view of culture,
media, and society, increasingly tangled up in a web of representations and unable to
see through them (Kesner, 2015, p. 16).

The incitement of reflection (examples of which are discussed below) is shared with models in
research and education; as opposed to these, however, model-as-art do not illustrate an idea or aim to
contribute to solving a distinct problem. As works of art, they pose broad, open-ended questions that
challenge each viewer to find her/his own meaning in them (Jozwiak 2014). Indeed, as curator and art
historian Thomas Trummer argues, they aim *"to obtain and express how meanings multiply as a result*
of multiple references" which means a disruption of the *"polar logic of model and original"*
(Trummer, 2005, p. 25). The ambivalence between the model as an object pointing to something
beyond itself and its own material reality has been identified above as an *issue* of representation and
concerns models in general; however, the *"interplay, or tension, between these two senses is*
absolutely central to most models in contemporary art" as Kesner (2015, p. 12) points out.

To be sure, the merit of models-as-art cannot be reduced to advancing our reflection in a more open-
ended way than applied models. Very crucially, they have *"direct sensuous and psychological effects"*
(Kesner, 2015, p. 10). If the allure (or aesthetics) of the miniature is relevant even to the effect of
applied models, this is yet more distinctly the case with models-as-art. Kabakov, for example, argues
that appropriating models is like *"going back to childhood when you like to play with little things,*
maybe because we feel bigger and little things are under our power ... We can move them, destroy
them, do whatever we want." (Kabakov cited by Battaglia, 2017, para. 4). In a related vein, Gormley
says about his *Memes* that *"the most important part of the strategy ... is that they become vulnerable*
when placed in a room that we share with them and we walk about like giants. I hope that what this
does is make us aware of our own scale and size, our own clumsiness" (Gormley and Kesner, 2015, p.
108). Both statements reverberate aspects of miniature appreciation and it stands to reason that the
sensuous and psychological effects of miniaturisation *per se* are part and parcel with models in visual
art.[36]

The objectives pursued with models-as-art can be divided into two categories. One motivation for
introducing model aesthetics to visual art is to challenge concepts of *modelhood* itself. In other words,
such works question and explore what it means for an object to be a model. Such works can usually be
distinguished from artisan miniatures and applied models at a glance as they employ distortions and
other formal abstractions. Sometimes in tandem with this way of handling models, but sometimes also
completely independent from it, artists appropriate the looks of models from the other genres as an
appropriate vehicle to thematise some specific subject-matter.

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[36] See also Kesner's discussion of the *"artistic strategies"* involved in model employment: *"the manipulation of*
scale and size, changing object affordances, exploring the materiality and its rhetorical effects, appealing to
imaginative projection" (Kesner, 2015, pp. 16–19 (citation: p.16)).

Questioning modelhood (formal explorations)

Hubert's and other's observation that models always exist in a field of tension between *'representation and objecthood'* can be rephrased as a challenge: If any model is necessarily an abstracted (simplified, distorted, selective, interpreted) rendering of a 'real thing' – how far can this abstraction be pushed without the model loosing the connection to this referent? In other words - when does a model seize to be a model and turns into an autonomous sculptural object? Related explorations in art range from Fritz Schwegler's models reminiscent of the kind of miniatures people collect in type drawer display cases (link) to the landscape-diorama-like works of Mariele Neudecker and Tania Kovats (link). Most often, however, explorations of *modelhood* target architectural models. This interest can be tracked back to the model-like sculptures of Kazimir Malevich and Georges Vantongerloo in the 1920s (Kesner, 2015, pp. 15–16) but they have taken on greater significance in more recent artists' occupation with models (fn: Ekman, Schüttte, Gormley xy).

Gregor Eldarb has constructed various model-like sculptures whose overall shape and organisation remind of buildings but deny any suggestion of usable spaces. Instead, they are cluttered and rather random assemblies of cardboard walls and pillars and in some cases one would readily believe that an architect has playfully glued together all the cardboard clippings that emerged as waste when cutting out the elements of a real model. Eldarb comments on one such work (*Fragment - graugrün*, 2005) in an exhibition catalogue: *"Principles of orderly modelling, economy, adequate content, comparability, adequate representation, and a systematic structure serve as quality standards"* (Galerie Krinzinger / Bergen Kunsthall, 2005, p. 42). Eldarb does not explain what exactly these quality standards are but the apparent contradiction to the work they are presented along with suggests an ironic statement on architectural model making itself.

Despite models-as-art can be assessed in terms of their capacity to question concepts of the model (Hubert, 1981; Trummer, 2005; Kesner, 2015), there is little evidence in artist's own pronouncements that this is among their prevailing intentions. Rather this theme emerges as an implicit – albeit important – corollary in artistic explorations of architecture. Many good examples are found in the work of Thomas Schütte. Since the 1980s, the artist has built maquettes of architectural structures from cardboard, wood, or metal often reducing them to basic shapes and constituents. Many of these works can be interpreted as a critique of (Modernist) architecture (*"de-heroicizing manifestations of power and subjection"*; Heiser, 2005, para. 2) whilst being themselves models *"for a better and more lovely world"* (Schumacher, 2010, p. 23). They can also be viewed, however, as a negotiation of what constitutes a model per se. In this vein, Petra Kipphoff describes *Studio I* (and the same could be said about many other of Schütte's model works) as a

> *strange hybrid between object of use, nonsense-object and sculpture. ... Does it not in some*
> *way resemble a doll's house, and architecture model, one of those toy houses that help*
> *enliven the scenery of a model railway? Yes and no: for all contexts and purposes the*

model is not model-like enough, not as pretty and homely and perfect as models ought to be. Thomas Schütte's models look rather like abandoned construction sites, forlorn homes, toys that have been in the basement. Then again: for pure nonsense-objects they are not crazy enough, too solid and almost [too] functionally constructed. And how do they work as sculptures?(ref)

Kipphoff leaves this last question open but the works' affinity to the other model genres suggests that one views Schütte's maquettes as a contribution to the ongoing discussion of the relation between art and non-art. However, they are not just another example of a non-art thing drawn into an art context in order to observe its transformation in this environment.[37] Quite the opposite, as Rainald Schumacher points out, Schütte's *"architectural models appear within an art context, they are self-evidently artworks, but visualize, as models, a conceivable 'other' – as if the concrete artwork in front of us is not the real or actual work itself"* (Schumacher, 2010, p. 23).[38] Schütte's quasi architectural models do not open debates of what art is or under which circumstances something becomes art, but rather explores when something seizes to be art.

In a similar vein, Vincent Fecteau explains that the *"model-like aspect"* of his works allows him *„to think of the pieces almost as propositions for art rather than art"* (Fecteau and Lewallen, 2009, para. 11). And yet, Fecteau's like Schütte's works do not *demand* to be completed in another format. They are self-sufficient works of art.[39] Fecteau in particular pushes the concept of modelhood very far. Many of his papier-mâché and clay objects made between 2002 and 2014 look as if an architectural model had been fragmented, thoroughly kneaded, reshaped all over and brightly coloured. If one detects some element reminiscent of a feature such as a room corner or a window, it appears deformed and often turned inside out. Conflating interior and exterior is also apparent in Fecteau's earlier, more conceptual, works made from traditional modelling materials (foam core and cardboard). Many of these are highly abstracted house parts with photos of interior details applied to what appears to be the outdoor face of these *"model-like sculptures"* (ref): A desk with a reading lamp and a look out of the window stuck onto a roof-like structure, an image of a corridor attached to the outside of an open cube ... Another artist taking a collage as well as inside and outside conflating approach to modelling is Oftra Lapid. In her work *Room Plan* (2014), Lapid created an assembly of fifteen miniature interiors based on rooms the artist has lived in herself and ones designed by architect Adolf Loos. Elements reminiscent of furniture, wall segments, and platforms are partially laminated with photos of outdoor features such as rocks, a waterfall or brick structures, and dispersed across a table. In effect, Lapid thoroughly dissects the idea of an interior model.

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[37] This is ... from Duchamp to Warhol to ...

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[39] The fact that some of Schütte's models have been rendered in larger scales does not relativise this quality.

In all of these examples, modelhood is questioned through strategies of formal abstraction: bricolage, extreme simplification, deformation, dissection. This entails a renouncement of scale preservation, which on its own might suffice (even in otherwise *realistic* works) to turn a model into a work of visual art.[40] Another strategy is the integration of building components that are untypical in modelling contexts. Schütte, for example, created a series of models that he calls *One-Man-Houses* (2003) which are in fact a re-interpretation of their main component: a ready-made aluminium segment, originally used in ventilation shafts. In a wider sense, Fecteau's and Lapid's integration of photos may also be seen as a rupture of model conventions. This strategy is, however, taken to yet another level by artists who insert moving images into the static model world. In Graeme Patterson's multimedia installations, for example, models often house little screens showing animated video sequences (e.g. *Woodrow, 2005*; *The Secret Citadel, 2013*). This integration of model and moving images does not only subvert notions of modelhood but takes these works beyond 'mere' sculpture (a genre most models-as-art are can be assigned to). Considering that both the miniature world and the allure of moving images foster the *"suspension of disbelief"*, ref) this combination seems highly suitable for procuring immersive experiences. Patterson, however, is not after this effect: The videos are digitally rendered stop motion animations and as such rather enforce than suspend the impression of a mise-en-scène. Furthermore, many of the videos are staged as if they were miniature cinema shows inside the model. Unlike so in artists' works where video screens behind doll's house windows display recorded live action suggesting 'actual' goings-on inside the model building (see, for example, Lynn Hershman Leeson's *Home Front* (1993-2011) and many of Tracey Snelling's works). Stewart argues that the *"miniature offers a world clearly limited in space but frozen"* and thus *"always tends toward tableau rather than toward narrative"* (Stewart, 1984, pp. 48, 66). Patterson's work grapples with this claim as the model and the narrative medium maintain a certain distance; seamlessly integrated live action video can be used to render it obsolete.

The introduction of video to the static model world adds to the multiple challenges of modelhood. This is, as in most of the other examples of challenged modelhood, interesting to observe from a theoretical point of view but it is, arguably, not the primary ambition of the artists. Rather the model (enhanced by video technology) is to convey narrative content: Patterson's *Woodrow*, for example, tackles life in the Canadian prairie village were his ancestors lived and exemplifies, as Jessa Alston-O'Connor says, *"how the complex entanglement of nostalgia, family history, and memory may be effectively brought to life through the use of miniatures"* (Alston-O'Connor, 2015, p. 248). In Snelling's case the viewer becomes *"a voyeur, with permission to look into windows and behind doors that normally aren't*

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[40] Peter Eisenman, argues in this vein that when a model *"is no longer scale-specific, it supposedly becomes sculpture"* (Eisenman, Shapiro and Stamm, 1981, p. 124). Talking about her modelled urban details, Tracy Snelling agrees: "*I never build to scale; rather, I eye the location or my sketch of a place and translate it organically, often mixing different scales for effect. At times, I will combine small scale with large scale in installations to explore the idea of what is real, and how reality is ultimately subjective"* (Snelling cited by Chung, 2015, para. 10).

acceptable for viewing" (Snelling cited by Chung, 2015, para. 10). The same is true for Hershman Leeson's *Home Front* were the viewer witnesses a marriage drama staged in a doll's house. (...)

In all of these cases, the format / looks of the model is not chosen primarily to interrogate modelhood but because it is a fit and proper means to explore an artist's concern with certain topics. Embracing and appropriating model conventions (rather than foregrounding a critical and experimental inquiry) entails the challenge of categorial distinction. A certain ambivalence is not a problem per se (see section on hybrid categories below); however, visual artists employing the psychology of miniature appreciation[41] are of course aware of the lurking dangers. Neither is it desirable in the world of contemporary art that a sculptural work is praised, above all, for its fine craftsmanship or enchantment, nor for its utilitarian value.

In most cases, it is not particularly difficult to distinguish *models-as-art* from applied models. As works of art, models do not serve any fixed purpose; they are neither tools nor media to foster specific insights.[42] At times more difficult is the distinction of models-as-art and artisan miniatures. Often this is accomplished by an explicitly disenchanting character. Jake and Dinos Chapman's war-ravaged dioramas (Hell, 2000, ref), Atkinson polluted and desolate landscapes (ref), and Ai Weiwei's recreations of scenes from his life in a Chinese prison (*S.A.C.R.E.D.*, 2013) may serve as extreme examples but also Kakakov's *My Father's House*, or Hershman Leeson's etc... Honert's Schlafsaal, and any of the works discussed in IIb are not meant or likely to enchant. A second strategy to distance the model-as-art from the artisan miniature is the reduction of detail. Chapmans', Atkinson and Wei explicitly allude to miniature aesthetics through much detail, others reduce detail to xy. Kabakov's models of xy or xy, for example, do in this respect appear rather like architectural or Bühnenbild models meant to suggest rather than to mimic what is important. For these formal reasons (that are in this case not, however, a *model-critical* abstraction) such models-as-art are likewise unlikely to be confused with artisan miniatures.

Eventually, however, telling the two realms apart is a question of art criticism. The leading question here is: Is the work multi-layered, subversive, hintersinnig, xy ... or rather content with an easy one-line message or cheap effect. Indicative of such an evaluation is the appearance of models(-as-art) in established institutions of contemporary art. A model may look much like a doll's house, a model railway accessory, a museum diorama, or an architectural model – once it appears in a gallery, biennial

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[41] *"[W]hatever deeper and specific meanings and messages there may be"*, Kesner points out, *"they are necessarily grounded in the psychological effects of models on their viewers"* and summarises (in accordance with points discussed above in this working paper) the *"artistic strategies used to induce such effects"*: *"the manipulation of scale and size, changing, object affordances, exploring the materiality and its rhetorical effects, appealing to imaginative projection"* (Kesner, 2015, p. 16).

[42] Referring to dioramas in the hands of contemporary artists, curator Ralph Rugoff argues in this vein that models can *"serve to remind us that our conceptions of nature and art are likewise packaged entities, representational conceits, which revolve around and reproduce a specific set of values, fantasies, and assumptions, rather than offering a neutral and direct depiction of the world we live in"* (Rugoff, 2000, p. 16).

or other *context* of contemporary art it will be seen as belonging to this world.[43] *"Three-dimensional models in art"*, Kesner expounds, *"are in some aspects directly related to other instances of 3D models"* yet they *"belong to the world of art, with its system of discourse, institutions, and valuation"* (Kesner, 2015, p. 11). Here is not the place to discuss (potential objections to) institutional theories of art (Danto, Dickie, Becker); what is important is that the presentation of models within this context *raises claim* not to be confused with artisan craft or functional devices. Moreover it is remarkable that model aesthetics are usually employed by visual artists in *some* of their works whilst they also use different media and formats. By contrast, there is also a certain 'scene' of artists who specialise in model aesthetics (examples). These artists' works tend to be shown in exhibitions dedicated to miniaturisation itself and are hardly found among other sculptural or installation formats (fn?).

In conclusion: What all of these artistic uses of model looks have in common is the renouncement of a physically real or ideal referent. Those artists with a more formal interest in architecture and modelling reduce the represented object to extremely broad concepts such as 'built structures', those taking a more narrative approach maintain more sophisticated referents but relocate them from the objective to the subjective realm. Models-as-art can thus challenge modelhood on formal grounds but also on content-related ones. Whilst it is a standard of artisan miniatures and applied models that they refer to some thing or class of things in the objective, physical, world, models-as-art may have their referent entirely in the imagination of their maker. Such works are *"models only in so far that they materialise a mental model of the artist"* as Kesner (p.12) says.

(...)

Hybrid Model Categories

As noted in the introduction, the three categories – *artisan miniature*, *applied model*, and *model-as-art* – overlap. With respect to models of excavation sites, archaeologist Christopher Evans points out, for example, that these *"worlds shown small"* involve *"the pleasures of a miniaturist phenomenology"* and conceptually straddle *"a divide between play and instruction"* (Evans, 2008, p. 156). Referring to models-as-art, Kesner underscores that *"[m]uch like in science"*, they "*can be based on research and rigorous experimental procedures"* whilst *"much like in hobby modelling, they involve an element of play and the materialisation of fantasy"* (Kesner, 2015, p. 11). Usually, however, a model can be assigned to either of the categories whilst admitting that it has *elements* of at least one of the others. A model of an excavation site remains an applied model despite its *miniaturist phenomenology,* Schütte's models are firmly rooted in visual art although they negotiate architectural issues, and a hobbyist's model of a 18th century sailing vessel is an artisan miniature even if it is also instructive of historical shipbuilding, etc.

In some cases, however, even a tendential assignment proves difficult. An example of models that are

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[43] This of course also supports the formal experiments questioning modelhood....

conceptually between *artisan miniature and applied model* are the small-scale replicas of buildings displayed in history parks (see Wimborne Model Town for an example). On the one hand, they enchant and entertain, on the other, they are designed to convey a notion of life in a certain historical period to visitors. There are also instances of an intersection of applied models and models-as-art. For example, some models are conceived by artists en lieu of a too costly, logistically impossible or for other reasons unrealisable *real* structure but are then presented as a form of (post) conceptual art in its own right.[44] A more frequent case is that of models made by artists only in order to be reproduced photographically.[45] Considering the number of practitioners, miniature photography can be considered a genre of its own with famous proponents including Thomas Demand, James Casebere, Oliver Boberg, and many others. In these cases, the physical model is the key component of the final work – yet it remains in the artist's studio whilst the photograph is presented as the artwork.

Eventually, it may sometimes be impossible to decide whether a certain model is better labelled an artisan miniature or a work of visual art. David McFadden, curator of *Otherworldly* – a 2011 exhibition dedicated to *Optical Delusions and Small Realities* (tellingly hosted by the *museum of art and design* in New York) – says explicitly that each of the artists participating in this show *"establishes a meeting place between art and craft"* (ref) and that their work *"displays the focused attention of the perfectionist craftsman, the celebration of virtuosic performances of manual skill."* However, McFadden continues to explain, this *"is not the goal"*; rather, these artists aim to offer *"provocative commentary on the world around us, evoke personal memories and fantasies, explore the way in which time – past, present, and future – is decoded, and offer the viewer hidden looks into environments and situations that are at once familiar and foreign"* (ref, ibid.). Many works shown in this exhibition (and there are others, similar ones...)

[close section]

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[44] See, for example, Thomas Schütte suggested to build a massive, walk-on-able staircase built into what looks like the bow of an ocean liner (*Ship*, 1980) for the 1981exhibition *Westkunst* in Cologne. The piece proved financially not viable but entered the show (along with two other scaled-down works) as a model. Examples of exhibitions conceived from the onset for models of artworks are Isa Genzken's *Models for Outdoor Projects* (Bundeskunsthalle, Bonn, 2016) and Ilya and Emilia Kabakov's *Whimsical Models* (Hirshhorn Museum, Washington DC, 2017). Models of unrealised installations as well as models allowing to bring a number of large-scale originals togehter in a single room, are also common in architecture. Many (if not most) architectural models are of buildings that are not realised (because they fail to convince commissioners, are too expensive, conceived as utopian visions from the onset, etc.). Occasionally such models, along with ones showing implemented buildings are presented in exhibitions. Important examples include *Idea as Model* (Institute for Architecture and Urban Studies, New York, 1976), *Modelli* (MAXXI, Rome, 2013), and *Imagining to Scale* (STAM, Gent, 2014/15).

[45] ...or, much more rarely: painting...For an example, see the work of Amy Bennett. Since the specific effects and conceptual merits of miniature photography are not germane to the *Memory Model Project*, this practice is not discussed here in more detail. I will consider some of such works in passing but only in so far as their specific photographic reality is irrelevant to my argument. Especially those concerning questions about the relation between 3D and 2D representation (refs) For theoretical deliberations, the reader is redirected to Christofori (2003, 2005) Wendler (chapter 5), xy,

Memory Model Epistemology

The enchantment and the utility of models in other domains inspire their use for the retrieval and communication of personal memories. For example, the fact that models present all spatial information at a time and not translated into a succession of descriptions (which necessarily follows a narrator's preferred order), marks an important difference to verbally reported memories. In a sense, the work being done with memory models can be regarded as a kind of *subjective archaeology*. It operates in a similar way to *"the practical discourse of archaeological presentation",* that as Evans points out, *"has always involved seeing, as much as reading the past"* (Evans, 2004, p. 130). However, memory models will go beyond the level of displaying *'excavated'* details: their production is anticipated as being an activity of excavation in its own right. Some memory details will only come to the fore as a result of working on the model. Moreover, by giving a form to one's memories, these models will – in a sense similar to models which represent the intangible world of molecules – shape how viewers imagine these otherwise hidden worlds.

The epistemic merits of memory models are to be sought at the intersection of craft, tool, and art – in the interplay of the sensual world and the *'hard facts'*, as King argues in his discussion of artisan miniatures: *"In such little worlds"*, he writes, *"we can study the interactions of self-expression and objectivity, illusion and the harsh demands of fact, the picturesque and the realistic, feeling and reason"* (King, 1996, p. 47). As the discussion above suggests, this applies not only to the models made by artisans and hobbyists, but indeed also to many that function as tools in design, science and education. But how is this achieved?

The approach taken by the *Memory Model Project* is that of an interdisciplinary, arts-based investigation. *"Artistic research",* philosopher Henk Borgdorff explains,

> *unites the artistic and the academic in an enterprise that impacts on both domains. Art thereby transcends its former limits, aiming through the research to contribute to thinking and understanding; academia, for its part, opens up its boundaries to forms of thinking and understanding that are interwoven with artistic practices.* (Borgdorff, 2010, p. 44)

At this point, I do not want to go into questions of methodology and the project's distinct contribution to knowledge. Instead, I will outline how memory models can be approached in order to gain different kinds of understandings; the question of how these understandings – that are in part idiosyncratic and private – fit into a *research* agenda are discussed in *Part VI: Methodology.*

The proposed research project will explore how suitable memory models are for the purpose of presenting and triggering personal memories. In this context, they are both a *means* and an *object* of investigation. As such, memory models can be approached from three different perspectives:

a) *The maker's points of view.* Memory models are constructed and used as tools to explore one's own memories. The epistemic situation here can be described as *reflective practice.*

b) *The contemplator's points of view.*[46] The epistemic situation here is one of an individual, or a group of people, appreciating (enjoying, thinking about, discussing, etc.) a single model.

c) *The analyst's points of view.* The epistemic situation here focuses on evaluation and comparison. Unlike b), it is not an individual model which is being considered, but rather an investigation about whether memory models, as a genre, are suitable for triggering and communicating memories.

Viewers at an exhibition may *only be* contemplators, and it remains an option to approach memory models under *merely* analytic (scientific) premises. However, as discussed above, the different epistemic perspectives often overlap. The model maker is always also her/his work's initial viewer, and thus much that may be said about model contemplation is also true for certain phases of model making. Moreover, makers and viewers may compare an individual model to other models and thus adopt an analytic attitude. Eventually, an analyst may attempt to construct a model her/himself, to be better able to understand the medium.[47] In effect, the division of model-maker, contemplator, and analyst is not bound to specific persons, but is connected to the perspective an individual adopts according to her/his *main* interests or at a given moment. In fact, the principal variability of epistemic perspectives is a typical aspect of arts-based research [elaborate].

The Maker's Point of View

Making a memory model requires asking oneself: *How did I experience a particular place? What was/is important about it? What can I remember?* It is expected that related memories will surface not only during the work's preparation but also as the model-maker engages in a *"conversation with the situation"* (Schön, 1983, p. 79). Artist Michael Grothusen, who made drawings and a model of houses he lived in from memory,[48] describes related experiences:

> *Working on the drawings and the sculpture sent me down a path of recalling many minute details of the furniture, lighting fixtures, the view out the windows and the kinds of interactions I'd have with family members and room mates. It started off as an exercise in memory, but also made me think about making memory (which can be jumbled and fragmentary) conform to the kind of logic needed to build a building, namely that the parts had to fit together. The drawings had lots of smears and eraser marks on them that were a recording of me trying 'to get it right' and make the rooms fit together in a logical and reasonable way. They had to fit together and form a 'truth', but that is a word that I think always needs quotation marks because it is so subjective, especially when dealing with memory.* (personal communication, 2016)

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[46] *Contemplation* is understood here, according to the Merriam-Webster Dictionary, as a *"concentration on spiritual things as a form of private devotion"* (ref), and thus as distinct from the more rational approach of *analysis*.

[47] One may even consider that looking at and responding to a model is an act of modelling in its own right (Wendler, 2013, p. 118).

[48] See also *Part II (b): Models of Homes in Contemporary Art.*

Similarly, Michael Paul Smith, who re-created the house where he spent the first 10 years of his life, explains:

> *Although I had very clear memories of that time and place, once I started to construct the model, truck loads of unpacked memories tumbled forth ... As my work expanded, I found myself recalling conversations and reminisces of my parents and relatives ... [M]y sense of smell and hearing was also picking up the ambience of the house. The radio faintly playing in the kitchen, Mom making breakfast and the scents that wafted through the rooms. The sound of foot steps on linoleum covered floors ... everything was attached to each other, and that included the emotional atmosphere. ... Looking at models or miniatures always brings on the memories, but when I actually make them myself, then the flood gates open.* (personal communication, 2016)

These two statements are not only in line with the practical merits of model-making as a research tool but also with what Stewart regards as philosophically constitutive of the medium as such. According to Stewart, miniatures yield *"an experience of interiority"*, which includes *"abstract experiences of fantasy and fictiveness"* as well as *"experiences known through representation"* that emerge as *"a dialogue between outside and inside, between partiality and transcendence with regard to authority and authorial knowledge"* (Stewart, 1984, p. 69). Applied to the memory model: The model-maker reconstructs the former home drawing on details *represented* in her/his memory. S/he fills in gaps by guessing and interpreting the past, which involves '*fantasy and fictiveness'* (hence Grothusen's doubt about the *'truth'* of memory). The model maker also negotiates *outside* and *inside*. S/he does so literally, by choosing an exterior or interior view, and metaphorically, as s/he considers the relation between the home's physical reality and how this reality was experienced. Related remembering includes *partiality and transcendence* as details are recalled and aligned with the place as a whole – a concept that ranges from the *'logic needed to build a building'* to its *'emotional atmosphere'*. Eventually, the model-maker *authors* a product for public display, which includes an assessment of what s/he is willing to disclose and what s/he prefers to keep to her/himself.

Although contentious if applied to miniatures in general (for a critique see Krasniewicz, 2015), Stewart's account appropriately describes what the maker of a memory model of a home is likely to do and the kinds of understandings s/he can (re-)gain. Some of them will be definable, like Grothusen's *'minute details of the furniture, lighting fixtures, etc.'* or Smith's conversations with his relatives. Others, as implied by Smith's references to smell, sound and *'emotional atmosphere'*, will remain beyond words. The practice-based experience of making a memory model will – like their contemplation – encompass what Borgdorff calls *"'the je ne sais quoi' of artistic, aesthetic experience"* that *"as a matter of principle ... refuses every explanatory gaze"* (also Biggs, 2004; Borgdorff, 2010, p. 47). Insights that are nameable can be made available for further scrutiny, for example by providing verbal records. With respect to the (re-)experience of a home's *'emotional atmosphere'*, however, the model's physical presence may be conclusive. In this sense, the memory model can be compared to the designer's *display model*, whose function it is to visualise that which

otherwise only exists in the imagination, or is difficult to articulate verbally. Eventually, some emotional or atmospheric memories may be stimulated by the modelling process, but refuse any form of expression, and therefore remain reserved for the benefit of the model maker alone.

The contemplator's point of view

Considering a memory model as a work of art, we can appreciate its originality, aesthetic qualities, and craftsmanship or relate it to other artworks and the broader context of art production and theory (refs). Such an assessment is usually linked up with an evaluation. Most people have a propensity to judge whether they see a 'good' work of art or not (refs). Another common aspect of art appreciation and one more germane to questions of knowledge production is the scrutiny of the work's relevance to one's own life or the culture in which one lives.[49] Without going into the ramified and at times heated debate regarding art's claims to knowledge (Worth, 2003; Gaut, 2005; Borgdorff, 2010), one pertinent difference between *learning from art appreciation* and *learning from or through scientific inquiry* can be specified.[50] What we 'take home' from works of art are often sensory or emotional qualities as opposed to propositional knowledge. For example, models representing other people's homes can give us a sense of *what it was like* to live in a particular place, how a person relates to this place today or how we would experience it ourselves. Moreover, encounters with works of art are especially intense or even therapeutic if they seem to mirror experiences the viewer had her/himself but could not process or describe as yet. Bjarne Funch, a specialist in the psychology of art appreciation, thus argues that works of art can provide, for the first time, a distinct form for hitherto inaccessible emotions, and facilitate through their objectification *"a platform for better contact to present life"* (also Funch, 1997, pp. 241–268, 2007, p. 13). In a similar vein, already John Dewey argues that it is a *"unique quality"* of art's production and reception – to clarify and concentrate *"meanings contained in scattered and weakened ways in the material of other experiences"* (Dewey, 2005, p. 87). [elaborate]

This aspect of art appreciation indicates what might happen when we contemplate memory models: We discover elements that feel familiar and important but have not been given much explicit consideration. Many sensate and once meaningful details succumb to the social conventions that shape the way we remember and to the more salient, well-rehearsed memories that push to the fore as we think of our home.[51] It is expected that contemplating a memory model can strengthen the esteem of the more subsidiary, or confusing aspects of our past. In this vein, artist Anthony Cribb attests models have the capacity to *"make available states of undecidability"* where *"'affective reverie' is positioned as a means for spectatorial access to impenetrable states – raising the possibility of a recuperation, thus repatriation of ... foreclosed spaces"* (Cribb, 2015, p. 232). The home in memory is a *'foreclosed*

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[49] Drawing together findings from various empirical studies of art appreciation, I have discussed these issues in my PhD dissertation (Jozwiak, 2014 see especially section 3.6).

[50] Art appreciation and scientific inquiry intersect at the level of art's theoretical and historical contextualisation; however, this mode of appreciation amounts to a systematic assessment of the artwork and is thus distinct from the more intuitive and holistic appreciation of artworks that is understood here.

[51] See discussion in *Part III: Memory: Models as Triggers and Monitors of Recollections.*

space' par excellence. Cribb's assessment also complies with what Borgdorff considers to be the core of artistic research's epistemological potential, namely to invite *'unfinished thinking'*, allowing *"us to linger at the frontier of what there is, and* [giving] *us an outlook on what might be"* (Borgdorff, 2010, p. 59). Revelations triggered by artworks *"come before any theoretical reflection about the world"* (ibid.); in fact, they enable us – just as Reichle et al claim regarding the model – *"to set our thinking into motion"* (Reichle, Siegel and Spelten, 2008, p. 12, translation mine). In conclusion, it is reasonable to consider an appreciation of memory models 'as art' as being a discrete mode of epistemological access.

The Analyst's Point of View

Memory models can be objects of systematic inquiry. Following this approach, they are described and evaluated as tools to gain insight into specific memory-related phenomena. It is hypothesised that memory models of homes may be used to assess how domestic spaces are experienced and remembered and how such experiences and memories can (or cannot) be represented. Social and psychological factors guide the way we remember, or wish to see the past, and determine what constitutes 'proper', 'interesting', and 'presentable' homes and models. Related analyses can compare a selection of models, and observe the process of their production. A crucial point here is that under a scientific perspective it is not the model alone that makes a complex object (such as a home) or procedure (such as remembering) more comprehensive but, as Reichle et al. suggest, the *"models are tools for a description without necessarily being themselves a description"* (Reichle, Siegel and Spelten, 2008, p. 12, translation mine).

To the (social) scientist, the memory model is an object to be investigated in terms of its usability and the tangible benefits it yields to makers and audiences. This may include, for example, how the making of this kind of model changes a person's accessible stock of memories, their evaluation, and their perception. Related theories and insights can lead to theories regarding memory models' potential employment in therapeutic or educational contexts, etc. Another line of inquiry may be to evaluate the practical confinements that derive from a model's nature as a *higher order thinking tool*. However, the analytic perspective is not limited to usability testing. Taking a more philosophical approach, one may also ask how memory models compare to other types of models. This means turning away from practical considerations towards ontology, and a shift from the instrumentality of the model to its definition. As the focus of the *Memory Model Project* is on what such models can *do*, rather than what they (philosophically speaking) *are*, such an account can be kept brief. However, it is instructive to draw together some aspects of the discussion so far, and provide a more nuanced working definition of the memory model. Whilst all the other research avenues described above can only be pursued as part of the proposed research project itself, a preliminary definition of the memory model can be developed within the scope of this working paper.

Memory Model Ontology

The first genre of models discussed in this paper was labelled *artisan miniature*. Models belonging to this category are those which are intended to be appreciated, first and foremost, aesthetically or for reasons of diversion. They often display and idealise objects that have been lost (or are otherwise unattainable) in real life, and expound notions of traditional handicraft. Some artisan miniatures may have (self-)therapeutic qualities[52] and most of them can be described as being the result of a playful appropriation of *real* objects. It is anticipated that many memory models will fulfil certain of these criteria; however, this is neither a necessary nor a sufficient condition.

The second genre, *applied models*, concerns models used for *heuristic* or *communicative* purposes in design, science, engineering, and education. As heuristic tools, models can be subdivided into *pragmatic fictions* and *selective concentrations* (Wendler, 2013). A model is considered to be a heuristic tool if working on it is a *method* for finding a solution to a specific problem. In contrast, if a model is employed for communicative purposes in science and education, it summarises or illustrates information which is already available; in design (particularly in architecture), as well as in engineering, it presents a vision or plan. Certainly, a model resulting from a heuristic (exploratory) process can turn into a communicative tool, but if this is the case it is likely to have been modified and adapted to the demands of its audience.

A memory model is a heuristic tool in so far as its maker explores something which is beyond sight, touch, and other sensual access. In this capacity, its production is akin to the model-based elucidation of other intangible phenomena (molecules, ancient settlements, etc.). Indeed, the memory model qualifies as a very fitting and proper example in support of the argument of Reichle et al, which states that our access to many objects *"is not only mediated by the model but enabled by it altogether"* (Reichle, Siegel and Spelten, 2008, p. 10, translation mine). The memory model does not, however, fall neatly within either of the two sub-categories of pragmatic fiction and selective concentration. The first sub-category applies to situations in which the model maker provides blurry or fragmentary recollections with a tentative form, and the second to situations characterised by an abundance of recalled details. Making a memory model will, however, often involve dealing with both a lack *and* an abundance of information depending on whichever aspects the model maker focuses on at a specific phase of the model's construction. Thus, making memory models will usually require navigating between the creation of a pragmatic fiction and a selective concentration.

An alternative way to frame the heuristic situation would be to view the production of a memory model as an act of designing, and to describe memory models in architectural terms as *study models.*

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[52] Models that can be used in institutionalised therapeutic contexts, may be a distinct and as yet not theorised category (see working paper *Part III: Memory: Models as Triggers and Monitors of Recollections*, section *Therapeutic Perspectives*).

This maintains the notion of research,[53] but avoids the (scientifically inspired) discrimination of pragmatic fiction / selective concentration. It is not necessary, in this case, to distinguish between different notions of representation, which is the purpose of this discrimination. Designers express their own interior world rather than represent an object or a class of objects. The classical purpose of the study model is *"to generate design ideas and to act as vehicles for refinement"* (Mills, 2011, p. 11). If used in order to express memories, it is hypothesised, it will trigger recall and help tidy up vague recollections.[54] When working on a study model, the designer develops new shapes or invents new functions for a product or building; the model maker in the process of remembering retrieves details of her/his past. The former and the latter are propelled by serendipitous findings; both draw on a stock of knowledge although (phenomenologically) new information is generated/retrieved in the act of hands-on experimentation.

In a sense, a memory model can be called a *reconstructive design*. The model is an *"an active tool"*, as Catharina Dyrssen argues, that closely relates to an *"investigating-constructing pursuit"* (Dyrssen, 2010, p. 230). A structurally similar process is at work when human memory creatively fills in gaps in order to generate coherence. Whenever we try to remember complex issues, we draw on (*'investigate'*) our stock of knowledge, and add or replace (*'construct'*) what is missing or does not fit the picture.[55] Just like the designer whose creative improvisation determines a product's novelty, so the maker of a memory model produces something phenomenologically new. S/he does so by extending a normally unconscious memory process into a manual activity.

However, the identification of memory models with study models means a certain contortion of the latter. Memory models do not anticipate future objects (in the sense that a prototype or scaled preview of a building does), but mimic a tangible space which has already existed. Although the model's accordance with this space is impossible to verify, and unlikely to be perfect, a memory model only deserves this name, as such, if it results from serious efforts by its maker to show how the particular place actually looked. Memory models are expected to present what the model maker sees in front of her/his inner eye, when envisioning the past, and not flights of fancy. As opposed to a flight of fancy (or a designer's study model, for that matter) this excludes deliberate embellishment or conscious elaboration.

A closely related problem is that, in the context of design, *study models* are discerned as being separate from *display models* (Echenique, 1970; Pattinson, 1982; Mills, 2011). Unlike the study model, the memory model is not made only for one's own or one's peers' eyes, but also for the appreciation of a broader public. Issues of display will not only follow, but rather permeate, the initial

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[53] This view follows Peter Downton's understanding of design as *"a way of inquiring, a way of producing knowing and knowledge; this means it is a way of researching"* (Downton, 2003, p. 2).

[54] See *Part III: Memory: Models as Triggers and Monitors of Recollections.*

[55] See *Part III: Memory: Models as Triggers and Monitors of Recollections Monitor*, section *The Memory Model as a document of personal memories*).

model making process. Although the remembered content must not be embellished for presentation, the production is likely to be influenced by conventions (notions of the dollhouse, the neatly crafted miniature, etc.). In effect, decisions about which details are relevant, the choice of modelling materials, the precision of execution, etc., will (consciously or subconsciously) be guided by certain standards. As long as the same space is not rendered in two versions (a private and a public one), a memory model will inevitably be a hybrid form of a study and a display model, respectively a heuristic and a communicative tool.

The influence of conventions is a problem if the memory model is limited to its function as a device for unearthing buried memories.. If, however, it is seen as a more complex object – that is, one for which the question of *how* to display ideas is an integral aspect – its ambivalent ontology becomes a point of interest in its own right. In fact, excavation and presentation must be seen as productively entwined, considering that the model maker is not only asked to recreate an architectural space, but also to account for its specific *atmosphere*.[56] This might require the employment of specific light effects, leaving certain parts blank, using idiosyncratic building materials, etc. which are *artistic* strategies. As with other models in which the expressive form rivals the object being modelled, the gaze of the contemplator or analyst no longer *"falls through"* the model and onto that which it seems to represent, but instead *"gets caught by it; it is palpably arrested, contorted, informed and developed by its concrete constitution"* (Wendler, 2013, p. 168, translation mine)[57]. If any model is, as discussed above, drawn between *representation and objecthood,* and this is indeed "*absolutely central to most models in contemporary art"* as Kesner (2015, p. 12) points out, then assigning the memory model to this category stands to reason. This would seem especially apt if one agrees with Kesner's view that models in visual art *"are models only in so far that they materialise a mental model of the artist"* and that it is another *"profound quality"* of theirs to *"be conceived of above all as props in games of make-believe, which function by activating various forms of imaginative projection"* (ibid.) in the viewer.

Once again, this categorisation of the memory model captures important aspects of its being, yet there are contradictory aspects too. On the one hand, a distinction between artisan miniatures and visual art objects is difficult to make, because as Kesner himself notes, *"no comprehensive theory of models exists in contemporary art"* (Kesner, 2015, p. 10). On the other hand, memory models are crucially utilitarian, which contradicts most concepts of visual art. The model as artwork must be allowed to function as a heuristic tool. This opportunity is provided by the emerging field of arts-based research. Models in this context are, as Catharina Dyrssen argues, media for the investigation of materialities and spatial thinking, but yet more importantly, objects for staging *"locations*, *heterotopias* and *liminal*

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[56] See Part IV: Home: Domestic Space 'through Memory through Model', section *Atmosphere*.

[57] In the original: *"Der Blick fällt sozugen nicht mehr durch das Modell hindurch auf dasjenige, was es zu repräsentieren scheint, sondern bleibt an diesem hängen, wird durch dessen konkrete Verfasstheit spürbar aufgehalten, deformiert, geprägt und ausgestaltet."*

states" (Dyrssen, 2010, p. 230). *"Heterotopias"*, Dyrssen in explaining this term coined by Michel Foucault states, *"are locations that carry a complexity by connection (direct, referential or conceptual) to other places* x. *Such complexities may be difficult to grasp through logical thinking, but they may be investigated through the artistic modelling activity and, possibly, revealed in their richness of information and connections"* (ibid.). Certainly, the production of miniature models is a specific kind of *artistic modelling activity* and Dyrssen does not address this in particular here. However, a memory model is an example par excellence of the visualisation of spaces whose reality lies in between the objective and the subjective (for example, between the architectural structure and furnishing of a former home and its representation in a person's memory), and it is determined by a wealth of cultural and psychological influences (ranging from the conventions concerning how a home was furnished in a particular period to how a miniature ought to be crafted). In effect, a memory model is a complex object that denies any definite assignment to the categories of the artisan miniature, the applied model, or pure visual art. It partakes in all of these, but ultimately has to be defined as an ambivalent object.

[edit conclusion]

Continued: *Part III: Memory: Models as Catalysts and Monitors of Recollections*
        or *Part II (b): Models of Homes in Contemporary Art*

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