UnDesign. The Un-designability of the Virtual.
Design from Problem-solving to Problem-finding.

Abstract

Drawing on Deleuze (1991) this essay investigates the virtual as what problematizes the possible by inserting contingency in the process of emergence of the new. The tension between the virtual as what is uniquely placed to engender true innovation, and its aleatory and unforeseeable nature mirrors the tension existing in design between form-making and the need to acknowledge contingency. In embracing the un-designability of the virtual design takes contingency and material variability as forces impinging on the process of emergence of the new. I suggest a new model for design research from problem-solving to problem-finding based upon the undesigned at the core of design itself. This points to a further shift: the role of designer from creator to facilitator, teasing form out of the formless, engaged with manifold forces expressed through material variation. Examples from design current engagement with smart and synthetic biomaterials are assessed through this theoretical paradigm.

Keywords
Virtual, problem, contingency, Deleuze, undesigned, material variability, morphogenesis, smart and synthetic biomaterials.
Introduction

This chapter aims at positioning itself as a speculative proposal for a new theoretical framework in design research based around notions of material morphogenesis and the virtual, as what problematizes the possible by inserting contingency in the process of emergence of the new. The tension between the virtual as what is uniquely placed to engender true innovation, and its aleatory and unforeseeable nature mirrors the tension existing in design between form-making and the need to acknowledge, and work with, the contingent. The chapter intends to propose a new model for design: a shift from problem-solving to problem-finding, based upon the idea of the undesigned at the core of design itself, best explored through a morphogenetic model. On this point, the chapter asks what are the implications for design if matter is liberated from the imposition of hylomorphism? If matter is constructed in dynamic terms, as a flow whose self-organizing properties are emergent rather than given, immanent rather than static, how might this inform a new way of thinking about the design process and the designer’s role?

To offer a possible response to this question the chapter suggests that Gilles Deleuze’s notion of actualization of the virtual (Deleuze 1991) ought to be taken on board by design as a problematizing paradigm to rethink the conditions that allow the emergence of the new. The actualization of the virtual is to be understood not in terms of things, but in terms of events. Every actualization of the virtual is indeed an event: something ultimately unexpected, strange and unforeseeable, therefore possessing the power to unlock a different future by provoking change and engendering transformation.

It seems to me that design is bound up with a similar set of concerns. How is the new being produced? How to catalyse the unexpected, unforeseeable differential of the event that, alone, has the force to create change? How to capture material stories from the future? Certainly, design is notoriously elusive to define, but whichever definition we choose and in whichever form we take it, one thing is clear. Design is never a thing, but a process. A process of speculation, invention and
change, which always produces tangible implications that affect behaviours and lives. Such a notion of design as the process of changing what is into what can be, always engaged with the not-yet, resonates with Deleuze’s assertion that philosophy is a creative practice precisely because it is always engaged with the creation of the new (Deleuze 1995 136).

For Deleuze (1995) one of the key tasks of philosophy is to figure out under which conditions the new is created. The production of the new is therefore bound up with a creative evolution, and cannot be conceived outside of a duration. In other words, the new is not something transcendent, a mysterious founding break, or a drastic interruption, but something completely immanent happening in time. Thus, the production of the new is always about the virtual. What is important to underline here is the extent to which the virtual is always process and production, rather than a product; a container of manifold tendencies or propensities that can be actualized, rather than a fixed sequence with a teleologically predetermined goal; an urgent, insistent, unpredictable force that insert itself into (and breaks apart) the tangibility of concrete reality.

A word of warning. To think design with Deleuze does not mean extracting ideas from an established philosophical corpus and then applying them to design. The point is not a philosophy ‘applied’ to design or worse, a philosophy wanting to monitor design’s output. Rather, in line with Deleuze’s practical philosophy (Deleuze 1988) this is about a processual, in-fieri, becoming way of proceeding (albeit not a method), a way of redesigning the relationship between thinking and making through a non-linear, emergent, open perspective. Deleuze makes clear that an applied philosophy is the opposite of his philosophical empiricism, which he describes as “analyzing states of things so as to bring out previously nonexistent concepts from them” (Deleuze 2006 304). In a radical reversal of canonical philosophy what now comes first is an existent state of things out of which new concepts (and new practices too) are to be extracted. If the state of things to be examined here concerns the processuality of design, what is to be evoked and extracted as a “previously nonexistent concept” is the notion of the undesigned, provisionally defined as ‘the amorphous, problematizing complicity of vagueness and contingency’ to be found at the core of design.
This chapter begins by looking at architecture theorist Sanford Kwinter’s work on morphogenesis, and in particular at how matter’s capacity for self-generation makes space for different models that describe the emergence of the new. Then, it examines the actualization of the virtual, and the distinction between the virtual and the possible, as articulated by Deleuze in *Bergsonism* (1991). Finally, it uses Deleuze’s notion of the problem to reframe the boundaries of design as a subject discipline, from a problem-solving to a *problem-finding event*.

**Material morphogenesis and design**

Drawing his metaphors from the 20th century's panoply of paradigm shifts in the sciences, Kwinter contends in *Far from equilibrium: essays on technology and design culture* (2007) that matter's capacity to spontaneously self-organize must be taken into account by those who design and create physical artefacts. While this in itself is nothing particularly new, Kwinter's insight lies in stretching the notion of the emergence and evolution of form, that is, morphogenesis, to every aspect of the world, over and beyond architecture.

Elsewhere Kwinter (2001, 1998, 1992) poses important questions concerning morphogenesis, self organizing systems and the creation of forms that evolve and change through space and over time, in particular asking which kinds of models of the possible might be best suited to embodying the real. He stresses the insufficiency of classical hylomorphism that explains the genesis of form through a linear model whereby only a limited number of possibilities are reproduced and there is no space for novelty to manifest itself. In this model “the state of a system at a given moment can be expressed in the very same terms (number and relation of parameters) as any of its earlier or later states” (Kwinter 1992 53). While this model can account for how a body moving through the system incurs change, it cannot however account for any change occurring to the system as such. Besides, and crucial to identifying the inadequacies of hylomorphism, the only variations this model can explain are those defined by perpetual self-identity – when a body changes only in degrees (quantity), but not in kind (quality), when, in short, these changes are not real changes at all as they fail to engender the emergence and variety of form.
The opposite proposition to the hylomorphic model would be to say that matter is endowed with morphogenetic capacities of its own. This model describes a process of form generation through growth, differentiation and continuous variation and assumes a continuous unfolding of matter where new forms emerge out of the unpredictable interplay of dynamic forces. Therefore there are forms because there are processes. No longer do we have an ideal form imposed by an external agency (an ideal design blueprint). Rather, form emerges from virtualities being ceaselessly actualized. This is how the new is created and the not-yet comes to be. If this point has been articulated well in contemporary architecture design,\(^1\) this notion of matter as inherently spontaneous and capable of self organization is indebted to Deleuze, both his own work and with Felix Guattari. In *A Thousands Plateaus*, Deleuze and Guattari postulate that matter is alive with the potential of its creative endless evolution and that everything is formed through differentiation and individuation of the same substance.\(^2\) The categorical difference between matter and form is bypassed. What is celebrated instead is “the prodigious idea of Nonorganic Life” (Deleuze and Guattari 1988 411) where “the essential thing is no longer forms and matter, but forces, densities, intensities” (Deleuze and Guattari 1988 343).

This is what a materialist philosophy has to offer to design: a way to stop thinking about matter as something obedient and inert that passively follows an external imposition, be it the Law, or the Royal science, or a design blueprint, to focus instead on an active matter, raw matter-energy, matter–movement capable of generating all the structures that surround us through self-initiated emergent processes. It is this flow of matter rather then the structures created that constitute our immediate reality (DeLanda 1999). Our present (and future) reality is “pure difference” that emerges via matter flowing through time, says Deleuze (1994 90).

\(^1\) For instance Neil Leach (2009) according to whom the paradigm shift from postmodern insistence with appearance to new concerns with performance and material functionality is an indicator of a growing interest in morphogenesis.

\(^2\) Deleuze draws on Spinoza’s single substance (Deleuze 1988) and on Henri Bergson’s idea that matter is made up of “modifications, perturbations, changes of tensions or of energy and nothing else” (Bergson 1991 201). For Bergson both matter and other form of life are different modalities of the same singular élan vital.
Thus, the potential for change and becoming, for the emergence of the new is lodged in this relentless unfolding of explosive matter.³

Philosopher Manuel DeLanda (2002, 2004, 2009) and architect Lars Spuybroek (2008) have both argued for this brand of radical materialism, from the two standpoints of philosophy and architecture theory and practice. This is a vitalist materialism that assumes matter as continuous variation and focuses on the philosophical implications of examining not just the properties, but the capacities of matter. Indeed, there is a difference between properties and capacities, the latter being always both capacity to affect and be affected. It is precisely on capacities – that is the entire pathosphere - rather than properties that the continuous material variability, nonlinearity and morphogenesis depend (DeLanda 2009).

In relation to design, the idea is to rely more on what has been called material information⁴ (Leach 2009) as the generative driver - and not as an afterthought to consider after the design phase has happened. Material information is about engaging not simply with the properties, but with the capacities of matter as generative morphogenetic drivers in the design process. This means to bypass the idea of inert matter and shift from form to formation - or else, from form-making to form-finding (Leach 2009).

This has important consequences for design. First, a morphogenetic perspective prompts design to question its relationship with materiality, as well as some of its assumptions about how objects actually come to exist. By grasping matter through the morphogenetic model - where matter is never static but coalesces in a continuity of different stages - design can theorize the production of the new not as the by-product of an external agency, but in radically material terms. By rethinking matter in terms of events and processes, rather than in terms of things and objects, design can shift its focus from its teleological fixation with the final outcome and from a customary concern with the user, to how to conceptualize, map and harness the

³ For architect Peter Eisenman “it was Leibniz who first conceived of matter as explosive. He turned his back to Cartesian rationalism, and argued that in the labyrinth of the continuous the smallest element is not the point but the fold” (Eisenman 1992 425).
⁴ Emphasising the etymology of the words Leach writes how “form must be informed by considerations of performative principles to subscribe to a logic of material formation” (Leach 2009 34).
material virtualities that constitute its manifold domain. A shift from molding to modulation takes place, allowing for the interplay of materialities and temporalities to swing back at the centre of the process of creation of the new. In this perspective what informs and constitutes the design process per se is now the process of actualization of the virtual.

One of the immediate consequences of this model is that it compels design to downplay the traditional role of the designer as the overarching and overseeing star. Philosopher Brain Massumi, who has written widely on the intersection between the virtual and architecture, remarks how

New form is not conceived. It is coaxed out, flushed from its virtuality. The architect’s job is in a sense catalytic, no longer orchestrating. He or she is more a chemist (or perhaps alchemist) staging catalytic reactions in an abstract matter of variation, than a maestro pulling fully formed rabbits of genius from thin air with a masterful wave of the drafting pencil (Massumi 1998 18).

What becomes privileged instead is the abstract regimes of forces that deploy the new, manifest in designed objects. In this perspective any object, be it a building, a city, or a designed artefact is nothing but a distribution of forces and intensities traversing matter.

The creation of the new

This insistence on the processuality of matter (and equally on design as a process), being the result of a continuous actualization is as critical as it is easily overlooked. The reason why we register reality as static is because what really are fluid states are perceived as temporal crystallizations, transient states frozen in artificial isolation, while in reality they are (very) slowly thresholding one into the next. Each form is only a temporary stage in the process in which each stage contains all the others. Each form virtually contains all the potential forms belonging to the same continuum. To borrow Kwinter’s expression, forms are not fixed things, but “continuous metastable events” (Kwinter 1992 59), “always new and unpredictable unfoldings shaped by their adventures in time” (Kwinter 1992 60 my italics).

The actualization of the virtual is precisely this ‘adventure’ that involves a developmental passage from one state of form to another. It is telling that the term ‘adventure’ is used to describe the process of actualization of the virtual both by
Kwinter (1992) and by philosopher Keith Ansell Pearson (2002). Kwinter in particular insists on time. It is only time that releases the virtual forms already existing within matter. He writes:

> Once time is introduced into this system, a form can gradually unfold on this surface as a historically specific flow of matter that actualizes (resolves, incarnates) the forces converging on the plane. These are the phenomenal forms that we conventionally associated with our living world. What we have generally failed to understand about them is that they exist, enfolded in a virtual space, but are actualized (unfolded) only in time as a suite of morphological events ad differentiations ever-carving themselves into the epigenetic landscape (Kwinter 1992 63).

To root the notion of “adventure in time” we can look at the example offered by the field of responsive design, where the responsiveness is embedded in the material and matter itself contains an infinity of singularities that emerge under specific conditions and are highly contingent - for instance, no-tech responsive architecture that capitalizes on the responsive properties embedded in the structure of the material. A pertinent example of this is found in architect Achim Menges’ HygroScope (2012), a meteorosensitive morphogenetic design experiment now at the Permanent Collection, Centre Pompidou Paris, which explores an innovative mode of responsive architecture based on the combination of computational morphogenesis and of the behaviour inherent to the material (Fig.1). The dimensional instability of wood in relation to moisture content is employed to construct a climate responsive architectural morphology. Suspended within a humidity controlled glass case the model opens and closes in response to climate changes with no need for any technical equipment or energy. Mere fluctuations in relative humidity trigger the silent changes of material- innate movement. The material structure itself is the machine. The HygroScope offer a sensuous and a very visible proposition of matter shifting from a critical point to the next, continuously thresholding from one stage to the next, whilst responding to changes in intensities circulating in the environment.
Because the wider the sensorium present, the higher is the capacity of affect and being affected, an extreme case in point of this intensities-based responsiveness is offered by smart materials. Smart materials “materials that change in response to changing external conditions” (Lefteri 2013) are capable of sensing and responding to their surrounding through a combination of intrinsic properties and context-based circumstances of use. What is so remarkable about smart materials is not simply that they are responsive and context-based, but that this characteristic they possess inserts time in the equation. In this sense they are coproduced in a duration and some researchers have called them becoming materials (Bergström, J. et al. 2010). For this reason smart materials are located at the opposite spectrum of contemporary industry metals that, to use DeLanda’s expression, are “well-disciplined materials” (DeLanda 2004 20). These materials (i.e. mild steel) have been historically stripped of material impurities in order to make them more homogenous and reliable, their behaviour predictable and their performance extremely standardized.5

Smart materials allow us to think at matter on a continuum, from disciplined and predictable to undisciplined and unpredictable. For instance, while industrially produced steel and glass are well-disciplined - homogenous (uniform in composition) and isotropic (identical properties in all directions), other materials are less disciplined: they possess richer material complexity, richer material information and therefore higher morphogenetic driver capacities. This capacities are not restricted of

5 Not to mention the social implications of this material-led process in the form of a deskilling in the craftsmanship required to handle and work these materials.
course only to smart materials. Wood for instance is heterogeneous, anisotropic and subject to irregularities.

Even more worthy of note here are those new typologies of smart materials that are effectively hybrids in between living and nonliving, organic and nonorganic, such as protocells and CLE (Cell-like Entities). These Protocells and CLE are engineered from lifeless liquid chemicals manufactured artificially in laboratory and although they rely on the basic principles of living organisms (biomolecular reaction networks that couple genome to a function), they do not actually qualify as living. This means that although they exhibit behaviour usually associated to living organisms, such as adaptation to their environment, movement, self-aggregation in colonies, they cannot however reproduce or evolve. They are currently used for the design of smart biosensors, for instance in civilian and military applications, and the sensing of physical, chemical and biological variations in the environment. Unlike the reengineering on living organisms (such as in synthetic biology), which is a top-down approach, protocells and CLE are the result of bottom-up, emerging processes.

The study of protocells is a new and emerging science that has the potential to drastically revolutionise the way we make materials, and materials make the world.⁶ A design application of protocell research is found in the Amoeba surface-adapting trainer, a conceptual prototype that seeks to probe the future of new protocell-based materials and proposes to use 3D printed biotechnology to create a second protocell skin around the wearer’s foot (Fig.2).

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The *Amoeba* shoe has been developed by researcher and multidisciplinary designer Shamees Aden, a recent graduate from the MA Textile Futures (Central Saint Martins, London) who is currently working with scientist Dr Martin Hanczyc from the University of Southern Denmark to fabricate a tangible protocell shoe for 2050. The effect for the athlete is that the protocell synchronises to the individual foot exploiting protocell responsive and reconfigurable properties, adapting in real time to the current activity of the runner by adding extra support in high impact areas.

If Aden is inspired by how science could revolutionise future fabrication, and how the chemical make up of materials questions the status of that material (is matter fixed or active?), her work also offers a speculative, and pertinent, example of the potential applications of a morphogenetic model in design.

**Actualization and realization: two processes**

Deleuze distinguishes between the process by which the possible becomes real (realization) and the process by which the virtual becomes actual (actualization). While the possible is a mode of anticipatory resemblance and doubling up of the real, a sort of preplanned, preformed version of the real, whose realization is always predictable because it does not involve anything unexpected, the transition from the virtual to the actual, on the other hand, is based on genuine innovation - the process erupting out of the collision of a multiplicity of material and immaterial forces. On this point it is worth quoting Deleuze at length:

> Now the process of realization is subject to two essential rules, one of resemblance and another of limitation. For the real is supposed to be in
the image of the possible that it realizes. (...) And, every possible is not realized, realization involves a limitation by which some possible are supposed to be repulsed or thwarted while other “pass” into the real. The virtual, on the other hand, does not have to be realized, but rather actualized; and the rules of actualization are not those of resemblance and limitation, but those of difference or divergence and of creation (Deleuze 1991 96).

In the first case only a limited number of possibilities are reproduced and there is no space for novelty to manifest itself - an apt description of the hylomorphic model. In the second case we have a model where the unfolding of matter and the unpredictable interaction of forces at play allows the emergence of new forms, of the not-yet - morphogenesis.

Moreover, in his discussion of the relationship between the real and the possible Deleuze makes another important point of relevance to design. If the real is what already exists here and now, and the possible is what can exist, this means that the possible is determined by, and ultimately dependent upon, the real. It is by knowing what is real that we can predict the probability that it might turn, one day, into the possible. In other words, we can predict which possibilities will be realised in the future starting from the reality we know already. However, until we stay in the realm of the possible we only have access to a sort of mechanical evolution that adds existence to something that is already known, that already exists. This means that there is not much space for the unknown to manifest itself. Ultimately, for Deleuze, the possible is a “false notion, the source of false problems” (Deleuze 1991 98) and in what seems a true warning to overplanning by design, he continues:

We give ourselves a real that is ready-made, preformed, pre-existent to itself, and that will pass into existence according to an order of successive limitations. Everything is already completely given: all of the real in the image, in the pseudo-actuality of the possible. Then the sleight of hand becomes obvious: if the real is said to resemble the possible, is this not in fact because the real was expected to come about by its own means, to “project backward”, a fictitious image of it, and to claim that it was possible at any time, before it happened? In fact, it is not the real that resembles the possible, it is the possible that resembles the real, because it has been abstracted from the real once made, arbitrarily extracted from the real like a sterile double. Hence, we no longer understand anything either of the mechanism of differentiation or of the mechanism of creation. (Deleuze 1991 98)
The only true “difference, divergence or differentiation” (Deleuze 1994 212) happens in what Deleuze calls the ‘inventive drama’ of actualization, that is, the movement from the virtual to the actual, where a contraction of virtuality takes place, whilst containing the germs of yet more virtual events to come. Thus, only actualization is genuine creation because it breaks with the principle of identity, whilst opening up new problem frames that question the existent. Actualization, thus, is nothing but the creation of problems. It is always problematic, and it is creative precisely because is a problematic and problematizing event. Specifically, the possible is problematized by the introduction of the unforeseen, and this is what opens up to the creation of the new. In design terms this means to acknowledge the presence of an undesigned and undesignable at the very core of design if true innovation is to be achieved.

The virtual is the problem

We must see the transition from the virtual to the actual as the (problematic and problematizing) relationship between what is and what could be. In this sense it has plenty to offer to design, if we take design, as we have done at the beginning of this chapter, as the process of capturing and materializing the not-yet.

This problematization allows design to reformat itself from a problem-solving to a problem-finding enterprise. This resonates with what Deleuze asserts in Bergsonism (1991) when he writes how “true freedom lies in a power to decide, to constitute problems themselves…the truth is that in philosophy and even elsewhere it is a question of finding the problem and consequently of positing it, even more than solving it” (Deleuze 1991 15). Moreover, Deleuze distinguishes between discovery and invention. Discovery has to do with speculative problems, that are simply stated and that actually contain their own solution, which only needs to be uncovered, thus discovery or uncovering has to with something that already exists, and would certainly happen sooner or later. On the other hand, however, “invention gives being too what did not exist: it might never have happened” (Deleuze 1991 15). Invention has to do with creating the terms by which a problem will be stated. It is invention, thus, that design should be firmly involved with.

Indeed for Deleuze the activity of thinking itself is often misconceived as the search for solutions to problems, a prejudice that has its roots in the social and
pedagogical system (the school), where the teacher is the person who poses the problem and the pupil the person who solves by discovering the correct solution (Deleuze 1991 15). Real problems on the other hand have no given solution. They must generate solutions by the interplay of diverse components and by a process whereby the virtual keeps on insisting and resisting. The established, the known, are taken over by the unexpected that enters the process of creation as an agent to contend with, as a force to be reckoned with and, crucially, as a material to work with. For design, this means not to be satisfied with an outcome-oriented, problem-solving identity, but relentlessly seeking to engage with new modes of interrogating and questioning the existent.

There is always something accidental about the virtual. It is accidental because it follows no internal plan. There is no preconception, only a working through (Evens 2010). Anything can happen. In this sense the virtual is unintended. It embraces the unexpected. Therefore, to engage with the virtual concerns experimentation (not prediction), risk (not predetermination), urge (rather than deliberation). Ultimately, it is about the virtual seizing you, not you using the virtual as an instrument. Ultimately, the virtual cannot be mapped or indeed planned. The virtual cannot be designed. To engage with the virtual we must therefore be prepared to leap into the unknown and, ultimately, be prepared to deal with contingency.7

For philosopher Robin Mackay contingency at its simplest “refers to the attempt to think events that take place but need not take place: events that could be, or could have been, otherwise” (Mackay 2011 1). Mackay stresses the point that contingency “is that which thinking can grasp only as event’, thus strongly emphasizing the connection between contingency and the unpredictable: “an event that happens to us, that comes from outside, that simply ‘strikes’ without any possible prevision” (Mackay 2011 2).

Armed with these insights we can now go back to design to draw some provisional thoughts, to explore further what we mean by these two aspects of the

7 Contingency, as Keith Ansell Pearson notes, is at the centre of Henri Bergson’s philosophy: “Bergson’s thinking of creative evolution places a notion of contingency at the centre of its concerns and conceives duration precisely in terms of an interruption and discontinuity” (Ansell Pearson 2002 74).
virtual that we have identified – the problem and the contingent – and whether they might inform a new model of design research. The process of design is possessed by an obvious tension between the desire to capture form on one side, and the need to acknowledge and work through contingency, on the other. A tension exists, in other words, between form-capture and the undesignability of the virtual; between the expected, safe solution to the problem or issue at stake (realm of the possible), and the unpredictable, yet truly innovative operation that only can deliver the new (realm of the virtual). This vague, aleatory, problematizing, yet utterly material, force is what I call the *undesigned* within design.

**The undesigned within design**

In *The architecture of continuity* architect and theorist Lars Spuybroek (2008) writes about vagueness (inspired by Peirce). If continuity is the plane of immanence, vagueness has to do with the indetermination of the virtual, the unforeseen. Yet, it is not a state of amorphous indeterminacy. Continuity and variation produce things continuously, but they produce discrete objects, not “slime or oceans” says Spuybroek.

In fact, continuity *is* vagueness insofar as “it understands things in the opposite way to what we know as elementary, not as prior to relations but as a posterior result of relationality. It is a universe where relationality is a given, and things – objects, beings, events – emerge from it” (Spuybroek 2008 144). If this continuity and variation together constitute the process through which designs grow (and this applies to variation of scale, from the giga to the nano) this process should be viewed however within a historical framework. “The new doesn’t emerge out of nothing, not even from a fully mobile state; it emerges from that which is already organized” (Spuybroek 2008 188). This seems obvious, but needs restating as it introduces contingency in the rupture with the existent that creates innovation. Contingency becomes another agent in the process, another force in the process. Contingency, as it has been written recently (Mackay 2011), becomes a medium to work with as it “introduces a new kind of precarity into our dealings with the present and the future. It reveals that we are ‘worked’ out from inside and out by anonymous materials (Mackay 2011 3). The forces of contingency are assimilated here to materials, tangible, raw, substantial, and, like matter, equally subjected to the process of morphogenesis and material variation.
The problematizing combined force of vagueness and contingency, as the interwoven components of the virtual, should strike a chord with design, insofar as they seem to contradict the very essence of what design is conventionally taken to be, namely, the intentional planning, the ideal blueprint, even the cunning deceit - as philosopher Vilem Flusser famously wrote. This view can be challenged by insisting instead on the contradiction and the resistance that the problematizing complicity between vagueness and contingency brings to design. Vagueness and contingency are here taken as disruptive forces impinging on the design process. Vagueness, as the continuity of immanence out of which all things are created through a process of metamorphing and emergence; and contingency, as its aleatory by-product. As such, they constitute the undesigned at the core of design.

Concluding remarks

Of all the tensions design is currently traversed by (dematerialization, digitalization, social innovation, critical interrogation of the existent) certainly the most crucial to this chapter concerns a renewed sensitivity towards materiality. This should find expression in how new kinds of philosophical materialism can percolate into design theory and practice. The challenge for design (and designers) is to take onboard, embrace and question these new materialist interrogations in an affirmative, critical and innovative way. Design needs to interact with matter not as something to be appropriated and impose upon, but something to co-explore with, recognizing the vitality of matter not as an academic discourse, but as an interlocutor developed within practice. At the same time design needs to eschew the limits (and the traps) of a self-appointed teleological destiny.

A materialist perspective signifies first of all that design should view the materials it engages with in a different light. No longer passive matter that obeys laws, but active matter informed by morphogenetic principles. In this immanent model the designer no longer imposes a form, but can only tease it out of the material. To think at the designer as a facilitator does not mean however to substitute a modernist god with an essentialist one. The designer becomes the one able to tease

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8 See “About the Word Design” in Flusser’s seminal collection The Shape of Things: A Philosophy of Design London Reaktion Books, 1999 pp. 17-21
form out of the formless, precisely because s/he is engaged and interacts with the manifold forces emerging during the design process, and expressed through material variation. As DeLanda remarks:

We may now be in a position to think about the origin of form and structure, not as something imposed from the outside on an inert matter, not as a hierarchical command from above as in an assembly line, but as something that may come from within the materials, as form that we tease out of those materials as we allow them to have their say in the structures we create (DeLanda 2004 21).

But we have to be cautious here. We cannot say that matter contains already the form that the designer will tease out. This is precisely the difference between the possible and the virtual this chapter has tried to describe. What must be emphasized is the non-linearity of the process, its aleatory and contingent nature, its problematizing effect that, together, can prompt design to interrogate reality whilst engaging with form finding. In this process, whose outcome cannot be known in advance, where intensities impinge on each other, the designer exercises force on matter, as equally as matter acts upon the designer, never merely reacting. Thus, if form-finding is the result of a collectivity of agencies, where the designer him/herself is thought of as another raw material with own capacities, whose virtualities are actualized alongside the unfolding of matter, design per se becomes the formidable process whereby the conditions that allow the not-yet to become the now, cannot but hinge on the unforeseeable, unpredictable, undesigned at its core. It will be only by experimentation therefore that the new becomes the tangible outcome design aspires to.

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