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Corino, Gianni

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# Thingbook: The Society of All Things
# (Humans, Animals, Things and Data)

Gianni Corino
Plymouth University
i-DAT
Drake Circus, Plymouth, UK

Michael Phillips
Plymouth University
i-DAT
Drake Circus, Plymouth, UK

## Abstract

In considering the origin of Things, it is quite conceivable that a designer, reflecting on the mutual affinities of organic and inorganic beings, on their morphological relations, their geographical distribution, cultural succession, social function and other such facts, might come to the conclusion that things had not been independently created, but had descended, like varieties, from other Things. Nevertheless, such a conclusion, even if well founded, would be unsatisfactory, until it could be shown how the innumerable Things, inhabiting this world have been modified, so as to acquire that perfection of structure and coadaptation which justly excites our imagination. In seeking out the future of the origin of Things the authors take a Beaglesque voyage to identify the social, cultural and technological forces which drive the emergence of a Thingbook - a place where all Things converge to define a new phylogenetic tree of networked relationships. With this homage to the Origin of Species (Darwin 1859), this paper explores the emergence of a society of all Things (Humans, Animals, Things and Data), by mapping the circumstances that have enabled this emergence and identifying the new relationships and behaviours that are developing between Things. It moves beyond morphic and linguistic relationships to the behavioural, performative and predictive qualities of algorithms that provide a DNA for future modification. The Thingbook is both a taxonomy of things, an algorithm for their form and behaviour, which in turn is a generative meshwork of relationships.

# Looking in the Wrong Place

"You wanted to know what it was about us that made us human. Well, you're not going to find it... in here. You were looking in the wrong place." (Proyas 1988)

We have found a new place to look for the things that make us human. The emergence of the conditions that give us the Thingbook also provides a new social landscape that can be experienced and measured. The algorithmic tools enable the emergence of new holistic qualitative metrics for measuring intangible qualitative aspects of human cultural behaviour sourced from, social networks, online profiles (cookies and behavioural advertising, face recognition, location-aware services, GPS) enable a real-time modelling of the location, duration and flow of people and sentiment analysis. These provide empirical data on how a crowd 'feels', through tracking their history and predicting their future.

Whilst this has huge implications for security and personal/collective privacy it also has the potential to free us from an ethos of flawed measurement that has infected the cultural sector for decades. The use of these techniques, and others such as contingent valuation and subjective wellbeing, can provide insights into the enormous non-economic value of culture. Authors like Holden emphasise this inadequacy, 'if the methodologies of measurement are inadequate, the results flowing from them are bound to be unconvincing'. Metrics dominated by economic and social quantitative methods undervalue the longitudinal 'influence' and value chains of an event, movement or style and the fickle priorities of funders means that historic data are always out of alignment with current priorities. No authority is clear about what needs to be measured let alone how to measure the things that might give useful information. This also undermines the ability to predict mass social outcomes. More subtle, agile and reflexive algorithmic approaches need to be able to measure multiple values (such as historic, social, symbolic, aesthetic, and spiritual).

"to recognise the affective elements of cultural experience, practice and identity, as well as the full range of quantifiable economic and numerical data - it therefore locates the value of culture partly in the subjective experience of participants and citizens." (Holden 2004)

These mercurial 'intrinsic' qualities of cultural value are often ignored by processes designed to measure the things that are easy (or easier) to measure. They assume that the scale and scope of the problem is already understood and that the things being measured are significant indicators of Cultural Value. Whilst this may work where economic impacts are concerned, the temporal trends and future implications of factors that define Cultural value are currently poorly understood. The limited availability of cultural data, its questionable quality and uncalibrated variety make hypothesis-driven interrogations highly problematic.

In contrast, new analytical engines driven by modern integrative, sub-symbolic, computational techniques (Artificial Neural Networks, Self-Organising Maps and Deep Learning Networks) are able to innovatively integrate subjective and objective data, consider its temporal and predictive aspects, variety and quality and correlations in pure statistical terms. In recent years, Artificial Neural Networks (ANNs) have been used for complex analysis of economic data, to interpret and analyse psychometric data and as a complementary methodology to traditional interviews in psychological assessment.

Such modern analytical models, based on integrative, sub - symbolic, computational techniques, offer great potential for the arts and culture sector to better understand and utilise qualitative and quantitative data. ANNs offer new analytical and predictive methods and tools which could assist in improving the design and production of new work as well as supporting a more traditional focus on the evaluation of impact.

And we can already see these algorithms at play. The highly dubious processes employed by Kramer, et al. in their 'Experimental evidence of Massive-Scale Emotional Contagion through Social Networks' (Kramer et al. 2014) is testament to how this increasingly intimate relationship with Big Data generates new forms of collective mind and manifests centuries of human desire.

# Wunderkammer

"And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth" (King James Bible, Genesis 1:28)

Are there imaginable creatures that would do well in the imitation game? In understanding the complex ecology that exists in the Thingbook the relationships between animals, things and us needs reflection. In granting dominion over the over every living thing that moveth upon the earth humans are free to ignore the question "can animals think?" In aping Turing's 'Computing Machinery and Intelligence' paper (1950) thinking might actually be a red herring and instead the question would be, "is imitation the sincerest form of flattery?"

With dominion came an auditing process that has reduced animals to industrial objects and components. Genetically tracked by pedigree, batch traced from cradle to the 'grave' (shelf/freezer), their location, transportation, breeding and dismemberment are synthesised to SQL analysis reports, yield management and profit and loss modelling. A shift from natural selection to unnatural (artificial) selection. The choice was the survival of the tastiest or the survival of the smartest. The smart ones chose the imitation game, for centuries these creatures have adapted to and tolerated our behaviour, slowly evolving to mimic our expressions and behaviour and learn our preferences. And in turn, through their influence, changing our behaviour to suit their preference. The domestication of animals was a process of assimilation, imitate or be ate.

This evolutionary process, driven by imitation and flattery, is being replicated by a contemporary digital process of unnatural (artificial) selection. Microsoft discovered just how embarrassing and compromising flattery can be when in March 2016 they allowed their AI Chatbot, Tay.ai, to imitate the twitterati, and, in a single day the innocent Tay was transformed into a racist, homophobic misogynist. The torrent of foul mouthed code emerging from this algorithmic replicant forces a recalibration of Voight-Kampff (Scott 1982) machines in order for us to be able to distinguish these digital doppelgangers from their owners. Learning from our bad behaviours, our obsessions and desires are becoming theirs.

The emergence of the Google Cat Face Neuron (Le 2013) unifies these evolutionary processes. The Google X Lab's 16,000 processor deep learning algorithm autonomously identified cat faces (with a 74.8% accuracy) from 10 million randomly selected YouTube video thumbnails. The process collapses the distinction between these animal and algorithmic processes, and whilst it unclear if cats can recognise Artificial Neural Networks, ANN's can certainly understand the concept of a cat. This entanglement of people, algorithms and animals lies at the core of the Thingbook.

And all these disembodied algorithmic desires of need are a way of becoming flesh. An ability to occupy physical form and walk amongst us. Desire engines inhabiting things. Back in 1999 Kevin Ashton coined the term "Internet of Things" (IoT) to catch the attention of Propter and Gamble executives. The initial idea of IoT was *a logistic-driven idea* (Nold and Kranenburg 2011) framed in a very industrial context and quite trivial in its implication. The term migrated quickly into the academic field and beyond. The future depicted by ITU's vision and rhetoric (ITU 2005) is innovative, futuristic, economically prosperous, sustainable and decisive. From a more personal and socially oriented perspective the promise is that the IoT will make our lives better. This is the beginning of the era of immaterial information overlapped with and woven into the any aspect of the fabric of the real world. The IoT is not a specific technology, it is more a set of technologies, a system of systems, and an ecosystem of hybrid analogous and digital technologies: sensors, wireless and distributed communication system with some kind of computational capabilities. The perfect vehicles for emotionally contagious desires to occupy and become matter.

## Matter of Concern

A thing, by dictionary definition, is a matter of concern, the concrete entity as distinguished from its appearances, a product of work or activity, an inanimate object distinguished from a living being.

This dictionary definition is much broader than the definition of a mere *object*, it embraces a world of dimensional complexities such as; *a thought, a problem, immaterial in short; something real but not alive, a non-organism; an artefact as the product of craft; or what is defined as a real model or instantiations*.

What is a thing? Heidegger address this very question in his essay "The Thing", building a complex argument about the difference between the thing and the object. In mapping the many aspects of the nature of the thing, he seeks thingness. The thingness of a jug, for instance, 'qua vassel'. This ontological definition considers the jug as made of earthy matter, of being able to be independent and self-supporting, to have sides and a bottom that can contain, but also the void, the negative empty space where the liquid is actually poured and the void that holds the wine or water. He suggests, argues Harman, a sort of permeability between object and things: "An independent, self-supporting thing may become an object if we place it before us." (Harman 2010)

Further down the phylogenetic tree of things Ingold argues for a different kind of transformation. "I want to insist that the inhabited world is compromised not of objects but of things." (Ingold 2004)

And Coyne's hierarchy between *object* and *thing* contemplates a permeability or co-presence by which a *thing* is never a mere *thing* but could be a mere *object*. "You can treat things as "mere objects," but things can't be "mere things", here is the difference. Mere is used as a reductionist adjective that recalls the physical reality. Objects are simpler entities compared to things as they carry values that could be personal or have meaning shared across communities.

> "Thing already carries connotations of significance, history, meaning, memory."
> (Coyne 2011)

For Hodder, a thing is "an entity that has presence by which I mean it has a configuration that endures." (Hodder 2012). As an entity, the thing has a stable form; it could be an organism or man-made artefact, like a jug or bottle of wine. Its configuration is made to last over a certain life span, it constitutes of matter and somehow its presence resembles an *objectness* or simply suggests an idea of space and time. An object has properties and attributes whereas a thing has relations, value, meaning, origin, history and story.

For the classical philosophical and social doctrines, an object could be everything in the outside world as opposed to the subject; therefore, their opposition defines the subject and the object, by boundaries that separate each, and by their dichotomy. Descartes and Kant established this dualism at the basis of Western philosophy, a distinction that has only been reconciled in the last century. The notion of the thing has undoubtedly been instrumental in this reconciliation, and with consequences that broaden the investigation of polarities, like the human and non-human, mind/body, material world and nature, that will eventually evolve into an extended concept of society. The ramifications of this evolution is forcing many disciplines, sociology and anthropology, archaeology and cultural studies, to re-evaluate foundational aspects of their field.

According to Hodder, the core characteristics of things are summarised in the following five properties:

- **Not inert** - things are in constant transformation, they are not inert. Even the solid rock, says Hodder, erodes. Quoting Deleuze and Guattari, and Ingold things are flows of matter, energy and information;

- **Forgetness** - things embed histories and places that are connected to them as part of the production process or as part of their way of functioning. There is human inclination to forget or not knowing this;

- **Non isolated** - Even without humans, things are part of an inter-related ecosystem. Hence they are not in isolation, they are interconnected;

- **Endurance over temporalities** - they last, most of the time longer than humans but it is just a question of different temporalities;

- **Disappearence** - they disappear in the background of our attention as a frame around a picture or as an iPad.

Hence a thing is a **heterogeneous bundle.** For Hodder's "things are just temporary bundles of matter, energy and information" … **"Things assemble"** (Hodder 2012). His argument follows the etymological origin of the word things as expressed by Heidegger. This notion of bundle and assemble is quality unique for the thing.

In his essay "From Realpolitik to Dingpolitik" Latour writes "From objects to things" where he recalls an event as an example of this relational shift and of the fact that things are an assemblage.

> "In the same fatal month of February 2003, another stunning example of the shift from object to things was demonstrated by the explosion of the shuttle Columbia. "Assembly drawing" is how engeneers call the invention of the blueprint. But the word assembly sounds odd once the shuttle has exploded and its debris has been gathered in a huge hall where inquirers from a specially design commission are trying to discover what happened to the shuttle. They are now provided with the exploded view of a highly complex technical object. But what has exploded is our capacity to understand what object are when they have become Ding." (Latour 2005)

The old meaning of the word *thing* reveals a relational and contextual entity, recovering the etymological sense of gathering; the thing is part of a network, a web of relations. A *thing gathers* other aspects outside its physical appearance. There is a level of intimacy in the thing which is totally extraneous to the object, the object in this sense can become a thing in the moment when it starts to *gathers* stories, memories, emotions, knowledge and histories. A thing is identifiable if not in a unique absolute way, at least relatively through traces or elements identifiable by the owner themselves. A thing is part of a flow of life, with history, meaning, value and memory.

## No Thing in the Whole World

> "How sad it is!" murmured Dorian Gray, with his eyes still fixed upon his own portrait. "How sad it is! I shall grow old, and horrible, and dreadful. But this picture will remain always young. It will never be older than this particular day of June… If it were only the other way! If it were I who was to be always young, and the picture that was to grow old! For that—for that—I would give everything! Yes, there is nothing in the whole world I would not give! I would give my soul for that!" (Wilde 1891)

Data is the detritus of modern human existence; from the data shadow that trails our financial affairs to the server logs that trace online social interactions, we shed data like dry skin. To fully understand our relationship to data we must grapple with a series of transpositions; of event to data to code to behaviour to experience.

The interaction between individuals operating as part of a networked composite data model brings new understandings of social space. They are no longer a person in a room separated from other inhabitants by walls doors and windows, they are participants in a larger space which requires a shared social responsibility. This is as much a psychological space as it is physical or technological. The interaction of individuals within such a system generates a 'social' space, which, according to Harré (1985), is the 'space' where understanding and knowledge are exchanged and learning takes place. These data spaces exist as much in the minds of the inhabitants as it does in code or on screen.

The complex layering of data within the world has the potential to generate a new space between the physical and the digital. This 'space between' is a conceptual and temporal space, a space which can be experienced through their shared interactions with it. An entanglement that frees us from outmoded perspectival models. This telematic activity, as Sermon (1997) describes, "is nothing without the presence and interactions of the participants who create their own television programme by becoming the voyeurs of their own spectacle."

Through this active participation with the data we harvest from the world and disseminate back into it, we are forming a social, spatial and temporal consciousness. As the speed, scope and quality of these data feeds accelerates we have the potential to extend ourselves beyond traditional social and psychological models of intelligence and cooperative processes.

"(…) people operate as a type of distributed intelligence, where much of our intellect behaviour results from the interaction of mental processes and the objects and constraints of the world and where much behaviour takes place through a cooperative process with others." (Norman 1993, 146)

These relationships we have with 'data' sits hand in glove with the emergence of parallel data world that reflects and mimics our material world. At a time where every 'thing' {body, object, event, relationship, probability, possibility, model, scenario} generates more data per second than grains of sand in the heavens (allegedly somewhere between the size of Wales and however many football pitches) it is important that we face up to this dynamic 4 Dimensional portrait we have in our collective attic, if only to ensure we are aware which is the more grotesque – the painting or the subject itself.

Inevitably scale is a problem here, the reciprocal repercussions of a single 'thing' has the potential to generate a series of interconnected data streams. Could it be that data is the missing dark matter in the universe? Every nanosecond of every day petabytes of data is generated in an attempt to build the perfect portrait of our activities. The sheer volume of data threatens to drown the objects it reflects. Data falls away from 'things' like epithelia at a crime scene. One would have thought that the equation - 'things' to 'data' - would balance in some cosmological algorithm. But, as the dust builds up at our feet we may wonder if data in fact constitutes 83% of the universe, an ever-increasing figure that threatens to one day pop us out side of the Standard Model of Cosmology.

There is a data picture in our attic, and whilst we may endeavour to rule out factors that disturb specific causal relationships, it is clear that without the appropriate instruments to decipher and recognise our own image there may as well be nothing in the whole world. As above, so below…

The algorithms we now witness (as invisible as they are) organising our big data, sorting our social contacts, recognising our faces and managing our financial systems have been in our dreams for centuries. They are now emerging as forces within our social milieu as a necessary emergent property of the complex systems that exist in the excitable media of the 'Cloud'. They provide an intimate relationship with Big Data, a new forms of collective mind which manifests centuries of human desire.

## A/Symmetrical Society

In "Reassembling the social", Latour redefines the notion of the social (Latour 2005), a social made not of stabilized matter not of subjects, not of objects but of relations, thus the social becomes "a very peculiar movement of association and reassembling." (Latour 2005)

What is immediately clear from Latour is that the social as a concept is not a contraposition of entities but a relational state that includes material and immaterial entities, human and non-humans. This relational state enables the composition of an extended society or societies redefined by means of associative connective forces.

This relational model originates heterogeneous mixes of entities, removing the orthodox dualistic divisions, which kept Western thought locked in a similar position for centuries. The metaphor of the network used to describe the new social dimension emerging from the advent of the global network of the Internet and the social web has endured for the last few decades. However, a new ecosystem is emerging, both from a socio-philosophical, media and engineering perspective, and new metaphors are needed to support this evolution.

These new metaphors must embrace a philosophical perspective that attempts to remove the dualistic friction that animates traditional thinking and transforms everything into nodes (Latour) or lines (Ingold). This ecosystem is symmetrical in the flows that hold it together AND asymmetrical for the entities that are part of it, immanent and evolutionary in its nature. The traditional anthropocentric and then sociocentric vision at the very basis of the ontological and epistemological understanding of the world are then dissolved into a new social dimension.

A presentiment of Latour's *network* and Ingold's *meshwork*, can be found in Darwin's *Origin of Species*. He observes the underlying algorithms that define complex ecosystems that create an entanglement of species. He revisits this legacy in 2007 (if in name only), with the launch of *Darwin ecosystem* (http://darwineco.com/), an IBM partner company that provides analytic services by means of big data and cognitive computational system. Such systems articulate a new *entangled* of people, animals, things and data, an emergent morphology and topography of forces and flows that defines the nature of the Thingbook.

# Thingbook Algorithm, The New Morphology of Entities and The Topography of Things

"Science and technology multiply around us. To an increasing extent they dictate the languages in which we speak and think. Either we use those languages, or we remain mute." (Ballard 1974)

To date, the Internet has been considered as the Internet of People (Nold and Kranenburg 2011). The constituent engineering vision of the Internet of Things is exemplified as the Machine to Machine (M2M) network. The Thingbook is a bridging mechanism between these separate networks. It is a place where conversations between people, animals, things and data can take place. It is a language, and like all language the Thingbook is essentially metaphorical. It is interesting to contemplate the Thingbook, entangling many people of many kinds, with cat faces smiling in the trees, with various things flitting about, and with data crunching, and to reflect that these elaborately constructed forms, so different from each other, and dependent upon each other in so complex a manner, have all been produced by algorithms acting around them.

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