The secret lives of ANTs

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Design is a process that starts with people thinking or imagining objects and systems into being. Our self-generated design as a human society has always included the affordances of objects which design us as much as we design them, as these objects ‘speak’ to us. However, most people would deny or seem unaware of these relationships between humans and objects. Knowledge of Actor-Network Theory (ANT) can reconcile opposing views, since ANT is concerned with the relationships that are formed between ourselves as human actors and the non-human actors (artefacts) we design. The focus here is on how this relationship can become asymmetrical, allowing designers to produce ‘black boxes’ (opaque systems) that cannot be questioned in the process of making meaning. The concept of arguing to first principles is put forward to counter this tendency, since the affordances of everyday existence should not be constructed by anyone but ourselves.

KEYWORDS: INTELLIGIBLE RELATIONSHIP, FIRST PRINCIPLES, AFFORDANCE MODELLING, INTRINSIC CONTROL, ACTOR-NETWORK THEORY

Le processus de design débute avec des individus qui pensent ou imaginent des objets pour en faire une réalité. Elle-même auto-conçue, la société humaine a toujours intégré les factivités ou affordances des objets qui nous donnent forme autant que nous leur donnons forme, car ces objets nous « parlent ». Toutefois, la plupart des gens nient ou ne semblent pas conscients de ces relations entre humains et objets. La théorie de l’Actor-Network Theory (ANT) pourrait bien réconcilier ces points de vue divergents, l’ANT s’intéressant en effet aux relations qui se nouent entre nous-mêmes en tant qu’acteurs humains et les acteurs non humains (artefacts) que nous concevons. L’accent est mis ici sur la manière dont cette relation peut devenir asymétrique, permettant aux designers de produire des « boîtes noires » (systèmes opaques) qui ne peuvent être questionnées lors du processus de fabrication du sens. L’idée d’argumenter les principes premiers est mise en avant afin de contrer cette tendance, puisque les factivités de l’existence quotidienne ne devraient être construites par personne d’autre que nous-mêmes.

MOTS-CLÉS: RELATION INTELLIGIBLE, PRINCIPES PREMIERS, MODÉLISATION DE L’AFFOR-DANCE, CONTRÔLE INTRINSÉQUE, ACTOR-NETWORK THÉORIE

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Introduction

This is an article on design’s ability to communicate with users through designed objects, and as such (design) semiotics should be seen as the study of how human beings observe and interpret the worlds they have created. The argument being assembled here is thus one that uses the theoretical frameworks of social structuration and of constructivism, but it does so through making use of the affordances of Actor-Network Theory (ANT), and as shall become clear, this leaves structuration / constructivism intact while largely negating the ‘social’ as an entity in the communicative process of negotiating everyday meaning. This approach is particularly fruitful for design as a process, for designed objects are meant to communicate with specific groupings of active humans; ‘active’ as in performing tasks in real-world situations that change over time and even change from region to region. Design, as an intermediary between the user and the object, cannot rely on ‘the social’ as an unchanging entity that can be communicated or reasoned with. Meaning is constructed by individuals, and yet it is never subjectively individual, nor is it social, although we have become used to attributing meaning-making and meaning-keeping to this amorphous mass. That is the problem, the fact that something we have made up, an artificial something, is imbued with so much authority of signification and structuring power. Is it any wonder, then, that most people would deny the communicative ability of designed objects, since they cannot speak to us, can they?

In that case, where and how do the products of our material culture fit in, if we construct patterns of ‘reality’ that shy away from any reliance on the non-biological, the constructed? We lead double lives: on the one hand we behave as if our words, intentions and actions are definitive of the worlds we inhabit, i.e., as if the world (and hence the meanings we find in it) can be created subjectively. On the other hand, we are also happy to inhabit an other world filled with the objects-for-life that we design (plan), manufacture, and then proceed to treat as if they were the same as the rocks and the trees, i.e., as if we live in a world where (outside-of-us) knowledge of things can be extracted from the objective environment.

We do construct our own meaning, construct our very selves (identities), but we do so surrounded and influenced by our designed artefacts, anything from a pencil to the Large Hadron Collider (LHC). The former has a circumference of about 27mm, while the latter is built into a circular tunnel with a circumference of 27km, yet both are mere tools, designed with the help of our technologically

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2 How is it possible to discuss, and even to philosophise, about ‘the fruits of man’s labour’, if we then do not award this aspect of being human a respectable place in the history and development of our very social existence?
advanced capacity to delve ever deeper beyond our present horizon of expectation, in the quest for more knowledge. Which is the more powerful, the pencil, or the LHC? Both are objects external to our being-in-the-world, if we believe, on the one hand, that our lives have sufficient meaning without objects and without further knowledge. On the other hand, both designs are also representative of more than external-to-us objects, since we need them to think with. Which is now the most powerful? That is the wrong question: designers (as is ANT) are not concerned with the designed object so much as with the relationships that can exist between human beings and what they need to think with. Meaning does not reside subjectively in people (either as individuals or as groups, i.e., ‘the social’), or objectively in things-in-the-world, because meaning is made when a relationship is negotiated between humans and their designed, artificial world. What, then, happens when this viewpoint on the world is given away, or when, in fact, it is not acknowledged to exist? If meaning, the whole of the semiotic signification of human life, is centred on and in ‘the social’ as the authoritative source, then we often find the conditions conducive to the following of rigid laws without question. My argument is that this ‘normal’ (socially formative) way of experiencing the structuring of society results in us abrogating authority in favour of those who rule us (cf. Hobbes’ Leviathan, discussed below), and that, given this normative human-to-human relationship, we can easily allow a parallel authoritative correlation to develop in the human-to-designed-object relationship.

Before discussing ANT, however, we need to look at Aristotle’s approach to observing and interpreting the worlds we create, especially his stance on arguing to first principles, a viewpoint that agrees with ANT’s refocusing on associations between actors instead of fixating on ‘the social’.

Designing in a Greek Bubble

When air traffic controllers feel themselves “in the flow and in control” then they are said to be in the bubble (Thackara, 2006:1). In control of a complex and fourth dimensional activity space that illustrates the relationship that must exist between human beings as thinking machines and everything they need to think with,
especially when that knowledge is ‘invisible’ for being only accessible through technological mediation (weather patterns, flight paths, number of aircraft).

Aristotle makes out a case for the in-between and the incomplete, for the question is, concerning any form of study, “what degree of accuracy is to be expected in any of them, in order that we may not unnecessarily complicate the facts by introducing side issues” (Aristotle, 1971:40). Apropos of how designed objects speak to us, Maturana (in Winograd and Flores, 1988:48) states that organism and environment (air traffic controllers and instruments) cannot be regarded as two separate things, but must be seen as a unity that “specifies the space in which it exists, and in observing it we must use distinctions within that space”. We can expect no ‘degree of accuracy’ from outside this unity, which is why observation, interpretation and consequent decision-making is in-between and ‘factually’ (objectively) incomplete, with reference to the outside, since only ‘distinctions within that space’ will place you in the bubble, where only the flow of information is constant, and everything else is mutable.

Aristotle (1971:29) brings up the question of whether it is best to argue from or to first principles, and combined with “when the sketch is well done, anyone can finish the picture” (:39) we begin to see an incomplete, in-between positioning of an individual’s acts of being. “We shall find that this applies to ‘beginnings’, which is our name for first principles; in them the fact is the beginning” (:41). It seems strange to argue for, or to accept any reason for, the absence of the why questions in any situation, and yet, here is Aristotle seemingly doing exactly that, in stating that “we begin with the fact, and if there is sufficient reason for accepting it as such, there will be no need to ascertain also the why of the fact” (:30).

But Aristotle’s fact is a mutable instance of being, neither textually nor historically captured, in the sense that it is human experience and consciousness that is taken as the beginnings of everything that comes after, i.e., experience built on an action that can only be described as the present-compelling-into-the-future, the very idea of what an experience is, can be, and can afford us, as human actors, in our knowing interaction (first, co-ordination) with design objects, which contact leads to (second, intelligible relationship) a space of understanding; an understanding of our new selves as knowing beings, and because of this, a knowledge of our (new) relationship with the designed objects we surround ourselves with, or, more importantly in this new world where the fact of ubiquitous computing is

... and some people would find it shocking that we can expect no outside ‘degree of accuracy’ from air traffic controllers inside the bubble, since the reality of the moment, the accuracy of the interactive situation, is being created in real time.

The essentials of The Nicomachean Ethics is rendered in Aquinas’ social theory as two-dimensional order: co-ordination and an intelligible relationship (Finnis, 1998:35-37).
making designed systems less visible, and therefore almost outside our spheres of influence, a knowledge of the designed objects and systems we will increasingly come into contact with in our total world space: this is an Aristotelian the-fact-of-being-human beginning that does not begin at any defined, historical point since it always already begins at all points, and therefore, like true design (as an idea), never ends.

Aristotle’s first principles, as beginnings, is a stance towards an ontological understanding of the self and its place in the world that asks a different question: the why turns into what next, an in-between, unspecified, ‘incomplete’ question that makes use of whatever is there, at, and in, the moment, in the bubble. New beginnings that have to be looked for, which is why one argues to these first principles and not from someone else’s: first principles in Aristotelian philosophy and in design proper are rigorously (ontologically) individual and social. However, would a Greek bubble (a controlled intelligible relationship, perhaps?) help us understand our contemporary socio-technical world?

**The first principle of affordance modelling**

For McKean (2001:85) life equals paradox and complexity, and he sees a link between the processes of research and design, which offer design students “roles for their own practice to model”. What is this practice, and what are they modelling? Design practice is thinking objects into existence for humans to interact with, and the focus should not be on the materiality of the objects but on their affordances, i.e., on their potential to speak to people. Here we may ask how it is possible for designed objects and events to speak to humans, when ‘they’ have no voice except the affordances we designers instil6 in them.

As for modelling, we all wish to deal with the world in a sensible way, despite it being too big and too complex, filled with too much information (cf. the air traffic controller’s in the bubble space). We therefore abstract information into models of that which we want to understand and deal with, and Beer’s (1979:234) cybernetic principle7 by which this can best be done is to acknowledge that “every regulator must contain a model of that which is regulated.” Any viable system, meaning all thinking, human, observing systems that have ‘mastery of their own action’ (Aquinas, in Finnis, 1998:35) in the very process of drawing some of the material-

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6 More properly, the affordances we instil in the minds of the human users who interact with these designs (environments). An example that has always worked well, precisely because this is how the human / object interaction works, is the propaganda poster that ‘affords’ the viewer the space-of-mind to turn an old version of a narrative into a new one, neatly replacing the viewer’s beliefs with that of the ‘designer’. Nazi propaganda posters spoke loudly and clearly to its intended audiences, as did the ‘civic’ call to ‘patriotism’ in all walks of American life after 9/11.

7 Very condensed: Second-order Cybernetics (the Greek origin kubernetes means steersman) is the study of observing systems, meaning, really, the study of human beings as they observe the world around them, and the results of that observation.
for-building-thought from the *socio-technical intelligible relationship*, must contain an adequate model of the larger system it is part of, wishes to investigate, or needs to belong to. What are students modelling when they learn, and what are users modelling when they move on from Aristotle’s ‘beginnings’ and allow the newly created relationship (this space of becoming between the human, the environment, and designed objects) to influence their very thinking, their dispositional *habits* or ways of construing the world*, if not a present-compelling-itself-into-the-future* learning environment, one that at the same time affords us the grounds for *designing* the new person?

What Beer is in essence talking about, and what Aristotle points to with first principles, is *control*, but what both focus on is a *first principle intrinsic control*. Modern control hands the ‘intelligible’ relationship focus to the Leviathan we elect to govern us (discussed below), but instead of the leadership exercising the appropriate authority *balanced* by “the exercise of autonomy by the parties to the co-ordination” (Aquinas, in Finnis, 1998:35), we are creating a contemporary world space wherein designed objects and systems (cf. ubiquitous computing) will become forms of the Leviathan, and speak to us with voices of authority, turning users into unthinking consumers. When we take control of our life world spaces, we use this intrinsic control by modelling an abstracted version of the thing we are dealing with, and in the case of designed objects and systems that includes the voices with which they seem to speak to us.

Designed artefacts speak to us initially with the (designer’s) ‘voice’ / message that was instilled in the design, but then it enters the (larger) world of socio-technical narratives where it speaks with and also through other designed objects, because the original ‘designed voice’ was meant to compete with other voices (as in, e.g., packaging design), but also because the original voice was designed to fit into a larger narrative, which is the context within which the artefact has to function. Bateson (2000:317) speaks of the immanent mind that works within the larger system made up of people *and* their environments, and he illustrates this with an example of tools (designed objects) that talk back. Bateson’s woodsman is working with an axe, a tool he ‘knows’ and has become accustomed to, which means that there exists a relationship between man and axe, and between man (as woodsman) and tree. Like the carpenter and his hammer, each blow of the axe on wood is, in the *performance* of metal interacting with wood, a conversation that can be read by the human part of the system, in order to (non-unilaterally) ‘control’ the process. “Each stroke of the axe is modified or corrected, according to the shape of the cut face of the tree left by the previous stroke [and the previous stroke was caused

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8 Pierre Bourdieu (2000:11) describes (a specific) *habitus* as a sense of the game (whose rules are not set out / imposed explicitly) that follows the specific logic of a field (of interaction, say): this is a gradual, imperceptible process, converting the original habitus; thus we construe the world-in-the-moment, in the bubble.
by the actions / decisions made by both man and axe, i.e., the next stroke is ‘controlled’ by the behaviour of those system parts at a previous time]. This self-corrective (i.e., mental) process is brought about by a total system, tree-eyes-brain-muscles-axe-stroke-tree; and it is this total system that has the characteristics of immanent mind” (Bateson, 2000:317).

As a design theorist I believe that Actor-Network Theory9 (ANT) can best reconcile the parallel discourses we call our human, ontological narratives with the larger narratives of socio-technical reality, within which cultural practices and product design have to acquire knowledge of each other. We are so used to designed objects and systems that we do not ‘see’ the axe anymore, thus objects become Latour’s (1992) missing masses; it is as if the designed objects we surround ourselves with are leading a secret life and communicating only with each other, and yet they are carriers of semiotic significance, making it possible for all human artefacts to be read as texts (Eco, 1976:57). ANT can afford us the opportunity to see where and how the products of our material culture fit into our own lives, but also where they might take over our role in the decision-making process.

**Actor-Network Theory**

Actor-Network Theory (ANT) is a way of observing the relationships that develop between human beings and all manner of designed objects and systems, and it treats people as human actors while treating machines, designed artefacts, systems and even events as non-human actors that play roles within this created relationship cycle. ANT, as a way of seeing and understanding the world, is thus normally concerned with the human / design interface, thus ANT can tell you what to look out for, but it will not, and cannot, help you make up your mind, since ANT is not applicable to anything (Latour, 2005:41).

ANT considers the observation of social systems as of necessity having to include both human and non-human actors. However, there is no such thing as ‘the social’ in ANT terms (Latour, 2005: 5); what is more important are the associations entered into by the members of that ‘social’, and because ANT is also known as the sociology of translation, everything we reach out to we simultaneously ‘translate’. That would normally mean we interpret the phenomena confronting us, in order to understand, not the phenomena themselves, but to understand our own selves, in translation, in movement. Everyday contact with the other, every association we enter into, is a translation of our old into our new selves. We are not so much interpreting or translating the other as moving our old understanding from its previous to its new position.

So what happens when we enter into an association with non-human actors?

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9 This is on the understanding that ANT is not an applicable theory that can be appropriated as a practical method by any discipline, but is instead a way of knowing.
In design terms you are ‘translating’ your old self (Aristotle’s factual beginnings leading to intelligible relationships) to find out what, ontologically, can be designed as your new self, and all this happens via the mediated discourses with designed objects and systems. We design the world and the world designs us. However, what ANT apparently allows us to see, is that, in becoming the focal actor in any relationship or association, you then recruit others into the new system, persuading them of your role and place, rendering yourself indispensable: this is the connotative message of many texts that put forward an explication of ANT principles (i.e., Linden and Saunders, 2009:22-23; Kraal, 2007), but it is a false message. Callon (1986) clearly states that “attempts by ... researchers to impose themselves and their definitions of the situation on the others”, in clear violation of the first ANT principle of agnosticism, i.e., impartiality between actors, is wrong. Rendering yourself indispensable is the equivalent of elevating yourself to the position of a macro-actor, while everyone (and everything) else is assigned roles as micro-actors, not ‘acting of themselves and by free choice’ (Aquinas, in Finnis, 1998:35). If you are one of the micro-actors you hand control to an ‘elected’ Leviathan who will speak to you with a voice of authority (cf. above). Callon and Latour (1981:278) discuss the social contract of Thomas Hobbes (17th century philosopher), that has much in common with Aquinas’ co-ordination and resultant intelligible relationship via the exercise of (deputized) authority by a ruler. For Hobbes the sovereign, although not speaking on his own behalf, yet becomes the focal actor, the Leviathan (supposedly benign). The question now is, how can macro-actors (the state, organizations, social classes) be distinguished from micro-actors (individuals, voters, users) when they should be the ‘same size’ (according to Hobbes’ social contract) and thus have the same voice? What happens when the Leviathan becomes less benign?

There is no such thing as ‘the social’, but there are associations entered into, some willingly, and others, perhaps, unwittingly, for who would think that in dealing with designed objects - and with the use of the internet, cell phones, wireless connection, Bluetooth, now with systems - that we are entering into an association with non-human actants who can take on the role of the defining focal actor, this new Leviathan? “We behave as if ... the object world, so close and yet so radically other, did not need to be taken into consideration” (Droit, 2005:73). In the contemporary intelligible relationship between users, objects and systems we are handing the voice of authority to these black boxes10, these indispensable actors who become the obligatory passage points (OPPs) through which all members of that association must pass.

10 A black box is anything that has been decided on, and packaged, as it were, as the last word in argument. A stop sign and an automatic teller machine are black boxes, and so are authoritative figures who have been invested with certain responsibilities, and whose position, once established, becomes “A black box [which] contains that which no longer has to be reconsidered” (Callon and Latour, 1981:285).
In the process of design we have to be aware of the modes of signification we instil in objects, since they most decidedly take part in the making of meaning, and the way they talk back to us is our doing. The theoretical framework of a semiotics of design has one purpose, to account for “the immanent [cf. Bateson, above] relations that ... predispose the manifestation of a certain meaning effect” (Mattozzi, 2007). ANT, as a lens to view the immanent process, is ideally suited to this purpose, for its impartiality shows us both sides of the argument. Designers have to pay attention to the semiotics of design in use, since a Leviathan-based approach will design objects as macro-actors in an asymmetrical relationship, leaving “to others the control of the world of meanings” (Chandler, in Hodge, 2003).

At last

The well-designed human-artefact relationship, then, centres on imbued semiotic affordances, e.g. in the case of a flute, such that it becomes difficult to distinguish “whether the person plays the instrument or the instrument the person” in our effort to understand the infinite variety of “the grammar of gesture and posture” (Droit, 2005:193) involved in our contemporary, ontological, socio-technical discourse. This does not produce asymmetries, for the unity itself specifies the space in which it exists (cf. above), creating our ways of thinking (grammar) and our ways of acting (gesture / posture). But, I am afraid that the secret lives of these missing masses, these designed objects and systems, this “proliferation of efficient and complex machines, highly sophisticated and eminently logical”, when we do not see or recognize them as conversational partners, “leads also to the proliferation of stupefied and passive states of mind” (Droit, 2005:116). Epistemology, the competence of acquiring knowledge, is nothing without the affordance of personal ontology, the way we actively design our present-compelling-into-the-future identities, and for that ‘we’ need to maintain a joint socio-technical, intrinsic, control.
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