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Design, knowledge and human interest

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ABSTRACT

This paper is an analytically orientated attempt to reshape understanding of the connections of theory (in the wide sense) and design. It does so by building on Habermas' double reconstruction of the interrelation of knowledge and human interests and the necessity of reflection in order to show that today, even in limited ways, design is a necessary form of *theoretical,* and not only practical, reflection. The underlying premise here is that in an epoch of the artificial, design is objectively situated to offer a distinctive mode of thinking concerning how we contend with the world as now is, i.e. the world we have made.

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I

The title of my paper contains a reference to Jürgen Habermas' famous inaugural lecture at Frankfurt in 1965. The lecture, and the later book of the same title[1] was Habermas' attempt to provide a systemic basis for 'emancipatory critical reason' by reconstructing the epistemological basis of such reason in the tradition of German philosophy and thinking from Kant to Freud. Habermas' target was the reduction of emancipatory reason to 'positivism,' i.e. the rule of instrumental rationality, meaning the substitution of 'technical control of objectified processes' for enlightened action (Habermas 1971, 316).

To put the aim of this paper into something like the framework and orientation of Habermas' project is to say that it is an analytically orientated attempt to reshape the understanding of the connections of theory (in the wide sense) and design. It does so by building on Habermas' double reconstruction of the interrelation of knowledge and human interests and the necessity of reflection in order to show that today, even in limited ways, design is a necessary form of *theoretical,* and not only practical, reflection. The underlying premise here is that in an epoch of the artificial, design is objectively situated to offer a distinctive mode of thinking concerning how we contend with the world as now is, i.e. the world we have made.

I am interested in looking at what design may offer to mind, and specifically what it might offer as a distinctive – and crucial – way of understanding concerning the relationship between knowledge, practice and human interests.[2]

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Design, we know, is historically peculiarly resistant to theory. In a way, it finds its glory in this. The unswerving application of design to practical ends, mediated by criticism, but (often) only in minor ways by self-reflection, accommodates almost too well that mode of acting on behalf of interest that it most powerfully offers.

But it is not only from the side of design that there is a problem with my claim. To propose design as a realm of thought is to fly in the face of the structure of theory and intellectual inquiry as we have received it across the European tradition. The attitudes we have inherited in this respect finds neat summation in reference to some sentences from the philosopher Schelling that Habermas gives at the very beginning of his lecture.

II

Habermas begins his inaugural lecture with these lines

> 'In 1802, during the summer semester at Jena, Schelling gave his Lectures on the Method of Academic Study. In the language of German Idealism he emphatically renewed the concept of theory that has defined the tradition of great philosophy since its beginnings.
>
> The fear of speculation, the ostensible rush from the theoretical to the practical, brings about the same shallowness in action that it does in knowledge. It is by studying a strictly theoretical philosophy that we become most acquainted with Ideas, and only Ideas provide action with energy and ethical significance.
>
> The *only* knowledge [therefore] that can truly orient action is knowledge that frees itself from mere human interests and is based in Ideas – in other words knowledge that has taken a theoretical attitude' (Habermas 1971, 301).

These sentences are significant—not least because what Schelling argues for can *also* be recognized in some of the recurrent ambitions of design theory. It is precisely in large part in response to the all-too-often 'shallowness' of action that the impulse for theory arises, and it is with the hope of giving practice 'energy and ethical significance' that it is pursued.

In that sense, it is not difficult to see that Schelling's sentences set out the fundamental premise of theoretical activity as a whole. The thesis that theory occurs consequent to the *separation* of thought and interests and the *distancing* of knowledge from action has its basis in the perception that interests (especially as applications) pollute theory (both science and critical social science in different ways operate on this basis) just as they weaken and trivialize action (ethics). The counter-appeal of Schelling's thesis is that, because it construes itself as *other* to interests, the theory about which he speaks stands back from immediacy, allowing thought to disengage itself from the vicissitudes of daily struggle and in so doing to reach a level (or a depth) of understanding that concern with immediate can *never* achieve.

From the standpoint of design, this is a deeply troubling proposition. Design is not other than interested and immanent. That design contains an objective or a distancing moment within its processes is of little account. Design is a practice that, *in its deepest structure,* is interested and engaged. The tension between design as a practice and the ambitions of theory with which we are all familiar is testament to this. The felt antipathy between design and theory therefore cannot easily be gainsaid.

But this is by no means the only difficulty raised by the theoretical stance. Schelling's proposition does not stand in isolation. As Habermas shows, it replicates the earliest demarcation of theory, the translation from *theoria* (which originally applied in the realm of religious spectacle) to theory (or philosophy). This movement begins with the demarcation between

the realm of the eternal and that of the fugitive. It passes on to establishing the structured, self-subsistent nature of what-is (that which is independent of our actions: the Platonic realm of Ideas, Nature) and it concludes by creating an internal relation (*ethos*) between the knowledge of eternal verities that theory achieves and theoretically informed action in the world.[3] This threefold movement establishes the demarcation of what belongs to theory and what does not (that is, what cannot be theorized). Even allowing for the transformations science has wrought on this model (but less than we tend to think in certain respects) these moments (especially 'the theoretical attitude and the basic ontological assumption of a structure of the world in dependent of the knower' [Habermas 1971, 304]) continue to define the essential structure of theoretical reflection. The whole of modern research is still based on them.[4]

> The empirical analytical sciences develop their theories in a self-understanding that automatically generates continuity with the beginnings of philosophical thought. For both are committed to a theoretical attitude that frees those who take it from dogmatic association with the natural interests of life and their irritating influence; and both share the cosmological intention of describing the universe theoretically in its law-like order, just as it is. (Habermas 1971, 303)

For design, the methodological implications of this movement are scarcely innocent. Thus, the first, that which makes the demarcation between the realm of the eternal and the fugitive (of what belongs to, and does not belong to, theory) translates the religious origin of *theoria* into the proposition that the work of theory is essentially the contemplation of the cosmos. Theory is then the exploration of 'what is' in the absolute sense. What it discovers – or what it seeks to discover – are the laws (divine or natural) that underpin existence as a whole. But the corollary of this concept is as important as the proposition itself. The argument that theory deals with 'what is' in the absolute sense requires the prior demarcation of Being and time; the separation of the realm of the eternal and the unvarying (Being as such) from the realm of human actions (being-in-time). Only this differentiation, as Habermas neatly puts it, reserves to '*logos* a realm of Being purged of inconstancy and uncertainty while leaving to *doxa,* the realm of the mutable and the perishable.' (Habermas 1971, 303). This separation between the intimation of divine reason and the creative order of the world and all that belongs to everyday thought and action allows theory to demarcate itself as the study of eternal Being (and thus to claim ontological status). But the price paid is significant. All that is within practice, all that belongs to the realm of the finite and the historical, falls 'below' theory – and therefore becomes that which *cannot* be theorized, at least in the classical sense. Theory has nothing to say concerning the everyday.[5]

The second criterion by which theory secures itself consists of the requirement that the realms that theory investigates must be *a priori* understood as those that stand outside of, and subsist independently from, us. (Habermas 1971, 307). What stand outside of us that can be known in this way are substantive natural entities, or they are self-subsisting verities existing beyond appearance, yet accessible by theoretical reason. It thus follows that what is not self-subsistent, or what is not *a priori* structured from outside of us, cannot be known. Essentially, that which is made passes beyond theory in this sense. Conversely, this point also implies that if we wish to bring any phenomena under the ambit of theory then the objects of inquiry (and here we can take this word literally) must be construed as if they are natural self-subsisting entities; that is, they must be attributed, must be seen as possessing, in some manner, law-like attributes, indeed to be determined by laws.[6] Herbert Simon, in *The Sciences of the Artificial*, gives a vivid instance of this. He is discussing the absence of the teaching of design in professional schools in major universities when he notes at one point:

> The kernel of the problem lies in the phrase 'artificial science.' The previous chapters have shown that a science of artificial phenomena is always in imminent danger of dissolving and vanishing. The peculiar properties of the artifact lie on the thin interface between the natural laws within it and the natural laws without. What can we say about it? What is there to study besides the boundary sciences—those that govern the means and the task environment? (Simon 1996, 111)

This dissolving of the artifact in the face of theory (Law) is not an accident, but is the essence of theory in the classical sense. It is how the latter constitutes itself, and indeed *protects itself against* what it is, that (in this case) the artifact might in turn reveal (for example, the question of the significance of the configuration of the artifact as against its determination by Law). The wider point, however, still hidden here is the hostility of classical theory to making, what we might call, without exaggeration, the 'fear of acknowledging making,' a fear still prevalent today, not least in the critical social sciences.[7]

The third movement, which takes up the cosmological focus of the first in order to establish how theory, although standing outside of action, can nonetheless enter into the conduct of life, establishes a pattern of relation between theory and ethos (acting in the world), but at a price. Habermas succinctly gives us the essence of what is traditionally involved here: 'When the philosopher views the immortal order, he cannot help bringing himself into accord with the proportions of the cosmos and reproducing them internally. He manifests these proportions, which he sees in the motions of nature … within himself.' The soul likens itself to the ordered motion of the cosmos and theory enters the conduct of life through this gate. Through ethos, 'theory molds life to its form and is reflected in the conduct of those who subject themselves to its discipline' (Habermas 1971, 302). What, in this movement, is however placed outside or beyond consideration are immanent ethical relations. Or rather, such relations can be thought *only* insofar as they can be thought within the question of conduct. This might appear to comprehend ethics and acting in general, but it does not. The discipline of the latter does not extend beyond limited spheres of conduct. Thus, most obviously, all of that which appertains in the classical definitions to labor and work lies below ethos. The realm of negotiation with the material conditions of existence passes outside of ethos and theory. In contradiction to Schelling's hopes, the largest spheres of human action remain without the 'energy and ethical significance' offered by theory.

III

These considerations are salutary for my proposition. It is immediately clear that *none* of these moments equate easily, if at all, with design. To the contrary, each begins to throw up sharp differences between theory in its traditional (or, indeed, in its technical) senses and design. It is worth looking further at these tensions for they at once help to bring to clarity the structure and character of design-action just as they also begin to stipulate the conditions for an adequate theory of design. Working from the moments already set in train three pairs of issues can be discerned: those concerning *limit* (or the impossibility of theory encompassing design) and *challenge* (by design, to theory); those concerning the *finite* and of *artifice and the artificial* (as conditions of design); and those *of contingency* and *activity* (the conditions of thinking of design as movement or process).

(1) The argument that the only knowledge 'that can truly orient action is knowledge that frees itself from mere human interests,' runs counter to the fact that design can *only* be knowledge concerning human interests (since human interests are, *by*

definition, what design is about; they are that about-which it is concerned).[8] Insofar then as knowledge must eschew interest design can be known in these aspects, only, at best, with difficulty.[9] Conversely, human interests in design cannot – or can only with difficulty – be grasped theoretically (in the classical sense). Taken together, these points suggest that the separation of knowledge from human interests vitiates theoretical knowledge as a mode of understanding adequate to design. This means that design cannot (and is not) comprehended by theory as-is. Nor can it be understood by the theoretical stance (philosophy).

The relation parallels that of science. Just as, in Habermas' view, science 'has no longer been seriously comprehended by philosophy' (1971, 4) (because philosophy post-Kant both withdrew from the *practice* of science whilst ceding epistemological ground to its method), the same applies to design, which, after all, originates in the same post-Kantian moment. As we will see in more detail below, design can possess no interest for modern philosophy, either as a practice (into what category of purified knowledge does it fit?) or as a mode of knowledge and understanding concerning the world (since it does not equate easily to any of the distinct spheres that philosophy tries to think; neither to technical control, nor to ethical action, nor to language and expression).[10] Yet philosophy pays a higher price for this denial than it imagines. Equating knowledge 'effusively with the absolute knowledge of a great philosophy or blindly with the scientistic selfunderstanding of the actual business,' the denials involved here are not only in respect of design but of the understanding of complex (material) practice(s) as a whole. But precisely this failure to be able to think material practice in complexity also means that philosophy fails to develop 'a concept of [practical and theoretical] knowing capable of transcending the prevailing sciences' (Habermas 1971, 4). This has the baleful effect for the conduct of the world that in its weakened condition philosophy is unable to seriously challenge the domination of technical rationality. 'The positivist self-understanding of the … sciences [that] lends countenance to the substitution of technology for enlightened action,' and, equally importantly, the underlying proposition that all technology and economics militantly maintains, 'that the practical mastery of history can be reduced to technical control of objectified processes' (316) remain *effectively* intact. Philosophy is limited to a spectator's role, offering at most only 'the pseudo-normative regulation of established' practices (5). This limitation extends to would-be philosophies of design, they too are impotent vis-à-vis thinking practice beyond its established models, unable to *think* design (in the Hegelian sense), or to think a model of understanding adequate to the 'unique circulation of thinking'[11] that design offers.[12]

(2) But the very impossibility of a 'philosophy' or a 'theory' of design in the classic sense suggests also its opposite: namely, that design passes beyond the sphere of the understanding of theory (philosophy). Dewey ([1934] 1980, 274) once proposed that aesthetic experience constituted one of the greatest challenges to the limits of philosophical thought.

Today it might be stronger to recompose that challenge in terms of design, for it would seem that design, which combines the objective *and subjective* self-formative process of the human species with the exploration of what, in relation to this process, artifice can be – and both of these with the human interest in pursuing, simultaneously self-preservation, utopic fulfillment and emancipatory cognitive and practical interest – provides the model for the ruin of, or at least the deepest challenge to, traditional theoretical thought.

(3) The proposition that theory (in the traditional sense) is essentially the contemplation of the cosmos and hence that theory deals with 'what is' in the absolute sense – and that it is here, and not in the realm of time that Being subsists – runs counter to the necessarily finite, impure, idiomatic and situational character of design. Design occurs, we know, not 'as is,' but through the event of its coming-to-be, through how, in historical circumstances, it *happens*. In design, as in artifacture as a whole, there is no realm of being outside of time. Put stronger, design is *unable* to stipulate a realm of being outside of time, outside its own historical event.[13] While theory seeks to create a realm of Being (logos) 'purged of inconstancy and uncertainty,' design has no other choice but to accept 'the realm of the mutable and the perishable' (*doxa*, the finite). Moreover, if theory seeks a purity of essence design is not other than a realm, a practice, a *thinking*,[14] of the impure. Indeed, design is radically impure. Idiomatic in its moments of knowing it constructs or utilizes; 'mutable and perishable' in its constitution; contingent, circumstantial, a matter of the *situation*, design cannot but insist that, for it, being lies *here*; i.e. that there is *only* impure finite being even if the capacities it employs and points to transcend immediacy and are in themselves not finitely knowable.[15] From this standpoint design thus *reverses* the stipulations that constitute theory. At the same time, in insisting that, for it, being is finite and situated design effectively posits itself as 'below' theory: it is that which proffers a realm of truth (in action) that challenges thought to be come adequate to it. On both these grounds, knowledge that seeks to understand design cannot do so in the form of theory traditionally conceived.

(4) The objectivated world that theory investigates presents itself (or is credibly constructed as) both structured and self-subsistent. However, the medium through which design comes to be is artifice. Artifice is neither structured (in the sense meant here) nor, despite its objective moments, self-subsistent. Artifice is relational, it has no independent existence.[16] However 'objective' it may on occasion seek to present itself (as in technology), it is dependent. Specifically, artifice is dependent on subjects, and this is particularly true of design, which deals as its essential character with the interaction of things and world (persons). In design, therefore, we are acting *in relation to* a realm that is, at best, *ambiguously* external or self-subsistent vis-à-vis either ourselves or the world. In this context, the theoretical insistence on *a priori* determining of objects of study as structured and self-sufficient – and, even more, as 'the projection within some realm of what-is … of a fixed ground plan of natural events' (Heidegger [1938] 1977, 117).[17] – introduces an objectivating distortion; it causes loss of sight as to that which is, in the end, most crucial to explore; namely, at once in design and in regard to the artificial as a whole, possibility, mediation and negotiation.[18] Finally, while in design we are dealing with potentialities and possibilities these do not constitute anything akin to an (ideal) realm beyond appearance. Potentialities and possibilities refer to capacities. An adequate 'theory' of design is a theory of design as a capacity or a potentiality.

(5) Traditionally, theory enters life by replicating within itself the objective structure of the cosmos, forcing transient and shallow life into its eternal mold.[19] This desire for a model of order larger than its own activity is what draws design, in some of its moments, to seek such models (e.g. mathematical, natural scientific, quasi social-scientific – or even the model of art). But whatever claims are made on behalf of such

metaphoric models, and there is obviously a considerable history of such in the history of design right up to the present day, the condition of ethos, which draws its normative power from its apparent discovery of an ideal world structure derived from its understanding of cosmic order, is fundamentally *only* allegorical. To put this otherwise, the cosmological analogy works *only* to the extent that theory is thought to have discovered 'in the cosmic order an ideal world structure … the prototype for the order of the human world' (Habermas 1971, 306). Insofar as cosmological understanding loses its force as a model for action so *ethos* disintegrates. Today, when for us cosmological understanding recedes before the urgent fact of our incorporation into a world in which artifice and no longer nature provides the horizon, medium and prime condition of our existence, no such model of an 'ideal world structure' can maintain its force, not least because we have lost all illusion (except in faith) that such an ideal world structure was in some manner directed towards us. Today we live within the contingency of the world, with the instability (from our perspective) of natural forces and perhaps more generally with an understanding, or at least a sense, that contingency permeates *even* the so-called 'Laws' of nature (Meillassoux 2009).

(6) Finally, there is, in theory in the traditional sense, a wider price paid for ethos and the mimesis that accompanies it. It is that in this model activity is not thought, nor is immanence constituted, as that which could provide template(s) for practice, the eschewal of action as that which could in itself contain ideas (released through self-reflection) devalues practice. It is this refusal of ideas to practice that deprives practice of 'energy and ethical significance'[20] – and that, not coincidentally, offers the excuse at once not to take practice seriously and in the process to demean those who practice, the social consequences of this are itself significant – they manifest today as obscene economic inequality which is also social and racial inequality. That 'theory' is transposed here as power and the ability to manipulate financial rents makes little difference – above all that practice is subordinated to those who maintain it in the service of others. But the denial of practice or activity is also the denial of the materiality of interests (save as consumption). Stipulation of interest from above – defined in economic terms and then socially insisted upon – negates what Habermas tellingly describes as the 'metalogical necessity of interests that we can neither prescribe nor represent, but which we must come to terms with' (Habermas 1971, 312). If we were to ascribe a possible virtue to design (one honored more in the breach than in the accomplishment) it would be that design as a practice is a site of the negotiation between and the translation of (the bringing to visible and material reality of) such interests. Design, at best, takes up the immanence of activity and the (in the end political) question of the relation of material needs and the forms through which these may be met, and creates 'template(s) for practice.'[21]

IV

In the face of these antitheses, it is scarcely surprising that thought as a whole (meaning here all those disciplines that concern themselves with *theoria* and understanding: the sciences, the social sciences, the humanities) should presuppose design as that which *cannot* be thought. Indeed, what these last paragraphs have made clear is the degree to which, at

every point, design appears antithetical to the conditions of theory traditionally considered. Design, to put it bluntly, *rubs theory the wrong way* – and theory retaliates by declaring design a-theoretical.

Are we to accede to this view? On one level it is almost tempting to agree; to declare that if design cannot be thought theoretically, if theory is antithetical to design, then it must be 'thought,' i.e. it must be understood, in other ways – *including through the practice of design itself* (and, after all, this is how, in practice, design thinks itself).[22] This attitude is replicated, we know, in a number of ways in the field. We shall see later that there is some merit in thinking this way, yet there is a problem here, and not merely at the level of thought.

Reactive practice only adds to the limitations imposed on an activity that generally lacks (as does design) an internal capacity for *articulated* self-reflection. The lack of depth that results echoes Schelling's charge against the 'rush to the practical' that 'brings about shallowness in action.' Conversely, the counter-proposition that '*only* Ideas provide action with energy and ethical significance' has weight.[23] Looked at in this way, 'theory' may be the necessary counterbalance to distorted practice. This is all the more so in that as commoditization helps withdraw from practice all self-reflexive capacity (substituting economic and technological instrumentalism for enlightened action), so the distortions that occur (e.g. the trivialization of design, its avoidance of consequence – the list could be almost infinitely extended) cannot easily be accounted for, or sometimes even perceived, by a critical consciousness that labors under the difficulties of articulating its case. Since design is in the same moment intellectually consigned to a subaltern space, so the connection to the intellectual and critical resources that it requires to adequately think itself retreat. Understanding, let alone critique, becomes more difficult. Conversely, the application of full attention to the situation out of which we might imagine depth-understanding flowing cannot happen, consciously, without a depth-vocabulary through which to grasp practice. Can such a depth vocabulary be constructed outside of theory?

But there may be another loss here as well, and that is the loss *to* theory. That theory eschews design means that theory cannot access the realms with which design deals. Although from theory's point of view this means little – for by definition design is outside of its concerns and therefore is regarded as a realm that has no value – we cannot be so sanguine, 'we' meaning here ourselves as participants in a world transformed, increasingly, into artifice. Theory in its traditional sense had force when artifice seemed but of little account. Today, this condition is reversed. We have already seen that whatever *intellectual* interest we may have in cosmological issues these cannot be regarded as containing the same force as once presupposed. By contrast, the problems that collectively beset us (and 'us' here includes humans and those nonhuman entities that are in some manner dependent on the consequences of our actions), those concerning that which most urgently needs understanding, are problems of artifice. The need that presents itself is therefore for a theory capable of reflecting (well, or at least adequately) on artifice. What preeminently allows substantive and *experimental* reflection on artifice from a standpoint that includes human (and more than human) interests is design.

These last points suggest a complex, doubled need for an adequate *theory* of design – that there is a need from the standpoint of design to be able to articulate design 'theoretically,' i.e. conceptually, and there is a need from the standpoint of understanding (theory) as a whole, that it be able to grasp what design potentially offers to it, particularly with respect to understanding artifice, which is today a question of some urgency. But how are

such theories to be constructed when it appears that design and theory belong to two antithetical realms? It is clear from all that has been said that one way that the problem of design and theory *cannot* be overcome is by trying to force design into the mold of theory in the traditional sense. This is, clearly, ultimately impossible, as the limits of those design theories that have attempted it attest. The costs – to the substantive concerns with which design essentially deals – are too great. The only chance that presents itself is to understand that in accepting that design is a counterpoint to traditional theory it also offers the basis (not the foundation or the ground but the basis) of *another kind* of theory.

It is the possibility of this 'other kind of theory,' this 'thinking other,' that I would like to try to articulate now. I will proceed through four argumentative stages, this time from the standpoint of examining how some of the major propositions discussed above can be redeployed as ways of originating a 'theory' adequate simultaneously to design and to the needs of theory today. The procedure, in each case, will be to draw *from the moments of design* the criteria for each theoretical step. I will start by reconstructing Habermas' own opening of theory to interest.

V

In his inaugural lecture, Habermas offers a counterfactual reading of the meaning of pure theory that begins to open up a wider and more adequate conception of what theory needs to be. Reversing the view that the derivation of pure theory was inevitably linked to, and had its impulse from, purely objective drives – from the drive for untainted knowledge of what (metaphysically) is – he argues that the positing of a realm of disinterested theory had both strategic and emancipatory impulses: 'The release of knowledge from interest was not supposed to purify theory from the obfuscations of subjectivity but inversely to provide the subject with ecstatic purification from the passions' (Habermas, 306). In a similar manner, the propositions of ontological distinction (*Being* and *being*: invariant or transcendent being versus historical or contingent occurrence) offered a space through which consciousness, emancipated from archaic powers, could anchor itself in the unity of a stable cosmos and the identity of immutable Being and on this basis begin to develop critical self-reflection.[24] Habermas summarizes his argument thus: 'If this interpretation is valid, then the two most influential aspects of the Greek tradition, the theoretical attitude and the basic ontological assumption of a structured, self-subsistent world, appear in a connection that they explicitly prohibit: the connection of knowledge and human interest' (Habermas, 307).

It is this distancing, Habermas insists, which permitted the development of reflective capacities and which in turn allowed for the release of the subject from 'dependence on hypostatized powers' (Habermas, 310). Theory's true *interest* is here, in the emancipatory work it at least points towards: 'In self-reflection knowledge for the sake of knowledge attains congruence with interest in autonomy and responsibility. The emancipatory cognitive interest aims at the pursuit of reflection as such' (Habermas, 314). In other words, theory in its origin is not ontologically 'pure' but is, on the contrary, *a historically and culturally situated means of releasing the subject from* the enmeshing of consciousness with power and with the immediacy of contingent and inconstant empirical interests.

Today, the hypostatized powers with which we deal – and from which we need release from our dependence upon them – are in large part economic and technological. More widely, they are the powers of artifice generalized to the point where they now constitute

the horizon and medium of our existence.[25] This changes, radically, and far more than we have yet understood, the conditions under which we act. Today, no existence is possible that does not pass through the artificial, which now constitutes our totality. This new condition demands a theory adequate to its ramifications and possibilities. In many ways, such a theory has precisely the same interests as that of Habermas' model: the development of forms of reflection adequate to these extremely dangerous conditions[26] (yet which also contain enormous possibilities for development), and the release of the subject from the enmeshing of its consciousness with power and private interest.

The differences are, however, equally acute. Whereas, for the Greeks, it was 'only by means of ontological distinctions that theory could … take cognizance of a self-subsistent world purged of demons,' today the *reverse* applies. Consciousness, which once anchored itself 'in the unity of a stable cosmos and the identity of immutable being' (Habermas, 307) has now to find its living and, if not its 'anchor' then at least the site of its being, in the forms of historical emergence that artifice opens for us. In this situation, the ontological demarcation between Being and time dissolves. Subjectivity is rediscovered as historical being, not as that which 'is,' but as that which happens, or 'events' (Vattimo 1992, 73) in historical and environmental circumstances.[27] In this context, the necessary 'purification from the passions' that was required in the Greek instance now finds its contemporary parallel not in the release of knowledge from interest, but in its opposite. Knowledge today has its function not in 'disinterest' but in fostering interest in emancipation (or at minimum of fostering the emancipatory cognitive interest necessary to the development of autonomy and responsibility); it seeks to emancipate subjects from the debilitating limitations of technical and objectivist practices – practices that are constituted today in significant ways *outside* of wider human interests.[28]

The consequences of all this, for design as much as for thought (or better, for design *as* thought) are acute. It is from this that we can begin to understand the indispensible relation of design (as capacity) to 'knowledge and human interests,' and thus the relation of design and theory. We can see this in four stages. They concern, respectively, possibility; artifice; technology and subjectivity; and the division of labor.

(A) We have already seen that in the context of the world become artificial the notion that thought can only address a realm of Being 'purged of inconstancy and uncertainty' dissolves. Being, thought historically, has to accept that today its realm too is that of the 'the mutable and the perishable' (*doxa*, the finite). This does *not* mean that reflection on being reduces to the given. In the artificial, what is, as lived existence, *includes* potentiality as an objective condition. To think historical being is to therefore think being in its historical potential, not as the objective movement of history (being is without *telos)* but as the engagement of potentiality (possibility – including the possibility of its own destruction) within 'the realm of the mutable and the perishable.' In relation to theory, what this dissolves is the absolute priority and status given to the description of what is, and hence to representation as the certitude of the given. For the moment that we are forced to accede to the idea that being 'might be,' the absolute force of representation dissolves. Today, 'data' is the last wave, the high point of the modern dependence on the quantitative measure of the certitude of what is. But this certitude is already undermined in that we live in a life-world whose structural characteristics can no longer be known with law-like authority, not

even as extrapolation.[29] Economics is the obvious case in point. The mere projection of what is no longer suffices. For a long time the model of nature allowed the alibi. On that basis, the possible was constructed as extension within (*but only within*) the given parameters of the situation.[30] Critique too stayed within these limits. Today, these limits have gone.

Extrapolation points towards disaster. The nonidentity of circumstance and action requires qualitatively different action and thought: it requires that this nonidentity be thought otherwise as the propositional thinking of possibility and potentiality. Theoretically (and in practice), two developments are suggested by this condition. The first questions critique. Bruno Latour, in an important paper, asked, 'Why has critique run out steam?' (Latour 2003) More recently, Alain Badiou economically shifted thought in a similar direction by questioning the dependence in philosophy on critique and insisting that 'the essence of philosophical intervention is really affirmation.'

> Why is it affirmation? Because if you intervene with respect to a paradoxical situation, or if you intervene with regard to a relation that is not a relation, you will have to propose a new framework of thought, and you will have to affirm that it is possible to think this paradoxical situation, on condition, of course, that a certain number of parameters be abandoned, and a certain number of novelties introduced. And when all is said and done, the only proof for this is that you will propose a new way of thinking the paradox. Consequently, the determinant element of … intervention is affirmative. (Badiou and Žižek 2009, 81)

It will be missed by nobody in this room that what Badiou prescribes as the recipe for the future health of philosophy has always been the condition of design. The second condition even more directly addresses making. If possibility inheres in the artificial, that possibility cannot be known in advance. Possibility is always, in a sense, unknown. It can be manifest, made 'testable,' only as a proposition that has some degree of realization. But possibility in the artificial is the possibility of negotiating incommensurable requirements differently. The relation of such requirements cannot be wholly represented in advance: it is only in the configuration of something that incommensurable relations can be nonreductively brought together.[31] Propositional configurative exploration is to the artificial (to design) what experiment is for the science.

(B) Today, the realm of the 'mutable and the perishable' *includes* artifice. That is, whereas in traditional theory 'doxa' was merely the world of opinion, today we are encompassed in and by the artificial. The artificial-as-world is, in one way, the absolute incorporation of the 'tendency towards release from the constraints of nature' (Habermas 1971, 312) – or, at least, it is that incorporation where this release has gained extraordinary freedom of action, at scales that are global in their impact, to the point where the largest natural systems react back upon this world and where artifice turns on its own progenitors, threatening effective dissolution of the world that generated these conditions. What is *now* placed on the table, as perhaps the most acute question we face, is the relation between the interests in self-preservation and towards utopian fulfillment and the new conditions of existence brought into being by artifice. Artifice both (potentially) threatens and permits self-preservation just as it threatens and (potentially) permits the promise of fulfillment.

(C) What threatens and, in the same moment, potentially opens is the *nature of the relationships between interests, artifice and nature/world.* But if the latter now provides our effective horizon of existence, then it is *only* through the exploratory interaction with artifice that being-in-its-relations-with can be disclosed. Design, which combines the objective self-formative process of the human species with the exploration of what, in relation to this process, artifice can be – and both of these with the human interest in pursuing, simultaneously self-preservation, utopic fulfillment and emancipatory cognitive and practical interest – provides not only the model for the ruin of traditional thought *but the schema for how a thought adequate to this condition can be*. Another way of saying this is that today design provides the space through which it is possible to explore (experimentally, propositionally, as anticipation) the *emancipatory consequences* of the enmeshing of artifice and human interests.

(D) What design potentially frees from – and why it provides, *pace* Heidegger, the model of a 'free relationship to technology'[32] – is that it provides an alternative to the false identification of human interests with objectivating reasoning and practice. This is significant in that, as we've seen, one of the consequences of the philosophical abdication from science and technology is that even critical thought is today forced into conceding, at least at the global level, both the effective 'substitution of technology for enlightened action' and the reduction of history to 'practical mastery' obtained through the 'technical control of objectified processes.' (Habermas 1971, 316. It should be noted that 'technical' or 'technological' is used in the widest sense.)

(E) In the face of this powerlessness of thought – 'where a concept of knowing that transcends the prevailing sciences is totally lacking' (Habermas 4) – the necessity arises of articulating at once a more adequate rationality of action, and a wholesale redefinition of the 'practical mastery' of history (which includes reshaping the terms of that understanding). The 'substitution of technology for enlightened action,' meanwhile, necessitates a double act: the reconception of 'enlightened action'[33] – which itself cannot now be considered outside of engagement with the artificial – and the reworking of technology (within the expanded field of the artificial), such that it is capable of internalizing subjective interests, interests that, today, it should be noted, go beyond the anthropocentric in the literal sense in that it is now in the subjective interest to take into account the interests of nonhuman beings. Subjectivity is today inclusive, not exclusive. What design permits for subjectivity (and thus for consciousness) is the inhabitation of a realm of praxis in which the conditions of subjective experience, now indissolubly wedded to artifice, can be explored within parameters that include subjective interests as *internal* moment of that praxis and not, as in objectivating reason, as a merely secondary or post-hoc, 'after-the-fact' consideration. The technical reason for this we have already seen: that design is, as a matter of course, concerned with the mediation and negotiation of incommensurable requirements, of which the subject–object (or subject–environment) relation is by definition preeminent, provides the objective basis for this relation.

(F) The fourth and final moment I will deal with is perhaps the largest, and that which most directly challenges current patterns of knowledge, even those that appear to be already surpassed, but are in fact not. The issue is that of the intellectual division of labor. Habermas' essay provides both an opening and an exemplification of this

splitting – which he was later to take further both in *Theory and Practice* (Habermas 1973a) and in his two-volume *magnum opus*, *Theory of Communicative Action* (Habermas I984). In the inaugural talk Habermas expresses the intellectual splitting I am speaking of here by positing 'three non-reducible "quasi-transcendental" cognitive interests: the technical, the practical, and the emancipatory. These knowledge-constitutive interests serve as the basis for three different forms of knowledge and three different types of discipline – each with its own distinctive methodological approach, object domain, and aims'[34]– in brief, the scientific, the humanities, meaning above all language, and the critical social sciences: 'The approach to the empirical-analytic sciences incorporates a *technical* cognitive interest; that of the historical-hermeneutic sciences incorporates a *practical* one; and the approach of critically oriented sciences incorporates the *emancipatory* cognitive interest' (Habermas 1971, 308.) These cognitive interests owe their transcendental authority to the fact that they are rooted in the basic dimensions of human social existence: 'work, language and power,' (Habermas, 313) They 'take form' within the mediums and this enables Habermas to claim that 'the specific viewpoints from which, with transcendental necessity we apprehend reality ground three possible categories of possible knowledge: information that expands our power of technical control; interpretations that make possible the orientation of action within common traditions; and analyses that free consciousness from its dependence on hypostatized powers.' (313)

Habermas' approach has an immediate appeal. After all, we recognize this account empirically in the structure of the modern university. But it is precisely here that we have to stop and consider what Habermas' insistence on these differentiations implies. One thing it implies, as already suggested above, is that design lies wholly outside knowledge.[35] Once we relate this model to the structure of university, it occurs to us that this differentiation is less analytic than it is descriptive of what, in the modern world, *is*. Indeed, what Habermas is positing is simply the given structure of modern differentiations of knowledge and attitude now given a quasi-transcendent gloss. Such differentiations are scarcely innocent, however. They manifest in powerful ways. In both Habermas' thought and in the structure of the modern university, one such split is that between 'work' and 'interaction,' the differentiation between the technical (now defined *only* as instrumental act) and everything that pertains to language (to which is assigned the contrasting realms of communication and interaction). Not mentioned by Habermas in his listing, but implicitly present, is the other great modern differentiation, that between technics, ethics and aesthetics – which emerges precisely at the moment of Kant and Hegel (between, say, Kant's *Critique of Judgment* (1790) and the beginnings of modern conceptions of technology in the 1820s) Once we consider these two moments from the perspective of design, we realize immediately the problems of the Habermasian model. Design, after all, is brought into being by industrial production precisely as the point where the 'rational' distinction between aesthetics (poetics), technics (production) and ethics (or the subject) is temporarily overcome.[37] Itself an industrial technique, it nonetheless also stands as the point of mediation between 'instrumental action' and 'interaction.' Considered from the perspective of the artificial in general, mediation (and hence design), i.e. the creation of an interface or 'meeting point' between an 'inner' environment, the substance and organization of the artifact itself, and an 'outer' environment,

the surroundings in which it operates,'[38] is the more fundamental, the universal act. It is the splitting of this act into its moments and their differentiation that is historical. It is this that belongs to the modern realm – and that is already, in fundamental ways, slipping past us.[39] What Habermas describes as the quasi-transcendent structure of knowledge – and which, for all its supposed theoretical 'overcoming' is still manifest in popular conception as much as the structure of academic knowledge – today begins to seem both local and limited. It is local in the sense that it refers to an epoch already slipping away from us. It is limited in that it is precisely this separation of modes of knowledge that cannot grasp either the fundamental conditions of now – the world, as artificial, where the previously seemingly distinct realms of technical systems; symbol structures and cultivated and reformed nature now endlessly interpenetrate making a mockery of attempts to neatly distinguish today between orientations of 'technical control,''mutual understanding in the conduct of life' and 'emancipation from seemingly "natural" constraint(s).' It is limited in a second sense that such a differentiation cannot achieve what this world most crucially demands, namely understanding of the mediation of subject and object in its widest expression, and what Adorno rather beautifully calls the necessity 'to catch a glimpse of an order of the possible and the non-existent, where human beings and things each would be in their rightful place' (Adorno 1973, 15). But if thought, split, cannot grasp these things, design *is* their materialized exploration.[40] The formulation of subject–object relations that Adorno insists must be the basis of understanding – 'Mediation of the object means that it must not be statically dogmatically hypostatized but can be known only as it entwines with subjectivity; mediation of the subject means that without the moment of objectivity it would be literally nil' (Adorno 1973, 186) – is, in design, realized on a daily basis. It is precisely the folding into the Real, the making at least partially or propositionally Real and therefore the transforming the given Real on behalf of the 'possible and the non-existent' in general, and specifically of the possibility of a world where 'human beings and things each would be in their rightful place' that is the virtue that saves design from its otherwise commercial vulgarity and capitulation to private interests. Design, then, 'thinks' these relations, and it does so in the way of thinking, in the form of a 'circulation,' that we saw Badiou outline earlier (Badiou 2005, 60). In design there are situations, concepts, schemas, methods, but there are also processes, models, prototypes, realized entities… design as a *thinking* does not separate these moments. What design configures, models and propositionally realizes circulates *between* these moments and this circulation is the movement of a unique thinking. Design, in short, is 'the inseparable unity of a theory and a practice' where its *thinking* is realized in and through this circulation, and in the configurational structure of what results and exemplifies this thinking, that which is produced and which stands always as a (doubled) proposition: 'This!?'One way of conceiving what design *specifically* offers in this respect is to note that 'Human interest in autonomy and responsibility' today travels *through* the question of artifice. Design matters in this respect because in it, in effect, artifice, language and self-reflection are conjoined. In relation, for example, to how Habermas formulates it – that 'In self-reflection knowledge for the sake of knowledge attains congruence with the interest in autonomy and responsibility' while in language, 'through its structure, autonomy … responsibility … and the intention of universal and unconstrained consensus are already posited' (Habermas, 314, 316) – design takes these moments, incorporates them, and unites them with artifice. Against the merely

objectivating tendencies of technology, which press towards the instrumental, design pulls back artifice from instrumentality, insisting, against the grain (against force) that the "practical mastery of history" *cannot* be "reduced to technical control of objectified processes.' (316)

VI

It is this last point that allows me to bring this paper to its premature conclusion. The intellectual wonder of design inheres in this thinking. It is a wonder that *belongs* to design (in the way that we can think its unique wonder, which means its unique capabilities and limits) and this wonder is thought *through* design. There is a paragraph to this end in a recent essay on design research. In the conclusion to his work, entitled 'Transition Theory,' Johan Redström says this: 'This book opened with the suggestion that as design research engages in the making of many different kinds of things, design theory might well be one of those things it could be making. Whereas a theory of design and designing would take design as its subject, the notion of design theory seems to call for a inquiry into theory as developed in and through design' (Redström 2017, 133). What I have tried to show, especially in the last and very incomplete section of this paper, is that the dimensions of theory 'as developed in and through design' are far greater, of more human account, of more intellectual and world-practical account, than the world has led design to believe. What everything said above intimates is that design is of account not simply as a (subaltern) means of doing things *to* the world but also – and ever more principally – as a way of reflecting on and understanding the world we have made – 'understanding' meaning here *how to act* in the world on behalf of all. Design *is*, or better, it offers, in certain crucial aspects, that 'originality and range of reflection' that Heidegger called for in order that 'the modern age' could be 'withstood in the future, in its essence and on the very strength of its essence'[42] (meaning in its implications).[43]

Notes

1. Jürgen Habermas (1971) *Knowledge and Human Interests*, trans. Jeremy Schapiro. He described his aim as 'I am undertaking a historically oriented attempt to reconstruct the prehistory of modern positivism with the systematic intention of analyzing the connections of knowledge and human interests. In following the process of the dissolution of epistemology which has left the philosophy of science in its place, one makes one's way over abandoned stages of reflection. Retreading this path from a perspective that looks back towards the point of departure may help to recover the forgotten experience of reflection. That we disavow reflection *is* positivism.' (vii).
2. To give a deliberately emotive and psychological definition: 'A unique characteristic of what defines us as human beings on a par with literature and music' ... 'We have in the history of design an astonishingly rich inheritance. What is even more amazing is that with every new-born child the latent potential for similar achievement exists in this incredibly fertile human capability. It is the greatest renewable resource we possess and to acknowledge its creative potential could be the finest legacy we leave for our children and grandchildren.' The words come from the end of the historian John Heskett's unpublished manuscript *Craft, Commerce, Industry*. Without over-valuing 'Design' (itself a fetishistic displacement of what Heskett is referring to here), one challenge to theory is to articulate this capability as a crucial moment – and perhaps for us in the 21st century *the* crucial moment – of human praxis. it is precisely the seclusion of this capacity at a developed professional level within the design

professions that forces its effective marginalization as a moment of action and that thus allows the substitution of unsustainable objectivating technological and economic rationality – and with it the squeezing of the 'conduct of life into the behavioral system of instrumental action' (Habermas 1971, 316). At the same time, to comprehend the psychology of design in the context of the artificial (which is today the minimum condition of thought) it is necessary to explode the nominal singular capacity 'design' to understand the shifting range of capacities and capabilities drawn upon in design action.

3. For the traditional (Platonic) relation here see Habermas 1971, 302.
4. This is the premise of Martin Heidegger ([1938] 1977) in 'Age of the World Picture' [1938] in *The Question of Technology and Other Essays*.
5. This is precisely why philosophy throws up its hands at design: its impurity and inconstancy, the inability to separate what-is from entanglement with crude interest; the fact that in the end design is only a matter of negotiation (but this 'only' is precisely the question) terrifies thought.
6. Heidegger ([1938] 1977) gives the logic of why this must be so. See especially the comments on the methodological construction of a 'fixed ground plan of objects.'
7. Though it is interesting that the onset of the digital both in the world as a whole and in academic study is beginning to compel a change in this position. To 'read and critique' add (to a degree) 'build and make.' Yet even this development is in tension with how the social sciences are capable and incapable of dealing with things. anthropology and sociology will both claim to deal with the everyday, and even with material culture. Yet they do so as descriptive givens. What is absent is what is inescapable for the 'movement' of design thinking and practice, namely the sense that things-could-be-other. Whereas for the social sciences contingency is simply a fact of circumstance, for design it is always a moment. For this reason, the social sciences cannot see the configuration of things as the agency of difference. Condemned to description, the thought that things-could-be-other terrifies. In counter, design, ever irresponsible to the given, too easily reduces the thing to its configurative possibility; makes of its contingency the occasion for a moment of display. Both architecture and fashion, in their different-though-similar ways, demonstrate this, architecture with the greater irresponsibility.
8. There is no evading this point. Recent attempts at the 'post-human' do not in any way escape this requirement. Design cannot be other than anthropocentric. This does *not* mean, however, that one accedes to given definitions or demarcations of the 'human.'
9. The interest most obviously obviated in almost all theories and models of design is the economic. Almost the entirety of design thought evades this question (save as valuing it as 'business' or 'innovation').
10. As I note in more detail in section V, design is both impure and outside these frameworks of 'knowing' the world. In respect of 'technical control,' design is usurped by technology (hence thought's contemporary capitulation to the digital); in respect of ethics design is usurped by 'rights' (since the materialization of ethics has almost no place in contemporary ethical discourse); in respect of language and the 'expressive' arts, the authority of literature, the humanities and art usurps the poetics of making.
11. This phrase comes in 'Philosophy and Psychoanalysis,' an essay by Badiou 2005. He is formulating an understanding of how a practice constitutes a form of thinking. 'I call thinking the non-dialectical or inseparable unity of a theory and a practice. To understand such a unity the simplest case is that of science; in physics there are theories, concepts and mathematical formulas and there are also technical apparatuses and experiments. But *physics* as a thinking does not separate the two. A text by Galileo or Einstein circulates between concepts, mathematics and experiments, and this circulation is the movement of a unique thinking' Badiou 2005, 60.
12. This is exemplified in Glenn Parsons' recent *The Philosophy of Design* (2016), which is a philosophy of modernism in design, not thought concerning design.
13. This is why there can be no design theory that is not also a theory of history.
14. This immediately suggests the potential fertility of the concept of design as 'unique circulations of a thinking.' Design is neither unique per se, nor is it 'all.' It is the site of a unique circulation between its complex moments: a circulation that contains, by definition, the impure negotiation of circumstance and situation.

15. Design, as an agency of the artificial, is by definition a sphere of the possible. This does not mean merely variation in time and place along a single continuum (as retrospective histories couch it) but possibility without finite end and without predictability as to what might thereby by opened, both as configurative possibilities and in the deployment of capacities.
16. Artifice is without ontology in the traditional sense, i.e. it has no being outside of history, outside, that is, the forms it takes in any instance. We are faced then with grasping artifice *in terms of the relations though which it is constituted and which, in turn, it helps constitute*. The artificial is the construction of such relations. Design is the agency of the artificial in its capacity as mediation or 'interface.' It is through design that we understand the artificial.
17. There can of course be no projection of a fixed ground plan of objects in design.
18. Cf. Simon 1996, xi, 6. Although Simon determines mediation as 'interface' and 'malleability by environment,' or 'meeting points,' and speaks of 'contingency' rather than possibility, the point applies.
19. In the Platonic version: 'When the philosopher views the immortal order, he cannot help bringing himself into accord with the proportions of the cosmos and reproducing them internally. He manifests these proportions, which he sees in the motions of nature and the harmonic series of music, within himself; he forms himself through mimesis. Through the soul's likening itself to the ordered motion of the cosmos, theory enters the conduct of life. In ethos theory molds life to its form and is reflected in the conduct of those who subject themselves to its discipline' (Habermas 1971, 301).
20. In that this refusal causes practice to be formulated, pedagogically and in practice as 'merely so'
21. I have very briefly sketched some moments of this in 'Care as a problem: How to begin to create, for design, an adequate theory of care' in Rodgers et al. 2017.
22. That design is itself its own criticism, and therefore its own self-comprehension of itself, is something that design theory has taken too little account of, most probably because of the historically low levels of critical dialogue around design and the incapacity of design theory in its current modes to deal, well, with designed things (using this term now in its broadest possible application).
23. Speculative critical design has built on this double understanding.
24. In relation to these moments, ontological theory served 'as protection against regression to an earlier stage that had been surpassed. Had it been possible to detect that the identity of pure Being was an objectivistic illusion, ego identity would not have been able to take shape on its basis. The representation of interest appertained to this interest itself,' Habermas 1971, 306–7.
25. This is today popularly described as the Anthropocene. The Anthropocene is, however, merely a symptom of the deeper development of the onset of the artificial as constituting world (see Dilnot 2014, 2015).
26. Cf. Heidegger's line that 'The modern age requires … in order to be withstood in the future, in its essence and on the very strength of its essence, an originality and range of reflection for which we of today are perhaps preparing somewhat, but over which we certainly can never gain mastery ('Age of the World Picture,' 137). The obvious question posed by this statement is: in what way is design enabled to offer 'originality and range of reflection' vis-à-vis the emergent essence (and crises) of what now is
27. I am using the term 'environmental' in two different ways. First, it refers to the historical environment, meaning the unsustainability of what now-is (of the artificial world we have created). Second, I want to use it in the sense that Herbert Simon uses it in *Sciences of the Artificial,* where he opens chapter 3 on the psychology of thinking with a discussion of first ant and then human behavior, concluding this short section with the hypothesis that 'A man, viewed as a behaving system, is quite simple, The apparent complexity of his behavior over time is largely a reflection of the complexity of the environment in which he finds himself' (Simon 1996, 65).
28. That we laud the *quasi*-autonomy of (particularly) technological, medical-scientific and economic practices and thinking is both a symptom and structural moment of the modern world. Today, the costs of the autonomy of practices, their deliberate divorce from human

interests that cannot be thought as internal to their operation, are beginning to be all-too evident.

29. We live with uncertainty, which is one reason why our mental horizons of capability have so drastically shrunk that we have become incapable of large-scale constructive action (though not of destructive actions: these retain their certainty and hence their appeal, at least for some).
30. Neither intellectual nor objective, this confinement of limits has as its purpose keeping speculation and extrapolation within the boundary of the 'abstract principles of organization' that secure and maintain system identity. In the modern case, these are the principles of capitalism, and beyond that of the technological and representational frameworks that secure and give identity to the 'modern.' A brief but valuable explanation of this point is available in Jürgen Habermas (1973b) *Legitimation Crisis*.
31. On incommensurability, see Sargent (1994).
32. There is no dispensing with technology. Desire alone proves this. As does need. The crucial condition is, as above, the establishment of a genuinely 'free relationship to technology.' In practice, this perhaps may be achieved by thinking through Walter Benjamin's extraordinary insight from 1935 that 'The destructiveness of war furnishes proof that society has not been mature enough to incorporate technology as its organ, that technology has not been sufficiently developed to cope with the elemental forces of society' (Benjamin 1969, 242). The term 'free relationship to technology' comes from Martin Heidegger's essay 'The Question Concerning Technology' (1977). See also, in the same volume, the essay 'The Turning.' The notion is surprisingly undeveloped in the literature on this essay.
33. A project that was begun by Adorno and Horkheimer (1997) *Dialectic of Enlightenment* [1944] but which today remains to be completed.
34. I am here quoting from Richard J. Bernstein's (1985) useful introduction to an extended debate on Habermas' work, 1–32 and especially 8–11.
35. Being outside the frameworks of knowledge, design becomes invisible. Critical thought shields itself from the challenge it represents by placing it in a hierarchy that eschews it of consequence. More generally, since the field of making is invisible to thought, the significance of the act of (re-)configuring that which is made passes below consciousness. The splitting involved here is itself taken as a given. If changing circumstances are putting objective pressure on this older model, the latter survives as the underpinning of disciplinary identity.
36. With all the consequent distinctions in pedagogy that follow; thus, by the 1840s nowhere in the world are architects and civil engineers still being taught in the same programs.
37. The logic of specialization differentiation, especially developmentally, has been defended in depth (cf. Habermas 1984 *Theory of Communicative Action*). But it leaves out of consideration the modes of synthesis through which these realms are reintegrated in the social totality. This is another version of that knowledge deficit at the societal level that concerns the synthetic interaction of diverse knowledge and experience. In relation to the realms of the aesthetic, the technical and the ethical it is clear that design provides one of the few moments in which, as internal condition of its own configuration and disposition, these three modes are brought together in forms of synthesis, both in actuality, and as a moment of what we might call the ideal practice of design.
38. Simon 1996, 9.
39. From the side of design, Jamer Hunt (2011) wittily comments on this condition.
40. Design does not (nor could it ever) of itself provide an integral model of the world-under-the-artificial. What, however, it does do *as a minimum* is that it calls into question the separation of modes of knowledge and acting on which the quasi-autonomy of wholly objectivated processes – instrumentalized science, most technologies, virtually all of economics; emerging techniques of data-management, surveillance, artificial intelligence; large sectors of the industrialized biological sciences – are based.
41. See note 11.
42. See note 26.
43. For the strongest statement of these see Heidegger 1973, especially 103–110.

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