INTRODUCTION
The prototype: more than many and less than one

Abstract
The essay offers an introduction to the special issue, and further attempts to situate the concept of the prototype within the larger field of an anthropology of prefiguration. I make a particular claim for the rise of 'prototyping' as a cultural discourse today, in design, engineering and artistic circles, but also among analogous experimental moments in social studies of science and critical theory. I focus in particular on the affordances of the prototype as material culture *and* sociological theory: prototyping as something that happens *to* social relationships when one approaches the craft and agency of objects in particular ways. Last, the essay examines the work that prototypes do as figures of suspension and expectation, where they can be seen to function as 'traps' for the emergence of compossibility. They offer in this guise a design for contemporary complexity that is at once 'more than many and less than one'.

Keywords: prototypes; experimental cultures; anthropology; traps; recursivity

> 'Our mistake is to look for an explanation where we ought to look at what happens as a 'proto-phenomenon.''(Wittgenstein 2009, 654–656)

> 'a goat is not a very good pig; the best pig is a cow.'[1]

Prototypes have acquired much prominence and visibility in recent times. Software development is perhaps the case par excellence, where the release of non-stable versions of programmes has become commonplace, as is famously in free and open source software (Kelty 2008). Developers are here known for releasing beta or work-in-progress versions of their programmes, as an invitation or call for others to contribute their own developments and closures. An important feature of prototyping in this case is the incorporation of *failure* as a legitimate and very often empirical realisation.

Prototyping has also become an important currency of explanation and description in art-technology contexts, where the emphasis is on the productive and processual aspects of experimentation. Medialabs, hacklabs, community and social art collectives, dorkbots, open collaborative websites or design thinking workshops are spaces and sites where prototyping and experimentation have taken hold as both modes of knowledge-production and cultural and sociological styles of exchange and interaction. Common to many such endeavours are: user-centred innovation, where users are incorporated into artefacts' design processes; ICT-mediated forms of collaboration (email distribution lists, wikispaces, peer-to-peer digital channels), or; decentralised and so-called 'horizontal' organisational structures. Some

economists favour the term 'open innovation' to describe an emerging production paradigm, where the boundaries between production, distribution and consumption (inside and outside an organisation) are increasingly blurred and interpenetrated (Chesbrough 2005). Computer-aided rapid manufacturing or 3-D printing are for example contributing to the collapse of some such categories, say, when a person can customise an artefact's design from her home computer and have it immediately printed out in 3-D. The object's materiality is then rendered 'propinquitous' (Buchli 2010), 'an intangible everyware (Greenfield 2006), less of a thing than an event. From a historical and sociological angle, the backdrop of such cultures of prototyping is not infrequently connected, if in complex and not always obvious ways, with a variety of artistic vanguards, the do-it-yourself, environmental and recycling movements, even the development of cybernetic philosophy (Turner 2006).

Experimentation has also been at the centre of recent reassessments of the organisation of laboratory, expert and more generally epistemic cultures in the academy. An interesting development is the shift in emphasis from the experimental as a knowledge-site to the experimental as a social process. For example, in open access publishing, or more generally in open collaborative scientific exchanges, where sociality and social exchange often become the limit-tests of experimentation itself, such as in debates about interdisciplinary exchanges (Strathern 2004a). Other examples include the use of social media to enable new para-sites of collaboration, where researchers and informants mutually co-design and modulate an epistemic space, or, simply, occasions where researchers (for example, anthropologists) are drawn into a research problem at the request of their informants (say, an international organisation that turns to the anthropologist for advice). Where researchers once entered the field as outsiders (academics) they are now suddenly and unexpectedly being turned into insiders (colleagues, advisors). The traditional entry and exit points of knowledge-creation now face a permanent threat of abduction and destabilisation (Mosse 2006).

In art, design, science, even entrepreneurial and political organisation, the languages of openness and open-endedness, of provisionality and experimentation, are thus taking hold as models for cultural practice. The prototype works as descriptor for both an epistemic object and an epistemic culture (Knorr-Cetina 1999). It is a language of, and reference for, a new techno-political consciousness of craft, skill and communal self-organisation. The experimental and open-ended qualities of prototyping have become a surrogate for new cultural experiences and processes of democratisation.

In an age of audit justifications, social impact and public and ethical accountabilities, the seductiveness of the prototype is hard not to miss. Here is an epistemic culture built on collaboration, provisionality, recycling, experimentation and creativity, which seems as much oriented to the production of technological artefacts as it is to the social engineering of hope. If the culture of prototyping indeed prototypes hope, shouldn't we all hope for prototyping cultures more generally? It is inspiring to be part of a cultural moment that

takes the prototype seriously as a social form; it is slightly more daunting to have such a form prefigure our cultural moment. Ours is the time, so it seems, that makes both possible.

The prototype offers in this sense a privileged vantage point from where to critically examine some of the key debates in social theory today. Thus, the artefactual and object-orientation of prototyping feeds directly into recent discussions about the materiality of political process (Marres and Lezaun 2011). The intrinsic futurity of the prototype addresses too some crucial questions about the hopefulness and promise of critical and collaborative work. Prototypes are also inscriptive objects in their own right: objects that hold within various biographical, techno-scientific and cultural lines of flight. They are 'things that talk' (Daston 2007), and that in this capacity can contribute much to present discussions about the objectual and material qualities of culture. Last, the prototype's porosity, indefiniteness and epistemic interdisciplinarity as a 'boundary object' offers new materials with which to think the place of models and model-building in science, art and cultural production at large (Creager, Lunbeck, and Wise 2007; Manchanda 2006; Chadarevian and Hopwood 2004). It offers, in particular, another route for reappraising the status of 'things-that-are-not-quite-objects-yet' as modelling devices in their own right.

Prototyping Cultures examines the claims, affordances and purchase of the prototype in a number of social and historical contexts. The history of science, as well as anthropological studies of innovation and technology, can help us situate the rise of the prototyping paradigm in a useful comparative framework, appraising both its (alleged) political promises and sociological justice, but also its critical value. The technological promises of the prototype seem to have instated a new illusion of democracy: it has brought the worlds of objects, engineering, design, cultural practice and politics together in some new fertile assemblages. It is therefore high time for social theory to take the prototype to task as both an epistemic object and a critical tool.

In the rest of this Introduction I shall make a particular claim for the rise of 'prototyping' as a cultural discourse today. My interest is in the affordances of the prototype as material culture *and* sociological theory: prototyping as something that happens *to* social relationships when one approaches the craft and agency of objects in particular ways. A cultural moment, then, when the prototype stands for the mutual prefiguration of objects and sociality; when objects and social relationships are recursively parenthesised, now as protos, now as types, with respect to each other. In this mutual bracketing, prototyping appears as a figure of possibility and suspension where relationships and objects can be at once 'more than many and less than one'.

The Barber Shop

In 1968 Gerhard Nonmemacher, a Chicago barber, battled with the city's Public Building Commission over copyright issues concerning the reproduction of Pablo Picasso's monumental sculpture at Daley Plaza. The construction of the sculpture had been undertaken by the Commission following the original design of a maquette by the artist. On 21 August 1966 Picasso signed a 'deed of gift' whereby he donated the maquette to the Art

Institute of Chicago, and the sculpture, and the right to reproduce it, to the Public Building Commission, 'desiring that these gifts shall, through them, belong to the people of Chicago.' (Anon.) The Commission and the City of Chicago undertook then a successful publicity campaign where drawings and photographs of the maquette were widely displayed and exhibited to advertise the Chicago Picasso.

The campaign's success prompted Nonmemacher to market a copy of the sculpture as his own business logo. The ensuing case battle went down in history as 'The Letter Edged in Black Press, Inc. (Plaintiff), v. Public Building Commission of Chicago, a municipal corporation (Defendant)'. The defendant's legal argumentation rested on an attempt to draw a distinction between copyright invested in the maquette and that of the public sculpture. 'The defendant's basic contention', as District Judge Napoli put it, 'is that the work of art is the properly copyrighted monumental sculpture not the models.' The judge, however, thought otherwise, and sentenced that when 'the monumental sculpture was finally completed it could not be copyrighted for it was a mere copy, albeit on a grand scale, of the maquette, a work already in the public domain.' (Anon.) The Commission's very use of the maquette in its publicity campaign had already divested the piece of any copyright entitlements. The drawings and photographs that the Commission had strenuously divulged to promote the 'Chicago Picasso' had effectively relocated the art piece into the public domain. Through the marketing campaign the city had literally 'owned up' to the sculpture.

The Barber's Shop would only two years later become an art piece itself, when William Copley assembled a portfolio of photographs, press clippings and copies of the exhibits attached to the Letter Edged legal opinion. Copley was at the time producing a series of editioned sets that were mailed directly to subscribers in an exercise meant to upend the traditional art gallery system. He curated six portfolios in all (known as S.M.S., Shit Must Stop), including sets with pieces by Man Ray, Marcel Duchamp or John Cage. His own portfolio on The Barber Shop, as Catharina Manchanda has noted, is 'a hilarious exercise in the question of original, copy, and commerce', where Copley 'suggests that Picasso's three-dimensional model (an image of which Copley included in his piece) was in fact a prototype, the finished sculpture and all subsequent commercial adaptations copies of varying degrees.' (Manchanda 2006, 39–42)

The image of the prototype, as deployed by Manchanda and Copley, captures beautifully the tensions that inhere in the production of late twentieth century forms of (artistic) knowledge: a figure whose contours are always already temporally stretched and spatially blurred. The Barber's Shop set explicitated the prototypical qualities of Picasso's artwork by revealing its retention and protention in a complex web of relations, including for example a copy of the letter that Nonmemacher addressed to Picasso, press clippings of the affair, or a copyrighted photograph of the sculpture. Copley's art set *prototypes* the prototype that inhered in Picasso's.

Copley's use of multiples and readymades participates of a wider shift in late twentieth century art aimed at modelling the processes of artistic practice itself. It was an attempt to dislocate and disassemble the figure of the author and shift attention to relations,

objects and functions rarely if ever associated with artistic craftsmanship. The set embodied what Howard Becker has called the 'Principle of the Fundamental Indeterminacy of the Artwork': the impossibility for 'anyone to speak of the "work itself" because there is no such thing. There are only the many occasions on which a work appears or is performed or read or viewed, each of which can be different from all the others.' (Becker 2006, 22–23) In doing so, it essayed a dismantling of the institutional economy of art, questioning the proprietary status of artworks, their political remit, civic personifications, even their communicative capacities (travelling in postal service). It disassembled the object into multiple potentialities. As Susanne Küchler has put it, 'prototypical artwork [can be seen] as prefiguring a knowledge-based economy, which thrives on the circulation of images rather than objects.' (Küchler 2010, 301–302)[2]

Although I do not intend to claim for the Barber Shop a historical antecedence to the forms of socio-technical, artistic and political experimentation that may fall under the rubric of 'prototyping cultures', I do think that Copley's intervention *prefigures* some of the cultural assemblages for which the imago of the prototype seems to stand today. Indeed, 'prefiguration' itself fares as one such cultural form. As we shall see below, a salient feature of prototyping is that it is internally pre-figured: what the prototype 'prototypes', first and foremost, is its own re-appearance as prototype, its own recursion. Yet the quality of prefiguration is not exclusive to the prototype. Prefiguration is a quality often found in – some have argued (e.g. Wagner 1986), constitutive of – symbolic anthropology, or indeed a feature of relationality itself (Strathern 2004b, 79, 98). In what follows I offer a review of some features of the contemporary culture of prototyping. I am less interested in situating today's 'prototype' in cultural or historical perspective, however, than in throwing light on the current perception of the prototype as a figure of sociological promise and abeyance.

The prototype, I shall argue, is a 'trap' for a contemporary figure of possibility and expectation. The work of such a trap is to keep sociality in suspension. The perception of suspension is elicited itself by 'the prototype' as a material but also as a social form. Sometimes it is sociality that drives the 'proto' with respect to the material 'type'; sometimes it is the artefactual that 'speeds up' against an apparently still and dormant background of social expectations. Prototyping is what a perception of liberated and self-released social relationships may do to and through the material world; it is also what a conception of a material world 'in beta' does to social relationships. The artefact is prefigured in prototyping as social process; the object as transitive materiality is elicited by a conception of social relationships as transiently experimental.

My argument here, then, is that prototyping works as a cultural heuristic, in ways not unlike how (say) 'comparison' or 'compatibility' have at different points in time provided aesthetic and critical purchase to the function of social analysis[3]. Prototyping *is* its own form of analysis, one, moreover, that places analysis itself 'in beta'. In this sense, prototyping works to produce scenarios not so much of comparison or compatibility as of *compossibility*. Whereas comparison presumes scale, and comparability requires partiality, compossibility supplements these by operating within and promoting a field of suspension,

one that facilitates a proliferation of abductions and transformations, including the possibility of (virtuous) failure. Herein lies, again, the 'trap' of the prototype: failure (recursively) prototyped.

The intrinsic recursion of the prototype weighs in, then, to shape its 'infinition' as a cultural form (Holbraad 2012). If the complex of social analysis was once required to produce descriptions whose effects were 'more than one and less than many' (Mol and Law 2002), the prototype indexes a cultural form in turn that is 'more than many and less than one'[4]: always on the move and proliferating into affinal objects, yet never quite accomplishing its own closure.

Experimentation

Experiments have a distinguished genealogy in the history and practice of the sciences (Shapin and Schaffer 1985). The history of experimentation has traditionally been carried out at specific sites and in the name of specific and trusted communities of practitioners and witnesses. The experiment has likewise mobilized a cohort of instrumental functions, objects, bodies and passions (including the desiring body of the experimentalist him – and less often her-self; see Schaffer 1998). The triangulation of experimentalist, experimental setting and the things experimented upon has at different points in history framed different notions of subject, object, facts, nature, and objectivity (Daston and Galison 2007). It is also worth distinguishing between the 'experiment' and the 'experimental system': if the experiment was once thought-of as a closed system against which scientists sought a theory's justification, it would seem that today the experimental is conceived rather as a *design project*, 'an experimental arrangement designed', as Hans-Jörg Rheinberger has put it, 'to produce knowledge that is not yet at our disposal.' (1997, 27) The very designing of the arrangement exemplifies the extent to which the research process and its techno-material means of deliverance are inextricably connected. The fact that the layout of the arrangement may incorporate objects that lay outside the laboratory's walls has led to thinking of experiments as scale-shifting devices, capable of rendering the world 'proportionate' to new onto-epistemic frameworks. The laboratory suddenly becomes commensurable (flattened) to the world outside: the inside and the outside are levelled and re-balanced vis-à-vis each other by the experimental design (Latour 1983). Thus conceived, the distributed layout of an experimental design deploys new 'divisions of labour' (between objects, techniques, networks and actors), or perhaps we should heed Hayek's insistence here and speak instead of a new 'division of knowledge' (Hayek 1937, 49). For the 'empirical' can hardly be conceived any longer as a data set confined to the activities of academic or scientific expropriation (Savage and Burrows 2007).

Thus, where the laboratory was once imagined in seventeenth and eighteenth century experimental philosophy as an organisational space for 'torturing' or 'distorting' nature (*elaborating on* the facts of nature), the prototype, as the figure for contemporary forms of experimental collaboration, weighs in on the *elaboration of social relationships* instead. Relationships, epistemic things and experimental practices are entangled in their on-going

rearrangement as prototyping cultures. They materialize their own social and political designs. What the 1970s arguably witnessed, following Galison and Jones (1999), was a displacement in the location of the experimental from 'knowledge-site' to 'knowledge-process'; a shift in the understanding of experimentation as a 'collective' rather than 'collected' enterprise (Latour 2011). There is perhaps no better example of this displacement that the rise of what Noortje Marres has called 'experiments in living': where the experimental is no longer a domain of activity but a repertoire of techniques (Marres 2012) – and today all kinds of people are prone to learn and deploy such techniques over matters that are 'vital' to them. The experimental has literally gone 'live'.

Prototyping cultures, then, share many of the epistemic and organisational features of 'experimental systems'. However, the rise of the language and imaginary of prototyping amongst new media, art and design, or digital social movements signals to one important distinction. Whereas the open-endedness and haziness of the experimental is oriented towards the production of epistemic things, the work of prototyping employs such open-endedness to deliberate *political* effect. Thus, whilst the experimental and the prototypical both invest in their residence in a space of uncertainty, they do so with varying intent. The experimental, following Rheinberger, is set up 'for the continuous reemergence of *unexpected events*' (1997, 32–33, emphasis added), whilst the prototypical aims instead for *underdetermined events* – events that summon their own openness to future tinkering.

Chris Kelty, in his study of Free Software speaks thus of 'culture [as] an ongoing experimental system, a space of modification and modulation, of figuring out and testing; culture is an experiment that is hard to keep an eye on, one that changes quickly and sometimes starkly.' (Kelty 2008, 15, emphasis removed) In this context, Free Software itself fares as a 'collective technical experimental system' (Kelty 2008, 2; see also Fischer 2009). Likewise, Bruce Braun and Sarah Whatmore have recently drawn attention to the 'redirection of research energies and resources toward more constructive partnerships in the staging and practice of *experimental knowledge polities* in terms of the fora, media, and devices in and through which technoscientific objects are rendered affective and amenable to effective political interrogation.' (Braun and Whatmore 2010, xxvii, emphasis added) 'Experiments', Latour has said, 'are now taking place on a life-size scale and in real time… [they are] happening to us, through the action of each of us' (Latour 2003, 32).

Despite this proliferation of the 'experimental' as an intellectual-cum-political modus operandi, it is nonetheless surprising how poor the social sciences' own record has been in experimenting with their means of production and performance. The point is brought home by George Marcus in his essay in this volume. Marcus compares two modalities of experimentation in anthropological (and I would argue, social scientific) research: Type 1 Prototyping, where the vocation of experimentation has been confined to questions of method and literary technique; and Type 2 Prototyping, for which the academy has no serious record to this day, and which would require experimenting with the production of new formats and devices for collective thinking – in other words, which calls for the 'prototyping' of novel techniques for collaborative research, emulating perhaps the

strategies of critical design and critical making (Ratto 2011), laying out an experimental field where tools, objects, spaces and forms of encounter are all devised anew.

The call for the social sciences to prototype new devices for collective thought draws attention to an important shift in the constitution of our epistemic worlds. If the task of the social sciences was once thought to be that of clearing new pathways to reason, it seems that today they are engaged (or there are calls for their engagement) in an inventive proliferation and deployment of object-knowledges. Thus, whereas the social form of the experimental in scientific environments once aimed for *epistemology*, it is perhaps fit to describe the rise of the social form of the prototype as an *ontological procedure*, a political design whereby the prototype is bodied forth as a new object-assemblage in the world. If the *epistemic* pulls the experimental, it is the *ware* (the arranging of the equipment) that holds sway in the prototypical.

Recursion, prefigured

Arranging equipment in space and time may be thought of as a choreography of sorts. Copley's Barber Shop was certainly a choreographic composition, moving through time and space in a fragile equilibrium of objects, exchanges and images. James Leach, in his essay in this volume, describes a contemporary dance company's use of digital media to create novel forms of engagement with its audiences as an experiment, too, in the making of new choreographic objects and relations. The choreographic echoes here John Tresch's notion of the 'cosmogram' (2007) or Rheinberger's image of 'graphematic concatenations' (1997, 105–108). These are idioms that aim to describe the material and semiotic topology brought into being through the traces and marks left by the relational engagements of human and non-human persons – descriptions of techno-material world-diagrams.

An important element of the prototype's choreographic and diagrammatic layout is its procedural openness. In Leach's example, the choreographic is rehearsed vis-à-vis the dance company's audience. The prototype's experimental design is left open for 'the public' to interact or tinker with – a boundary object tensed by a repertoire of potential uses and inclinations. Indeed, as Michael Guggenheim notes in his essay in this volume, perhaps the history of prototyping should be better contextualized as a history of 'allotyping', a history of changes of use. Lucy Suchman and her colleagues, however, are more interested in the prototype's capacity to reconfigure a work practice through the simultaneous reconfiguration of its network of 'accountabilities', which may include users or professional communities but also non-human actors. Not where the prototype as object can go, but where and how its community of developers comes together around it as they simultaneously re-evaluate and reshape their own practice: 'an object that reconfigured material and discursive practice in an accountably relevant way.' Such collaborative reconfigurations they call 'co-operative prototyping' (Suchman, Trigg, and Blomberg 2002, 175, 167).

There is perhaps no better example of co-operative prototyping today than Free Software. Free Software projects are always everywhere infrastructurally underdetermined

by the community of people at work on it at any given point in time. The community of developers is 'self-grounded', as Chris Kelty puts it, in its own infra/structural constitution. Such entanglement is infra/structural because it is continuously questioning, challenging and reorienting the 'depth or strata of this self-grounding: the layers of technical and legal infrastructure' which are necessary for the community to exist in the first place (Kelty 2008, 8).

Developers who are collaborating on a Free Software project come therefore together in what Kelty calls a 'recursive public', where the 'recursion' refers to this capacity to self-ground one's own politico-technical desires: where the project is simultaneously written as output and rewritten as infrastructure. What arguably distinguishes Free Software as *prototype* is its aesthetic and desideratum as a politico-technical object: its self-image as a social collective *in the very terms of* the prototype.

Of experimental systems at large Hans-Jörg Rheinberger has observed that to 'establish a scientific object means that it will have emerged from differential reproduction and that it will be able to be inserted in the reproductive cycle of an experimental system. Epistemic things, therefore, are *recursively* constituted and thus intrinsically historical things.' (1997, 76, emphasis added) The work of prototyping, then, diagrammatizes its own field of sustainable open action. If John Tresch speaks of 'cosmograms' as 'external depictions of the elements of the cosmos and the connections among them', yet ones which insofar as presenting 'a totality… remain firmly within the local and the empirical' and therefore 'raise the possibility of an open holism' (Tresch 2007, 92, 93), perhaps it makes sense to speak of prototypes in this context as *betagrams*, that is, as symbolic infrastructures for a holism 'in beta'.

The 'Dinosaur' that Adolfo Estalella, the members of the Zoohaus collective and myself describe in our essay offers an evocative example of the making of one such betagrammatic infrastructure. During its life course, the Dinosaur-object underwent unexpected transformations, from its original status as a repository of diagrammatic and technical specifications, to its later development into an archive, a neighbourhood office, and finally a curatorial project aimed at producing 'events' or 'situations'. The situations deployed an unanticipated quality of the Dinosaur's betagrammatic properties: its ontological nature as an 'atmosphere'. It is in this guise, too, that the Dinosaur became, in the words of the art collective, 'a prototype for an open-source architecture'. The Dinosaur thus grew by re-functionalising its own infrastructural capacities, as it struggled to keep its various components (diagrams, digital media, wood planks, people) in a beta or open status.

In the words of the members of the Zoohaus collective, the history of the Dinosaur is in many respects the story of its re-functionalization from 'open knowledge' to 'eventful infrastructure'. Alex Wilkie's ethnography of the design of a technological prototype for the management of obesity likewise centres on the figure of 'event' as conceptual placeholder for understanding the multiple user-technology concrescences through which 'obesity' is continually redefined as a techno- and bio-political issue. The prototype whose history Wilkie describes works in this fashion as a sort of operator of 'becomings': the

prototype 'aims' for obesity, which thence remains 'not-quite-the-thing-yet'. As Wilkie puts it, this also opens up the performativity of prototyping to the allure of a sociology of expectations.

This capacity of the prototype to call upon itself, to re-functionalise its own purpose, recalls Roy Wagner's analysis of myth and trope as a 'symbol that stands for itself' (1986). One of the ethnographies that Wagner builds his analytical model on is Nancy Munn's splendid account of iconographic representation among the Walbiri people of central Australia (Munn 1973). Munn describes the power of Walbiri iconographs (in particular 'tracks' traced in sand) to re-inscribe a person's life-trails and displacements within the cosmological impressions made in the earth by the creative original movements of ancestral beings. 'The life of a person', glosses Wagner, 'is the sum of his tracks, the total inscription of his movements, something that can be traced out along the ground. And the life course of a people, the totality of their ways, conventions, and conventionally encountered situations, is the sum of its "tracks," the trails over its country along which experience is measured out.' (Wagner 1986, 21)

The iconography of the track summons and reproduces the creative designs of ancestral beings through the creativity and inventiveness of the Walbiri people themselves. The 'meaning' of iconographs does not lie 'before' them (in the myths of origin) or 'after' them (in their narratological representations), but in their very tracing and tracking as 'self-grounding' (in Kelty's sense) conditions of life. The graph may be seen therefore as a recursive performance. Thus, not unlike 'graphemes' or 'cosmograms' these designs are (graphic) interventions in the epistemic- and ontological conditions of Walbiri life. Indeed, Rheinberger too has described the movement of experimental work as a 'tracing game' (1997, 21)

The recursion of tracing partakes therefore of a wider *anthropology of prefiguration*. Walbiri graphs and songs and stories and dreamings and the designs in bodily decorations may be seen as analogies on analogies. Relations are always turning themselves 'into' other relations, moving in and out of different social forms, in what Roy Wagner has described as a 'flow of analogies' (1977). Such flow is 'obviational', for it makes 'obvious' the supplementary and substitutive flow of social relations, but in that very movement some relations are also 'obviated' in favour of others (Wagner 1978, 31). As a social dialectic, pre-figuration or obviation is 'the process by which the artificial comes to metaphorize the innate (and the reverse process).' (Wagner 1978, 31) Pre-figuration works therefore as the recursive logic through which social process recurrently artificializes and 'artefactualizes' itself, a point to which I shall return below.

Within the larger purview of the anthropology of prefiguration, the prototype fares as a pure (perhaps the paradigmatic) analogical figure: the cultural form capable of pre-figuring its inherent transformative and inventive dynamic. Martin Holbraad has said that as an anthropological analytic, 'recursion' operates a form of empirical truth on social relationships that evinces in their 'infinition' (Holbraad 2012, 220), their re-inventive

definition of themselves. The prototype is infinitive in this tropic sense too. It dwells in its own culture of (self-) elicitation.

Traps

The prototype, so it seems, is but the artefact that 'moves' by itself: open-ended, self-elicitating, recursive. Indeed, Holbraad, in describing the heuristics of a 'recursive anthropology', turns precisely to such an image of self-motion: 'What we have, in effect, is a machine for thinking in perpetual motion – an excessive motion' (Holbraad 2012, 265). Prototypes echo or rehearse in this context the larger history of 'devices of wonder' (Stafford and Terpak 2001), instruments and artefacts that entrap our conceptions of personhood and social relationality within the enchantment of apparently magical technologies of production. Devices of wonder, such as the Enlightenment's fascination with game-playing automata (Schaffer 1999), trapped their audiences in the illusions of self-movement. 'We in the west', Alfred Gell once observed, 'have longed for (and fantasized about) statues or images that would move, or bless, or make love, but, for centuries, always in vain.' (Gell 1999, 209) Gell's deservedly famous anthropological theory of art sought to elucidate the mechanics of such illusion within a complex social geography of intentionalities (Gell 1998). Duchamp's readymades, he observed, do not differ in this respect from, say, hunter-gatherers' traps. They both index forms of surrogate agency and models of relations-in-the-world. A trap, noted Gell,

> is a model as well as an implement… [It] is particularly a model of its creator, because it has to substitute for him; a surrogate hunter, it does its owner's hunting for him. It is, in fact, an automaton or robot, whose design epitomizes the design of its maker… This is not just a model of a person… but a 'working' model of a person. (Gell 1999, 200)

But traps do not just model their creators; they model their addressees too. Hunters manufacture traps to emulate a prey's environs. 'Traps are lethal parodies of the animal's *Umwelt*', says Gell (Gell 1999, 201). Not surprisingly, Rheinberger resorts to the trap metaphor too when speaking of the implicit rules of experimentation. 'They constitute', he says, 'a kind of experimental spider's web: the web must be meshed in such a way that unknown and unexpected prey is likely to be caught. The web must "see" what the spider actually is unable to foresee with its unaided senses.' (1997, 78) The trap models thus the very transitive relation between predator and prey: between the 'empty time of waiting' and the 'catastrophe that ensues as the trap closes' (Gell 1999, 202), the trap holds the relationship between predator and prey in abeyance. Between the 'proto' and the 'type' the trap embodies all relationality as a prototype itself. The trap works therefore to 'artefactualize' the illusions of self-movement: it opens up a space and time where the mechanics of regularity and predictability and the eventfulness of the unknown are folded and kept in mutual suspension.

Abduction

We may also think of the trap's temporal structure of suspension as a capacity for abduction. Gell himself, following Umberto Eco and Charles Pierce, resorts in later work to the logical term 'abduction' to describe a particular type of semiotic inference (Gell 1998, 14). Abduction is different from induction or deduction and describes how an entity extracts meaning from the vicinity of social relationships wherein it is located. Set amidst a nexus of social relations, Gell argues, objects are every now and then mobilized to social effect themselves. The moment of abduction is a cognitive and indexical process whereby a sign is suddenly thrust into a person's network of distributed meanings.

Elsewhere I have suggested that Gell's model of abduction may be used to understand not only how artefacts or signs 'occupy' meaning, but how meaning may be similarly produced through processes of evacuation or disappearance (Corsín Jiménez 2008, 237–239): where abduction signals not an effect of agency but agency by omission. We can think of persons falling into a trap but also of a trap abducting our personhood – in the process making part of ourselves disappear. Thus the tension that inheres in a trap may be thought of as being oriented towards the evacuation of expectations, motivations and desires from those who inhabit or roam the trap's vicinity. Indeed, when the trap closes it suddenly 'interrupts' – gets a hold over – different parts of the hunter's and game's personhood: whilst the former must redeploy his or her predatory equipment, the latter must reawaken its survival instincts.

This is of course simply another way of saying that social agency is made up of actions and subtractions – even distractions, for it is the distracted game that falls into the trap. The trap abducts the absent-minded. As a model of relational engagement – as a prototype – the trap therefore displays a complex repertoire of modalities of social agency, including action, subtraction and distraction. These are enabled by the trap's emplacement in a field of temporal suspension. The trap is capable of eliciting abduction because it is deliberately fabricated to 'hang' in a regime of uncertainty: it is a temporal construction that tolerates uncertainty as a reasonable and feasible outcome. We can invoke Wittgenstein's epigram, with which this essay opens, and say that as a prototype the trap is an artefact designed to slow down social life to a proto-phenomenal current.

Slowing down: less than one

Traps do have a tendency to slow down the flow of life, at least for those who fall into them. Think of being trapped inside a broken elevator. Our intentions come to a halt and our relationship with the artefact comes into full view. We feel a bit like idiots. Isabelle Stengers has recently argued, in fact, for a conception of political life as a trap of sorts, an 'artefactualization' of life for idiots. The idiot, she says, 'is the one who *always slows the others down*, who resists the consensual way in which the situation is presented and in which emergencies mobilize thought or action.' (Stengers 2005, 1001, 994, emphasis added) The broken elevator interrupts indeed consensual expectations. Such a scenario,

then, 'compels everyone to produce, to "artifactualize" themselves, in a mode which gives the issue around which they are all gathered the power to activate thinking, a thinking that belongs to no one, in which no one is right.' (Stengers 2005, 1001) The elevator, the trap, thinks for us.

Javier Lezaun and Nerea Calvillo's essay in this volume offers an account of one such artefactualization of the political as the designing of an environmental trap of sorts. Lezaun and Calvillo reconstruct Kurt Lewin's famous experiments on 'political atmospheres' at the Iowa Child Welfare Research Station. Their account brings to the fore that which Lewin and his team never quite paid attention to: the materiality of the attic space where the experiments were conducted. As Lezaun and Calvillo show, the layout and organisation of the attic's material fabric, apparel and paraphernalia literally furnished and imbued the space with atmospheric tension. Thus, the forms of social interaction that Lewin dubbed 'democratic', 'autocratic' or 'laissez-faire' were in fact partial re-inscriptions of the attic's infrastructural and spatial equipment. The experimenters furnished the attic space such that it would alternately elicit 'the right political affects', as Lezaun and Calvillo put it, 'for that is what was meant by 'atmosphere'.' They therefore designed a trap where the constant locomotion and kinetic dynamic of the group were '[c]onceived as a mechanism for generating and holding in suspension pure political forms'. The trap's modulation and modelling of an *Umwelt* enabled 'the political' to be held in suspension as an aesthetic effect.

In these terms the trap may appear an omnipotent artefact: a residential unit for all-encompassing modalities and temporalities of action. I insist, then, in circumscribing such features to the trap's *prototypical* attributes. Traps serve different purposes in different ways. But as prototypes they carry within the memory (so to speak) of proto-phenomenal possibilities. We are likely to remember the day we got stuck in an elevator for years to come. The elevator encloses us in our impatience, in our own infinition. Let me expand with a classic ethnographic example.

The New Ireland Malangan is a memorial carving commissioned on the occasion of a funerary ritual (Küchler 1988). The making of a Malangan sculpture is a process invested in the holding together of particular kinds of social relationships, evinced in the motifs and designs of the land-occupying matrilineal units that come together at a mortuary ceremony. The Malangan figure 'holds' these images in place until the ceremony is over, when the gift of money for the making of the effigy 'kills' the ritual sculpture. The imagery then gets detached from the sculpture when it is left to rot, thereby releasing its 'smell' (*musung*), which is the most important aspect of memory (Küchler 1988, 627). Thereafter the images remain 'alive' only in the memories of those who have assisted to the ceremony, who have in turn acquired the right to reproduce such images in future ceremonies.

The Malangan is designed as a container for the channelling of life-force (*noman*). The purpose of the effigy is to recapture (to *trap*) the life-force released through the decomposition of the person's body. 'This is', Alfred Gell has remarked, 'what the Malangan is; a kind of body which accumulates, like a charged battery, the potential energy

of the deceased dispersed in the life-world.' (Gell 1998, 225) Indeed the very making of the Malangan rehearses this notion of recharging, for the ritual work that goes into the production of the effigy is known as 'building up the fire' (Küchler 1988, 631). At the ritual presentation of the sculpture, when the effigy comes alive and looks back to the people viewing it, the Malangan, in full fire, finally glows with the heat of *noman*, which is then dramatically reclaimed by the attendants.

The patterns that cover the sculpture's planes are known as its 'skin', a term that in New Ireland stands also for affinal relations: those who share the memory of the Malangan imagery 'call themselves "one skin" and can make claims to land and to residency irrespective of marriage or birth.' (Küchler 1988, 632) The assembling and disassembling of the Malangan's skin (the ritual de/composition of the deceased's body, but also of the ritual confederation of 'one skin') therefore at once constitutes and traverses the spatiotemporal conditions for the circulation of memory. It centripetalises and redistributes the memories of dispersed peoples. The Malangan is revealed then as the 'ideal form' for a 'regional system of socially distributed memory images.' (Gell 1998, 228) The Malangan, then, is not so much an effigy operating as a prototype for modes of social action and remembrance, as memory itself circulating as a trap for past/proto and future/type events.

The Malangan's internal temporality (building up fire) and external cyclical structure (reproducing the relational memories of 'one skin') evinces therefore a structural cultural form that is always everywhere less than itself: aiming for its own completion it barely accomplishes to spark a remembrance for a future iteration. It is performative of its own compossibility.

Speeding up: more than many

The Malangan's capacity to capture or 'slow down' the circulation of memory into abductive containers – a capacity to trap and carry, in the terms sketched above, the memory of proto-phenomenal relationships – is something often remarked upon in prototyping projects in art, media and engineering contexts. A phrase one often hears in such projects is, 'We are getting ahead of ourselves', when the work of prototyping is experienced as releasing alternating currents of excitement and frustration; moments of liberation followed by disciplinary calls to hold back, to contain oneself. Not unlike in the Malangan case, participation in the making of a prototype levers moments of energetic assembly and disassembly. The fire is built up only to let it go again.

Release and containment appear therefore cultural concomitants of the practice of prototyping. In this sense the prototype's futurity carries within, also, a momentum of impetus. The impetus often leads to 'forking' scenarios, where excitement and caution eventually provoke the project bifurcating in different directions. In Free Software, for example, forking takes place when geeks work on particular pieces of source code that at one point may add up to a distinctive collection of code. The new code is a rewrite of the base source code. The functions and processes that it performs are the same, but the means are different. Free Software thus objectifies a culture of internal divisions that may lead to

differential extensions and end-up in bifurcations (Kelty 2008, 136–141). The license of binary code is pre-empted by the cultural code of binary licensing (cf. Strathern 2011).

Such detachments are not experienced as necessarily destructive but an expression of the conditions of possibility of the prototype itself. The parts or side-projects detached keep the proto/type in view. They 'speed up' against a background of things that are left behind. The detachments are self-proliferating, branching out in unsuspected directions. They do not quite amount to an efflorescence of 'many', for it is to the conditions of their possibility that they keep referring back to. They are many indeed, but their infrastructural recursion will certainly open the door for many more to come. They are therefore many 'more than many': a structural compossibility of the prototype form itself.

Forking thus makes the prototype itself always appear in 'proto' mode against or towards a 'type' finality. Sometimes it is the capacities that inhere in the artefact that call for its acceleration; sometimes it is the energy of social relationships that refresh the project's motion. As Marilyn Strathern has observed, 'where cutting [forking] is a creative act, it displays the internal capacities of persons and the external power of relationships. Thus, in these capacities or powers, sociality in turn appears to 'move' like a figure against a background of persons and relationships.' (Strathern 2004b, 114) In prototyping what 'moves' is always the prototype itself. In motion and in beta, prototypes therefore work as 'arguments' or theoretical interventions in their own right: where the prototype recurrently draws attention to its hermeneutical im/materiality (Galey and Ruecker 2010)[5]. Prototypes call themselves out as they self-ground their motion. Might we build on this notion to intuit perhaps in the culture of prototyping a novel mythological form?[6]

Prototyping cultures: automatas, interfaces, prototypes

In 1741, Jacques de Vaucanson, who was famous in his time for having fabricated three automata, including a duck that could digest and defecate, was commissioned by the French government to examine best practices in the silk mills of Lyon and Piedmont. Upon returning from the assignment, he immersed himself in the design of a new automatic silk machine. When he tried 'installing these machines at a new-style silk mill in the Ardèche', however, 'he soon found that lack of skilled workmen and local resistance… frustrated his plans.' He was prompted then 'to publish in the proceedings of the Royal Academy of Sciences a series of plans of the idealized factories he had constructed: airy, light, disciplined, efficient, if ultimately bankrupt.' (Schaffer 1999, 144) Vaucanson's work on machines thus amplified his vision of machinery to the organisation of work at large. His philosophy of machinofacture simultaneously engineered labour as a (mechanized) human body and an organisational body of machines: where 'the automata', as Schaffer puts it, 'were vital for the materialization and evaluation of the laboring body.' (Schaffer 1999, 148)

Vaucanson's automata operated thus as 'interfaces', in the terms in which the then nascent discipline of ergonomics took up the word in the 1940s to describe 'the site at which the human body interacts with a complex mechanical apparatus.' (Harwood 2011, 9)

The definition is John Harwood's, who has recently documented the work that designer and architect Eliot Noyes carried out for IBM in the second half of the twentieth century. Noyes' programme, Harwood argues, became definitory of how modern-day corporations have come to understand the roles of architecture and design as data-processing machines. Noyes' design consultancy literally engineered into existence a view of architecture, space and industrial objects as informational, media and relational flows. Graphics, machine casings, curtain and cellular walls, or the layout of table and machine in an operator's control panel should all be understood as environmental interfaces shaping the (corporate) person's capacity for action and understanding. Noyes modelled a corporate culture on the image of a computational and cybernetic environment, where informational transactions were re-inscribed as social interactions.

Vaucanson's defecating duck failed to model the silk plants of Lyon as corporate interfaces. The duck, one presumes, cared too much about its bodily functions and not enough about its corporate personae. Eighteenth century automata, in other words, were not quite media interfaces yet. Where Vaucanson failed, however, IBM and Eliot Noyes triumphed. The factory plans and corporate buildings designed by Noyes epitomised the turn towards the 'architecture of information' that set the stage for the late 1960s architectures of experimentation (Galison and Jones 1999).

The 1960s saw the architecture of information travel to become an experimental architecture, in science, art and a variety of cultural settings. Fred Turner has persuasively argued how the cybernetic designs and architectural practice of Buckminster Fuller, for instance, made its way into the countercultural artistic and political expressions of groups such as the Merry Pranksters or the New Communalists (Turner 2006). In particular, it was foundational to Stewart Brand's work at the *Whole Earth Catalog*, which became the first of a series of what Turner calls 'network forums' and 'cultural infrastructures' (see also Turner 2009) where cybernetically-inspired forms of sociality, such as 'collaboration', 'peer to peer exchanges' or indeed the 'hacker ethic', were naturalised as social innovation *tout court*. Such 'forums themselves', writes Turner, 'often become *prototypes* of the shared understandings around which they are built.' Here participants 'celebrated entrepreneurial work and heterarchical forms of social organization, promoted disembodied community as an achievable ideal, and suggested that techno-social systems could serve as sites of ecstatic communion.' (Turner 2006, 73, emphasis added) Importantly, the forums themselves were understood as recursive devices by participants: 'For Brand, the *Whole Earth Catalog* was simultaneously a whole system in its own right and a tool for its readers to use in improving the whole systems that were their lives and the world in which they lived.' (Turner 2006, 82) Social process is therefore re-inscribed as a techno-communicative and techno-communitarian possibility. No longer simply a model of, nor an interface for social relations, the man-machine 'network' has now become the prototype for sociality itself (Riles 2001). The cultures of prototyping come finally home in their 'recompilation' as prototyping cultures (Kelty 2011).

Let me conclude by returning to Copley's Barber Shop. Copley's set was meant as a sardonic commentary on the composite forms, scales and circuits of art. It held together a disparate set of artefacts, images and indices, eliciting (rather than over-determining) possible relations between them. It scaled down into a portfolio the repercussions and concomitances of an artwork that had scaled-out of itself. It is of course a piece of its time, rehearsing the questions and challenges to decentralisation and telecommunication that had taken over the art- and science worlds in the early 1970s. It was an exercise, as Manchanda has put it, in extricating the prototypical qualities of Picasso's artwork, doing so by pointing out its own status as a prototype – as a suspended agent of possible connections and interpretations. For strictly speaking, there is no Barber Shop artwork: it is but a set of disparate pieces. More than many and less than one, the Barber Shop is but a compossibility.

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Notes

[1] As put to by a Daribi friend to Roy Wagner, on the subject of what an 'innovation' in food animal rearing may look like (cited in Wagner 1978, 28)
[2] The architecture of experimentation in the second half of the twentieth century mirrors such an epistemic transformation in the nature and organisation of scientific and artistic work: where factories and industrial laboratories were once designed as placeholders for creative work, the late 1960s witnessed a shift in the nature of the experimental as 'dispersed social-technical-spatial entities in which meaning is constructed at several peripheries, and no single center can hold.' (Galison and Jones 1999, 527)
[3] On 'comparison' vs. 'compatibility' (say, in cyborg theory, where relations are made as 'partial connections'), see Strathern (2004b)
[4] I owe the coinage to Antonio Lafuente, whose brilliance is a continuous source of inspiration.
[5] Debbora Battaglia similarly speaks of prototypes as 'material arguments for themselves' (Personal communication, February 2012).
[6] Perhaps a mythology for 'things' or a mythology for assemblages. At any rate, prototyping *is* its own myth of experimentation: 'As much an event (*like a scientific experiment*) as it is an explanation… the facility of the myth… is not that of replicating the world, but of setting up its own world in contradistinction.' (Wagner 1978, 33 emphasis added)