In this particular volume the issue of art as interference and the strategies that it should adopt have been reframed within the structures of contemporary technology as well as within the frameworks of interactions between art, science and media. What sort of interference should be chosen, if one at all, remains a personal choice for each artist, curator, critic and historian.
The Case of Biophilia
A Collective Composition of Goals and Distributed Action

by
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ABSTRACT

Rather than follow the machinations of a singular artist in the production and exhibition of an interactive artwork, this paper uses an actor-network approach to collectively hold to account a whole host of actors that literally make a difference in the production of an interactive artwork, Biophilia (2004-2007). My main argument is that in order for any action to take place both humans and non-humans must on some level collectively work together, or, in actor-network terms translate one another. However, such new relations are predicated and indeed just as dependent on and what these new actors are willing to give up as it is to do with what they can offer. Needless to say that when the negotiations are momentarily over, actors give up individual goals and compel others to collectively form new definitions, new intentions and new goals with each interaction. In other words, the ‘work’ represents neither the beginning nor the end of a particular event, but is described more as a continually shifting and cumulative series of distributed actions.
Several days later the artist receives another email from the Siggraph “Art Show Chair”:

I am concerned about the amount of walk space between your booth and the art walls below it in the plan. […] We need more space so people can stand back and view the art plus the Fire Marshal does not like us to have close passages.

Several emails later it is clear that some negotiation over space is required, if the embryonic relation between Biophilia and Siggraph is to be sustained.

This description of the trials of strength inherent in the construction and exhibition of an artwork may have started in a rather strange place. But the process demonstrates how actors are co-defined when they begin to form relations. In actor-network terms, the elemental affiliation that enables a network to form is the process called translation. Michel Callon describes translation as:

‘A translates B’. To say this is to say that A defines B. It does not matter, whether B is human or non-human, a collectivity or an individual. Neither does it say anything about B’s status as, an actor. B might be endowed with interests, projects, desires, strategies, reflexes, or afterthoughts. The decision is A’s – though this does not mean that A has total freedom. For how A acts depends on past translations. These may influence what follows to the point of determining them… All the entities and all the relationships between these entities should be described – for together they make up the translator.

The trajectory and relative makeup of a translation can be mapped when we consider the amount of associations and substitutions that go into making a relation stable and thus viable. This process can also be expressed in Figure 1.

So what an actor in translation gains in one area is a result of having lost something in another. It’s in this way that all translation requires a series of translations. That is, Biophilia will disengage weak or threatening entities whilst incorporating those that are sustaining. It is the nature of these trans-actions, which defines the strength or weakness of a given translation and will contribute to the explicit shaping of the artwork; apart from the intentions of the artist. Therefore, a collective entity like Biophilia cannot be entirely defined by its ‘essence’ or what we see on the surface in a representation at anyone particular time. Rather, translation as observed in Biophilia produces a unique mediatory signature of a specific association of entities at work at any given moment, as is shown in Figure 2.

The notion of translation demonstrates that the problem solving involved in art practice, is a deeply intertwined sociotechnical process. When we see the artist take his position at a desk in front of the computer and begin to work on the problem of Siggraph’s lack of space, he will need the desk, the computer and a whole host of other entities to be compelled to solve the problem. But of course in order for this problem-solving process to work it will require that technical components are already socialised for use. Computer vision is socialised, it enables the computer to ‘see’, and the computer and camera can ‘talk’ to each other, just as computer code is compatible with reading. What at first seems like a highly complex objective process with sophisticated technological components is made compatible with social ways of coding and reading. It is in this way that properties are borrowed from the social and inscribed into nonhumans.

At the same time, this process will also extend non-human influence in the social. Whereby, humans will equally absorb nonhuman properties; that is, take the position of sitting and using a mouse, submit to the limits of the technical components, follow structured software patterns or read feedback given, in order to establish a working relation. So much so that what the artist will learn from the production process is the result of contact with nonhumans, which is then re-imported back into the social as conceptual and afforded content through the artwork.
The computer, code and technical components lend their nonhuman properties to what was previously a scattered and unordered bunch of parts and loose intentions. The intersection of nonhuman influence will allow these actors to align and their relations to harden. So much so that the sociotechnical hybrid Biophilia will eventually submit to the fire laws of Boston, measured by firewardens, held accountable by the Chair of the art gallery and be granted a social life, worthy of its place in the Siggraph Intersections exhibition.

When we observe the so called ‘social’ actions of the artist sitting and at work at the computer, trying to solve this problem, it looks as if the human does the ‘work.’ However, when we take into account the vast amount of translation in the construction of Biophilia our observations are undermined. Translation shifts the focus to a vast assembly of actors who are directly related by function, material and ontological inseparability, recombined in a specific time, space, action and material sequence, who are also doing the work.

THE PROTOTYPE

Try as he might, the artist is unable to solve the increasing complexity of the code. The computer is not able to ‘talk’ sufficiently fast enough to the camera, so that the artist sitting and at work at the computer, trying to a scattered and unordered bunch of parts and loose intentions for its exhibition space.

When we observe the so called ‘social’ actions of the artist sitting and at work at the computer, trying to solve this problem, it looks as if the human does the ‘work.’ However, when we take into account the vast amount of translation in the construction of Biophilia our observations are undermined. Translation shifts the focus to a vast assembly of actors who are directly related by function, material and ontological inseparability, recombined in a specific time, space, action and material sequence, who are also doing the work.

Nonetheless, prototyping Biophilia in relation to the problem of Siggraph is necessary because it increases the probability that Biophilia’s goals will align with that of the gallery. It can only ever be a probability because the actors involved in each situation will be different. Thus the associations the new situation creates will allow or disallow a whole range of unforeseen affordances. Although the Art Show Chair and the gallery staff require a certain ‘stability,’ duly required by professionals, they are not going to get it unless the other half of the relation (the nonhuman kind) is cajoled into line. No matter how obstinate, professional standards also relate to nonhumans. Yet even with all this work done with, and before the artists hand, the prototyping process is tenable and only as strong as the alliances it can maintain and carry forward into space.

John Law describes the construction of space in relation to the actor-network as one in which objects are co-constituted with the surrounding space. This means that “spatial relations are also being enacted at the same time [as translation]... Or, to put it more concisely... spaces are made with objects.” The relation to space, to the actor-network and/or possible actions, seems to fit well with Callon and Latour’s early definition of actors as:

Any element which bends space around itself, makes other elements depend upon itself and translates their will into a language of its own. Before the elements dominated by an actor could escape in any direction, but now this is no longer possible. Instead of swarms of possibilities, we find lines of force, obligatory passage points, directions and deductions.

In this way, actors and space are mutually dependent and as such mutually constituted in translation. Prototypes, much like institutions such as galleries, are exemplars of this kind of compelling space. Galleries, installation spaces and indeed prototypes not only regulate physical and material movement but also the cognitive, political and ideological rhythms of the many actors constituted in their frame of reference.

The spatial relations generated by institutions (much like the collectives at work in the construction of Biophilia) not only control the networks between inside and outside. They also shape the political, material and practical participation actors have in those spaces. As John Law states, “spatial systems... are political because they make objects and subjects with particular shapes... Because they set limits to the conditions of object possibility.” Yet this relationship is not a one-way affair. As much as Biophilia submits to the limits imposed by the Siggraph gallery, it also pushes Siggraph to negotiate and open the institutional and regulatory boundaries imposed on it. Until both networks become re-aligned each negotiation pushes Biophilia and Siggraph to a unique sociotechnical collective that will occupy a distinct spatial topology at a particular point in time. Therefore, Biophilia becomes much more than an artwork defined by a singular interaction/representation and more like a nexus of relations that shapes objective, subjective, cognitive, social and institutional associations. In other words, the ‘work’ represents neither the beginning nor the end of a particular event, but is described more as a continually shifting and cumulative series of distributed actions.

INTERSECTIONS EXHIBITION, SIGGRAPH ART GALLERY, BOSTON, USA

Before the participant arrives, she is already ‘prepared’ for involvement by various marketing materials and previous ‘interactive’ experiences. As she steps off the crowded bus, attendants and human attendants guide her to the entrance to Siggraph. On entering the gallery, the space is dark and quiet, and the participant’s pass is checked and stamped. The darkened gallery space, gallery attendants and didactic information about each installation ensure that by the time the participants come in contact with the artwork they already know, in part, the role they must play.

At a more intimate level, the point at which the participant enters the installation space of Biophilia and begins to interact signifies a change in behaviour. The gallery visitor is now redefined as a ‘participant.’ The world of the gallery is now redefined as a ‘participant.’ The cavernous Boston Convention Centre becomes the Siggraph Intersections Gallery. Siggraph lives up to its promised brand and Biophilia becomes truly ‘interactive.’ The participant literally learns in real time, that they, in association with the artwork are “an interface that becomes more and more describable as each [actor] learns to be affected by more and more elements.” Moreover, the participant’s objectives to engage the artwork, begins to identify with the physical affordance of Biophilia, to the point that the user’s intentions are shaped, both in a positive and negative sense of enabling and constraining certain behaviours. In other words, a certain level of influence is distributed throughout the act of engaging with participatory artworks that alters each actor’s definition, ontological makeup and associated goals and objectives.
This is represented in diagrammatic form as goal translation in Figure 3.

Goal translation represents a symmetrical example of how, through interaction, competencies, objectives and possible actions are co-constituted. Both the human participant and the artwork’s goals are translated into a collective program of action, in which any number of unintentional consequences could result. In other words, action is shared amongst those in the collective and is in part uncontrollable by any one element, human or otherwise.

This kind of unpredictability is brought to bear by such translations and is used by the artist (whether he recognises it or not) to take advantage of the volatile collective action produced when a multitude of entities come together. It is no wonder then that Frank Popper conceptualised such phenomena in electronic art works as “neocommunicability [as] an event - full with unaccustomed possibilities…” The uncontrollability of relations in an interactive event is a small articulation of what many artists come into contact with every day. That is, to act means to be perpetually overtaken by the thing you are supposedly building.

In this way goal translation as evidenced in both the construction and interaction with Biophilia demonstrates that there is no prime mover of an action and that a new, distributed, and nested series of practices allows all kinds of unintentional actions, ontological variability and exchanges to develop. The implication then is that action can be redefined as follows:

Not a property of humans, but of an association of actants (human or nonhuman agents). [...] Provisional “actorial” roles may be attributed to actants only because actants are in the process of exchanging competencies, offering one another new possibilities, new goals, new functions. This kind of distributed action not only highlights the implausibility of humans and nonhumans acting alone but that the whole process of gaining some kind of competency is undertaken by exchange. As Latour further explains:

Interaction cannot serve as the point of departure, since for humans it is always situated in a framework which is always erasable by networks going over in all directions. [...] the attribution of a skill to an actant always follows the realization by that actor of what it can do when others than itself have proceeded to action. Even the everyday usage of ‘action’ cannot serve here, since it presupposes a point of origin [...] which is completely improbable.

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As Figures 4 and 5 illustrate, there is a long chain of events that can be traced back to the initial actions and decisions of the actors involved. The cost is time, misplaced intentions, and the reallocation of responsibilities. The means by which collectives like Biophilia operate are complex and not always aligned by mistake, nor wholly by chance, but through the carefully orchestrated interplay of agents that contain their own sub-programs of action. Although the artist spends precious hours rigging the installation, the slightest bump throws out the camera's alignment or the settings, which are part of the computation. Therefore, for the artist, the setting is part of the computation.

In this manner, the interactions, and indeed the intention to act in the production, exhibition and interaction with interactive artworks, is considered collective and distributed.

By examining Biophilia as much more than a discrete artwork in itself we begin to see that the competencies and functions of each actor begin to lose their distinctions in order that the ‘work’ is made.

In this way, the intentions of the artist are significantly translated and thus altered to the extent that all the actors in the development and exhibition of the artwork shape the conceptual and physical aspects of Biophilia. In a sense, the long tail of the sociotechnical translations shape the type of cognitive and functional operations that are possible. As Edwin Hutchins states, “One cannot perform the computations without constructing the setting; thus, in some sense, constructing the setting is part of the computation.”

In this way, the Siggraph gallery and the installation space are also dependent on similar sociotechnical systems (bricks, mortar, funding bodies, committees, community support) that sustain the types of movements within it. So too are participants’ actions, intentions and cognition similarly shaped as an effect of the “modes of ordering” implied by the framing aspect of the gallery and indeed the installation itself. Therefore, for the artwork to emerge the individual goals and functions of each actor must merge into a larger if not distributed action.

**CONCLUSION**

From an actor-network approach, actual interactions with participatory art works (much like still images of the event) are not a departure point, but one point of many in a chain of associative links. As is seen in the various translations in Biophilia, interaction consists of agents that can only act by and through association with others. As these actors associate and thus work together, their initial goals are forcefully exchanged, sacrificed and colonised for the greater good of the collective. Sometimes these goals align with a strong probability that the trajectory of action grows stronger with more associations. Other times they don’t.

Nevertheless, these unfounded probabilities and lost propositions connote a deeper sense of the multitude of sacrifices required for a strong relation to form. As a result intentions and goals are detoured from their initial trajectory and precipitate new alliances and new actions that would not have been originally possible. It is in this manner that the interactions, and indeed the intentions to act in the production, exhibition and interaction with interactive artworks, is considered collective and distributed.

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**REFERENCES AND NOTES**

2. Sections of this paper are derived from my PhD dissertation, Mark Cytpher, Trans-Action: An actor-network Approach to Interactivity in the Visual Arts” (Ph.D. dissertation, University of New South Wales, Australia, 2011).
3. Siggraph Art Show Chair, e-mail message to author, March 28, 2006.
9. Ibid., 799.