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INTERFERENCE STRATEGIES

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LEONARDO ELECTRONIC ALMANAC, VOLUME 20 ISSUE 2

Interference Strategies

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Interference Strategies: Is Art in the Middle?

If we look at the etymological structure of the word **interference**, we would have to go back to a construction that defines it as a sum of the two Latin words *inter* (in between) and *ferio* (to strike), but with a particular attention to the meaning of the word *ferio* being interpreted principally as *to wound*. Although perhaps etymologically incorrect, it may be preferable to think of the word *interference* as a composite of *inter* (in between) and the Latin verb *fero* (to carry), which would bring forward the idea of *interference* as a contribution brought in the middle of two arguments, two ideas, two constructions.

It is important to acknowledge the etymological root of a word not in order to devalue or strike academic exercise, but in order to clarify the ideological underpinnings of arguments that are thematically and characterized by a word.

This book, titled *Interference Strategies*, does not (and in all honesty could not) provide a resolution to a complex interaction—that of artistic interferences—that has a complex historical tradition. In fact, it is impossible, for me, when analyzing the issue of interference, not to think of the Brecht's *Maker* (also known as *Daniela Wolferra*) and the coverings that the painter followed in 1959 commission from Pope Paul VI to 'remember decent' the naked bodies of Michelangelo to Buonarroti's fresco in the Sistine Chapel. That act, in the eyes of a contemporary viewer, was a wound inflicted in between the relationship created by the artwork and the artist with the viewer (*intentional*

intentional *caution* with *intentional* *caution*), as Umberto Eco would put it. Those famous breasts appear to be both a form of censorship as well as interference with Michelangelo's vision.

Interference is a word that assembles a multitude of meanings interpreted according to one's perspective and ideological constructs as a meddling, a disturbance, and an alteration of modalities of interaction between two parties. In this book, there are a series of representations of these interferences, as well as a series of questions on what are the possible contemporary forms of interference—digital, scientific and aesthetic—and what are the strategies that could be adopted in order to actively interfere.

The complexity of the strategies of interference within contemporary political and aesthetic discourses appears to be summed up by the perception that interference is an necessarily active gesture. This perception appears to exclude the fact that sometimes the very existence of an artwork is based on an interfering nature, or on an aesthetic that has come to be as non-conscious to and, hence, interfering with a political project.

Interfering artworks, which by their own nature challenge a system, were the artworks chosen for the exhibition *Entartete Kunst* (1937). The cultural and ideological underpinnings of the National Socialist German Workers' Party could solely provide an understanding of aesthetic that would necessarily imply the defini-

tion of 'degenerate art' produced by 'degenerate artists'. That was not a direct hymn to the grandeur of Germany could be seen by the Nazi regime as anything else but 'interfering and hence degenerate,' since it questioned and interfered with the ideal purity of Teutonic representations, which were endorsed and promoted as the only aesthetic of the National Socialist party. Wilhelm Heinrich Otto Dix's *War Cripples* (1920) could not be a more critical painting of the Body Politic of the time, and of war in general, and therefore had to be classified as 'degenerate' and condemned to be 'burnt.'

Art in this context cannot be and should not be anything else but interference, either by bringing something in between or by wounding the Body Politic by placing something in between the perfectly constructed rational madness of humanity and the subjugated viewer. A moment that in interference, obstructs and disrupts the carefully amotated and carefully choreographed itinerary that the viewers should be likely follow. In this case interference is something that corrupts, degenerates and threatens to collapse the vision of the Body Politic.

In thinking about the validity of interference as a strategy, it was impossible not to revisit and compare the image of Paul J. Goebbels viewing the *Entartete Kunst* (*Degenerate Art*) exhibition to the many images of pompously sitting corporate CEOs and billionaires in museums and art fairs around the globe, gazing with pride over the propaganda, or—better—over the breast that they have commissioned artists to produce.

Today's contemporary art should be interfering more and more with art itself, it should be corrupted and corrupting, degenerate and degenerating. It should be producing what currently it is not and it should create a wound within art itself, able to alter current thinking

and modalities of engagement. It should be—to quote Pablo Picasso—a instrument of war able to *interferir*: "No, painting is not done to decorate apartments. It is an instrument of war for attack and defense against the enemy."²²

If art should be a strike or bring something apart of what has been a long aesthetic conversation that preceded the Avant-garde movement or the destructive fury of the early futurists. 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 framework of interactions between art, science and media.

What sort of interferences should be chosen, if one at all, remains a personal choice for each artist, curator, critic and historian.

If I had to choose, personally I find myself increasingly favoring art that does not deliver what is expected, what is obvious, what can be hung on a wall and can be made to tapstries. Nor can I find myself able to favor art that should propagate or business under a veil with the name of art repeatedly written in capital letters all over it. That does not leave very much choice in a world where interference is not longer acceptable, or if it is acceptable, it is so only within pre-established contractual cooperative frameworks, therefore losing its 'interference value.'

This leaves the great conundrum—can interferences still possible? There are still spaces and opportunities for interference, and this volume is one of these remaining areas, but they are interesting spaces and are shrinking fast, leaving a overwhelming Bauhaus and a descent produced by the conspirators of art and made of a multitude of dresses.

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If art should either strike or bring something is part of what has been a long aesthetic conversation that preceded the Avant-garde movement or the destructive fury of the early Futurists. 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.

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This leaves the great conundrum - are interferences still possible? There are still spaces and opportunities for interference, and this volume is one of these remaining areas, but they are interstitial spaces and are shrinking fast, leaving an overwhelming Baudrillardian desert produced by the conspirators of art and made of a multitude of breeches.

In this introduction I cannot touch upon all the different aspects of interference analyzed, like in the case of data and waves presented by Adam Nash, who argues that the digital is in itself and *per se* a form of interference: at least a form of interference with behavioral systems and with what can be defined as the illusory realm of everyday's 'real.'

Transversal interference, as in the case of Anna Munster, is a socio-political divide where heterogeneity is the monster, the wound, the interfering and dreaded element that threatens the 'homologation' of scientific thought.

With Brogan Bunt comes obfuscation as a form of blurring that interferes with the ordered lines of neatly defined social taxonomies; within which I can only perceive the role of the thinker as that of the taxidermist operating on living fields of study that are in the process of being rendered dead and obfuscated by the very process and people who should be unveiling and revealing them.

With Darren Tofts and Lisa Gye it is the perusal of the image that can be an act of interference and a disruption if it operates outside rigid interpretative frameworks and interaction parameters firmly set via *intentio operis*, *intentio auctoris* and *intentio lectoris*.

It is the fear of the unexpected remix and mash-up that interferes with and threatens the 'purity' and sanctimonious fascistic interpretations of the aura of the artwork, its buyers, consumers and aesthetic priests. The orthodoxical, fanatic and terroristic aesthetic hierarchies that were disrupted by laughter in the Middle Ages might be disrupted today by viral, amorphological and uncontrollable bodily functions.

My very personal thanks go to Paul Thomas and the authors in this book who have endeavored to comply

with our guidelines to deliver a new milestone in the history of LEA.

As always I wish to thank my team at LEA who made it possible to deliver these academic interferences: my gratitude is as always for Özden Şahin, Çağlar Çetin and Deniz Cem Öndüğü.

Lanfranco Aceti

Editor in Chief, Leonardo Electronic Almanac
Director, Kasa Gallery



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Interference Strategies

The theme of 'interference strategies for art' reflects a literal merging of sources, an interplay between factors, and acts as a metaphor for the interaction of art and science, the essence of transdisciplinary study. The revealing of metaphors for interference "that equates different and even 'incommensurable' concepts can, therefore, be a very fruitful source of insight." 1

The role of the publication, as a vehicle to promote and encourage transdisciplinary research, is to question what fine art image-making is contributing to the current discourse on images. The publication brings together researchers, artists and cultural thinkers to speculate, contest and share their thoughts on the strategies for interference, at the intersection between art, science and culture, that form new dialogues.

In October 1927 the Fifth Solvay International Conference marked a point in time that created a unifying seepage between art and science and opened the gateway to uncertainty and therefore the parallels of artistic and scientific research. This famous conference announced the genesis of quantum theory and, with that, Werner Heisenberg's uncertainty principle. These events are linked historically and inform interesting experimental art practices to reveal the subtle shift that can ensue from a moment in time.

The simple yet highly developed double slit experiment identifies the problem of measurement in the quantum world. If you are measuring the position of a particle

you cannot measure its momentum. This is one of the main theories that have been constantly tested and still remains persistent. The double slit experiment, first initiated by Thomas Young, exposes a quintessential quantum phenomenon, which, through Heisenberg theory, demonstrates the quantum universe as a series of probabilities that enabled the Newtonian view of the world to be seriously challenged.

If the measurement intra-action plays a constitutive role in what is measured, then it matters how something is explored. In fact, this is born out empirically in experiments with matter (and energy): when electrons (or light) are measured using one kind of apparatus, they are waves; if they are measured in a complementary way, they are particles. Notice that what we're talking about here is not simply some object reacting differently to different probings but being differently. 2

In the double slit experiment particles that travel through the slits interfere with themselves enabling each particle to create a wave-like interference pattern.

The underlying concepts upon which this publication is based see the potential for art to interfere, affect and obstruct in order to question what is indefinable.

This can only be demonstrated by a closer look at the double slit experiment and the art that is revealed through phenomena of improbability.

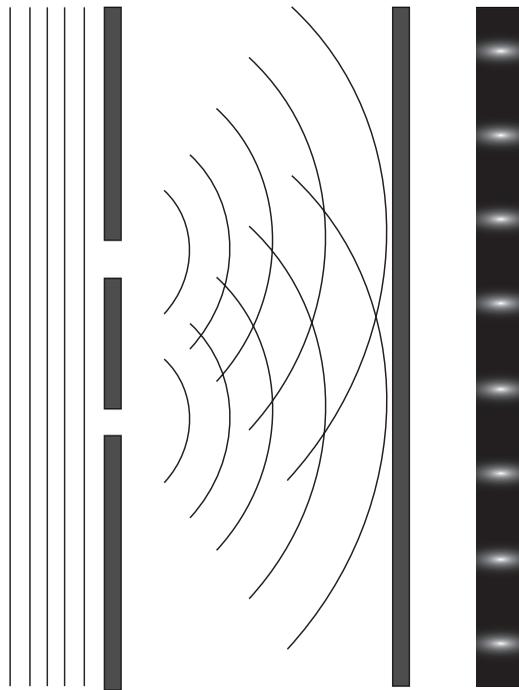


Figure 1. Diagram of the double slit experiment that was first performed by Thomas Young in the early 1800's displays the probabilistic characteristics of quantum mechanical phenomena.

When particles go through the slits they act as waves and create the famous interference pattern. The concept is that one particle going through the slit must behave like a wave and interfere with itself to create the band image on the rear receptor.

Interference Strategies looks at the phenomenon of interference and places art at the very centre of the wave/particle dilemma. Can art still find a way in today's dense world where we are saturated with images from all disciplines, whether it's the creation of 'beautiful visualisations' for science, the torrent of images uploaded to social media services like Instagram and Flickr, or the billions of queries made to vast visual data archives such as Google Images? The contemporary machinic interpretations of the visual and sensorial experience of the world are producing a new spectacle of media pollution, obliging the viewers to ask if machines should be considered the new artists of the 21st century.

The notion of 'Interference' is posed here as an antagonism between production and seduction, as a

redirection of affect, or as an untapped potential for repositioning artistic critique. Maybe art doesn't have to work as a wave that displaces or reinforces the standardized protocols of data/messages, but can instead function as a signal that disrupts and challenges perceptions.

'Interference' can stand as a mediating incantation that might create a layer between the constructed image of the 'everyday' given to us by science, technological social networks and the means of its construction. Mediation, as discussed in the first Transdisciplinary Imaging conference, is a concept that has become a medium in itself through which we think and act; and in which we swim. Interference, however, confronts the flow, challenges currents and eulogizes the drift.

The questions posed in this volume, include whether art can interfere with the chaotic storms of data visualization and information processing, or is it merely reinforcing the noxious nature of contemporary media? Can we think of 'interference' as a key tactic for the contemporary image in disrupting and critiquing the continual flood of constructed imagery? Are contemporary forms and strategies of interference the same as historical ones? What kinds of similarities and differences exist?

Application of a process to a medium, or a wave to a particle, for example, the sorting of pixel data, literally interferes with the state of an image, and directly gives new materiality and meaning, allowing interference to be utilised as a conceptual framework for interpretation, and critical reflection.

Interference is not merely combining. Interference is an active process of negotiating between different forces. The artist in this context is a mediator, facilitating the meeting of competitive elements, bringing together and setting up a situation of probabilities.

In response to the questions posed by the conference theme, presentations traversed varied notions of interference in defining image space, the decoding and interpretation of images, the interference between different streams of digital data, and how this knowledge might redefine art and art practice. Within that scope lies the discourse about interference that arises when normal approaches or processes fail, with unanticipated results, the accidental discovery, and its potential in the development of new strategies of investigation.

In "[t]he case of Biophilia: a collective composition of goals and distributed action",³ Mark Cypher highlights the interference in negotiations between exhibit organisers, and space requirements, and the requirements for artist/artworks, resulting in an outcome that is a combination generated by the competition of two or more interests. As part of the final appearance of *Biophilia*, the artwork itself contained elements of both interests, an interference of competing interests, comprising a system in which the artist and the artwork are components, and the display a negotiated outcome. Each element interferes with itself as it negotiates the many factors that contribute to the presentation of art. In this sense the creation of the final appearance of *Biophilia* is the result of the distributed action of many "actors" in a "network."⁴ (To put this in another form all actors are particles and interact with each other to create all possible solutions but when observed, create a single state.)

In summing up concepts of the second Transdisciplinary Imaging conference, particularly in reference to the topic of interference strategies, Edward Colless spoke of some of the aspirations for the topic, entertaining the possibilities of transdisciplinary art as being a contested field, in that many of the conference papers were trying to unravel, contextualise and theorise simultaneously.

The publication aims to demonstrate a combined eclecticism and to extend the discussion by addressing the current state of the image through a multitude of lenses. Through the theme of interference strategies this publication will embrace error and transdisciplinarity as a new vision of how to think, theorize and critique the image, the real and thought itself.

Paul Thomas

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The Case of Biophilia

A Collective Composition of Goals and Distributed Action

by

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INTRODUCTION

In an application form addressed to the Siggraph 2006 Intersections Gallery, the artist must describe his interactive artwork. The form states:

The installation Biophilia will enable participants to interact with and generate organic forms based upon the distortion of the user's shadow. Coined in 1984 by sociobiologist Edward O. Wilson, Biophilia refers to the need of living things to connect with others - even those of different species. On one level, Biophilia critiques Wilson's notion that western culture desires a connection with nature, even though that same desire belies a deep unconscious fear of all things natural. With these ideas in mind the installation Biophilia attempts to absorb and synthesize users and their contexts, producing unpredictable patterns of propagation and hybridity.

Although short, this simple paragraph, like many others about the work, belies the complexity of relations that have enabled such a reference to be made.

For the moment though, complexity is not important. The statement must have enough impact to catch the

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.

attention and interest of Siggraph and the judges who work on its behalf.

The form together with the inscriptions and reference images, imply a desire for a connection to form, or a movement from disinterest to one of interest.

Several months later, the artist receives an email that accepts the proposal.

Now unbeknown to the artist and the judges, they have just formed the first step in translating the art work *Biophilia*, and the chain of actors that support

it, into a binding sociotechnical relation. Even though the artist is in Australia and Siggraph and its judges are in North America. In the end, the written form and its inscribed references were enough to convince all the actors involved that a relation can be made. The effect will be that the artist's CV will get bigger, Siggraph will also get greater international participation and *Biophilia* will be more attractive to other judges, festivals and curators in the future. In a sense, both actor-networks are now able to achieve effects that would not have been possible on their own.

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 passageways.

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 transactions. That is, *Biophilia* will disengage weak or threatening entities whilst incorporating those that are sustaining. It is the nature of these trans-actions,

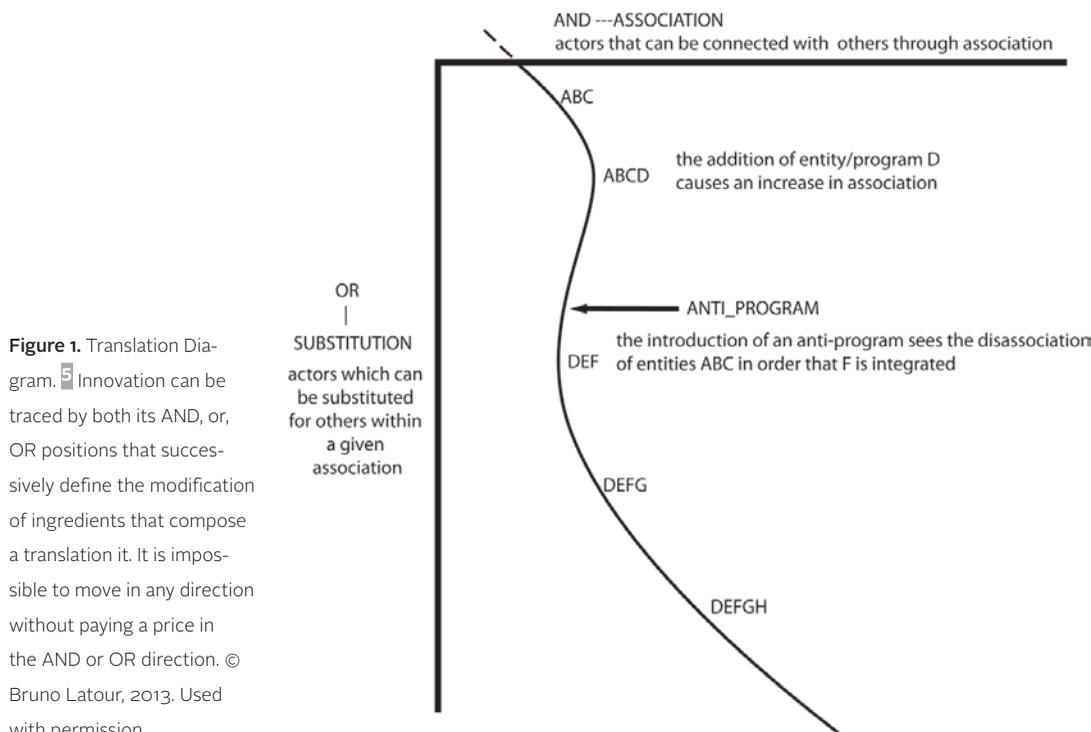


Figure 1. Translation Diagram. Innovation can be traced by both its AND, or, OR positions that successively define the modification of ingredients that compose a translation it. It is impossible to move in any direction without paying a price in the AND or OR direction. © Bruno Latour, 2013. Used with permission.

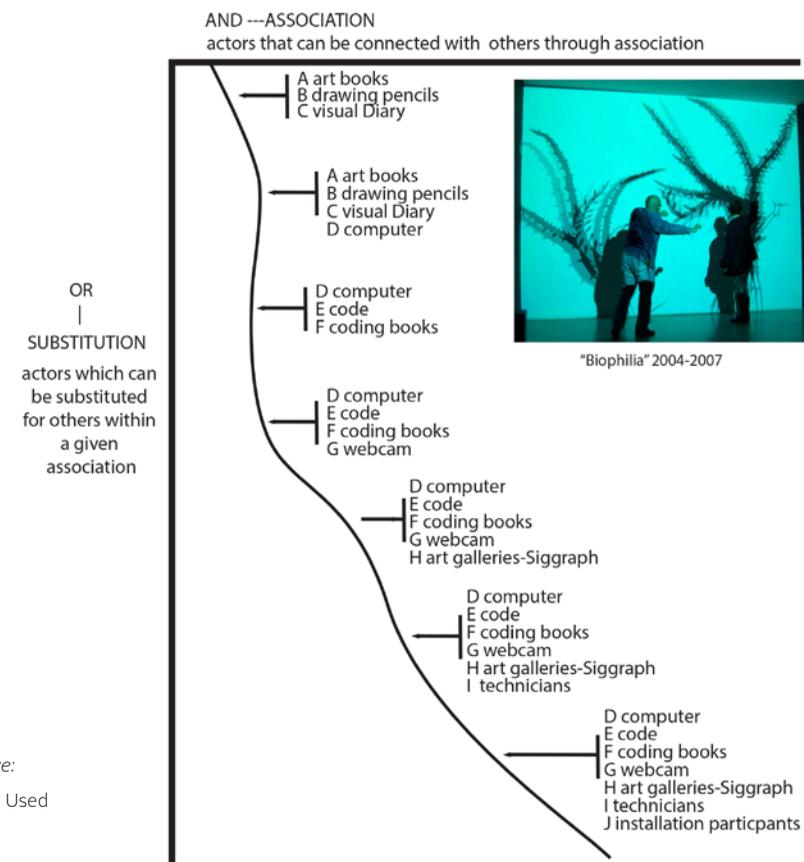


Figure 2. Mapping the Collective: *Biophilia*. © Mark Cypher, 2013. Used with permission.

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.⁹

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, actorial 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 yet another actor, a technician, is associated to the realization process of the artwork. After meeting with the technician, it is decided that a scale prototype of the artwork will be constructed beforehand. This will accommodate the testing of new goals and new configurations of *Biophilia* and indeed Siggraph's dimensions for its exhibition space.

To say that prototyping happens 'beforehand,' assumes that the most important actions must at some point involve hands. Or that material contact with

humans in this time and setting is somehow divorced from the nonhuman flow of activity, procurement of skill and the accumulation of goals, which are essential for any action to take place. But of course many hands and many things outside of this time and place lay embedded in every skill, in every tool. So much so that it should be impossible to clearly define any action, as beholden to any one actor because 'beforehand' should rightly stretch into the long distant millennia. Therefore hands and material are relevant contact points, but they are also just one point of many in the continually shifting and collective trajectories that are part and parcel of all action

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."¹⁰ 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.*¹¹

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."¹² 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.¹³ 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, handrails 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 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."¹⁴ 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.¹⁵ 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.

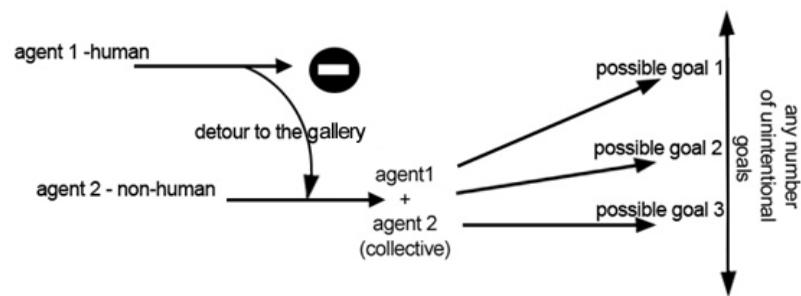


Figure 3. Goal Translation Figure3 adapted from Latour. ¹⁶ The explosion in unintentional goals is a result of different combinations of actors interacting. One can never really know what is going to happen, because we can never really know all the elements activated in a given association or context beforehand. © Bruno Latour, 2013. Used with permission.

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...” ¹⁷ 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. ¹⁸

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:

[N]ot a property of humans, but of an association of actants [human or nonhuman agents]...[Whereby] 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. ¹⁹

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 underwritten 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 erased 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. ²⁰

Action and indeed agency is always shared and distributed amongst other entities. The ability to act is therefore mediated by others' actions that have come before it. Such cumulative influence can be illustrated in Figures 4 and 5 below.

Cumulative influence of the Collective

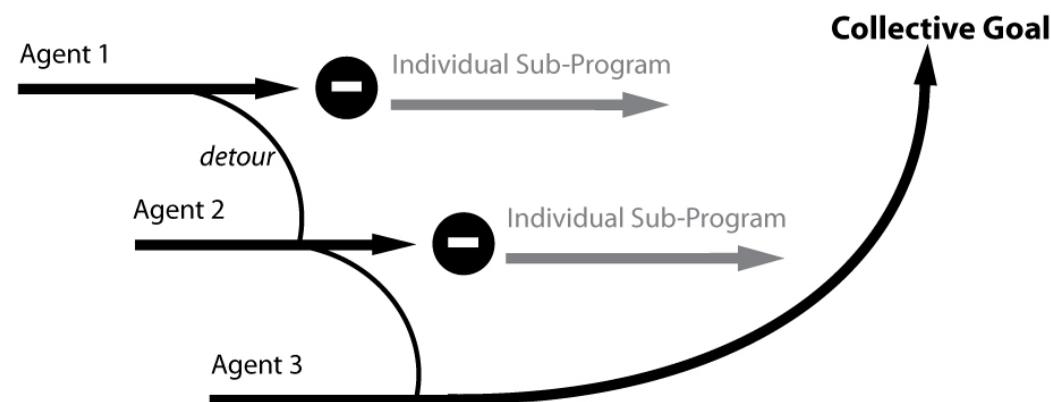


Figure 4. Individual sub-programs of action are bent towards a collective goal. ²¹ © Bruno Latour, 2013. Used with permission.

Cumulative influence of the Collective

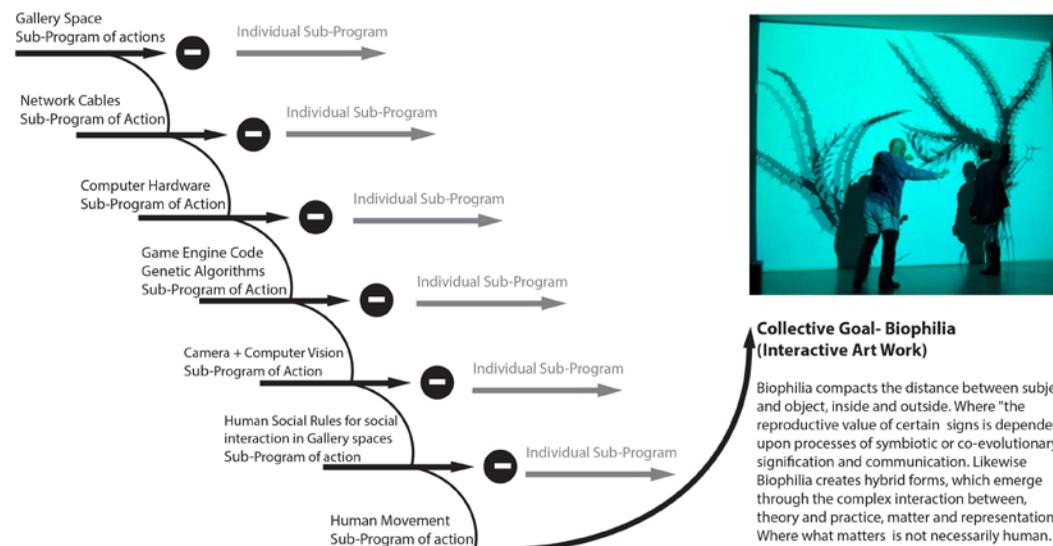


Figure 5. Mapping the cumulative influence of the collective. The composition of new goals is made possible by the colonising of many sub-programs which are then cumulatively bent towards the collective goal for *Biophilia*. © Mark Cypher, 2013. Used with permission.

As Figures 4 and 5 illustrate, there is a long chain of actors that contain their own sub-programs of action. The nature of each subsequent movement not only requires new associations. But it also means that individual sub programs (intentions and motivations) are trans-acted, if not subject to “modes of ordering”²² implicated in the process of translation and required for a collective goal to be successful.

In this sense translation is important for rethinking production because it usually involves the exchange or trans-action of one actor, to replace another actor to help solve a problem. But as we have seen in Figure 5 these new cumulative problem solving abilities, affordances and skills come at a cost. For example, although the artist spends precious hours rigging the video camera to hang at the optimum height in the installation, the slightest bump throws out the camera's focus. So another set of goals, equipment and technicians is associated and a new reshuffling of actors and associations take place. The order of which is not aligned by mistake, nor wholly by chance, but through the finely tuned or out of tune cumulative translation of goals. Nonetheless a new camera rig collectively eventuates. The cost is time, misplaced intentions, detoured goals, and professional pride. This is not an unimportant detour from the narrative of *Biophilia's* collective construction. But an integral ‘taking into account’ of the way relations are predicated and dependent on what actors are willing to give up, ransom or sacrifice, as it is to do with what they can offer.

The means by which collectives like *Biophilia* apply these kinds of enforced behaviours is recognised as a sort of agency. For Lambros Malafouris agency is something that:

[C]annot be reduced to any of the human–nonhuman components of action. [...] It cannot be too strongly emphasized that neither brains nor things

in isolation can do much. [...] Agency is in constant flux, an in-between state that constantly violates and transgresses the physical boundaries of the elements that constitute it. Agency is a temporal and interactively emergent property of activity not an innate and fixed attribute of the human condition. The ultimate cause of action in this chain of micro and macro events is none of the supposed agents, humans or non-humans; it is the flow of activity itself.²³

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.”²⁴ 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”²⁵ 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.

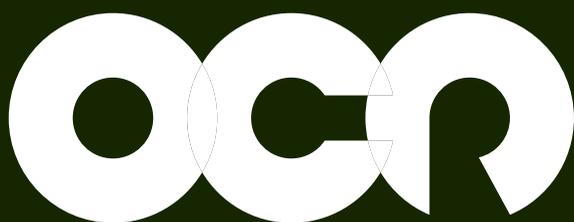
CONCLUSION

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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