

CAMPO, COERÊNCIA E CONECTIVIDADE. MODELOS, METODOLOGIAS E
AÇÕES PARA O FLUXO DA ARTE EM MÍDIAS HÚMIDASCarlos Augusto Moreira da Nóbrega (Guto Nóbrega)¹Maria Luiza Guimarães Fragoso (Malu Fragoso)²

Resumo: Este artigo introduz investigações práticas e teóricas nos campos da arte e da tecnologia relacionados à biotelemática, hibridização e experimentação transcultural com base em pesquisas realizadas nos últimos cinco anos no Núcleo de Arte e Novos Organismos (NANO). Abordaremos este assunto considerando três pontos de vista principais: teoria de campo (ASCOTT, 1980; NÓBREGA, 2009); o conceito de coerência (HO, 1993; HO & POPP, 1989; SIMONDON, 1980); e o estado de conectividade (ASCOTT, 2006). Estes irão atuar como modelos integrativos para a compreensão de uma estrutura orgânica híbrida emergente pensada neste contexto como um organismo estético (NÓBREGA, 2009). O conceito de teoria de campo é aplicado como um modelo de trabalho para o papel sistêmico da informação dentro do fluxo imaterial, invisível e dinâmico que intercomunica os organismos naturais (ou seja, humanos e outros sistemas vivos) e artificiais (ou seja, máquinas) no processo da invenção, bem como na fruição da obra de arte. Em termos do conceito de coerência, propomos a ideia de obras de arte como transdutores de energia; mais especificamente, como ressonadores de campos coerentes que interconectam o artista e o público em um todo dinâmico e integrado. Além disso, abordamos o estado de conexão como uma noção fundamental para a dinâmica envolvida na invenção, exibição e absorção de obras de arte contemporâneas, bem como uma importante fonte de transformação cultural em direção a um paradigma de sustentabilidade ecológica.

Palavras-chave: Arte. Coerência. Conectividade. Sustentabilidade. Mídia Úmida.

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FIELD, COHERENCE AND CONNECTEDNESS. MODELS, METHODOLOGIES AND
ACTIONS FOR FLOWING MOISTMEDIA ART³

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Abstract: This article introduces practical and theoretical investigations in fields of art and technology related to biotelematics, hybridization and transcultural experimentation based on research carried out over the last five years at the Nucleus for Art and New Organisms (NANO). We will approach this subject by considering three main points of view: field theory (ASCOTT, 1980; NÓBREGA, 2009); the concept of coherence (HO, 1993; HO & POPP, 1989; SIMONDON, 1980); and the state of connectedness (ASCOTT, 2006). These will act as integrative models for the understanding of an emerging hybrid organic structure presented as an aesthetic organism (NÓBREGA, 2009). The concept of field theory is applied as a working model for the systemic role of information within the immaterial, invisible, dynamical flow that intercommunicates natural (i.e. humans and other living systems) and artificial (i.e. machine) organisms in the process of invention, as well as in the fruition of artwork. In terms of the concept of coherence, we propose the idea of artworks as transducers of energy; more specifically, as resonators of coherent fields that interconnect the artist and audience in an integrated, dynamical whole. Furthermore, we approach the state of connectedness as a fundamental notion for the dynamics involved in the invention, exhibition and absorption of contemporary artworks as well as an important source of cultural transformation towards a paradigm of ecological sustainability.

Keywords: Art. Coherence. Connectedness. Sustainability. Moistmedia.

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This article departs from the notion that moistmedia art is a realm of emerging hybrid organic forms that can be thought of as ‘aesthetic organisms’ (NÓBREGA, 2009). To develop this view and articulate such ideas in the context of art creation, we shall define the basis in which the artwork might be considered, in biological terms, as a symbiotic relationship between natural and artificial systems. In order to validate this claim, it is necessary to develop a model that is able to see the artwork (i.e. a technical object) not as instrumentation for the creation of an aesthetic experience, but as a technological entity in its own right. A conceptual model allowing for this already exists in the work of the French philosopher and psychologist Gilbert Simondon. For Simondon, (SIMONDON, 1980) the technical object can be understood as an individual. Far from being reduced to utilitarian function, Simondon considered technology to be a process of invention in which the technical object acquires individuation through a process he termed ‘concretization’. Our aim in the following paragraphs is to articulate the idea that the invention of aesthetic organisms – whose embryonic form is structured in the artist–artwork–observer matrix – is the instantiation of a coherent communication system.

THE PROCESS OF INVENTION

Let us first consider that, like a living organism, the technical object influences and is influenced by its environment (SIMONDON, 1980, p. 61). SIMONDON, (1980, p. 61) calls this environment, at the same time natural and technical, an ‘associated milieu’. The associated milieu is by definition ‘the mediator of the relationship between manufactured technical elements and natural elements with which the technical being functions’ (1980, p. 61). The invention of a technical object presupposes a previsionary, imaginatively creative thought in order to foresee the circular causalities that will only effectively take place in the moment that the object is constituted. The actual object is conditioned by these forces – a field of potentialities which inform the object while already in its abstract level of existence (i.e. mental schemas). This exchange of forces is ‘acted out by systems of the creative imagination’ (1980, p. 61) and will eventually give birth to the technical object in a given milieu.

In this respect, the dynamics of thought are similar to those of technical objects, as:

[m]ental systems influence each other during invention in the same way as different dynamisms of technical object influence each other in material functioning. The unity of the associated milieu of a technical object has an analogue in the unity of a living thing. (SIMONDON, 1980, p. 62)

Accordingly, Simondon (1980, p. 66) suggested that: 'We can create technical beings because we have in ourselves an interplay of relations and a matter-form relation which is high analogous to the one we institute in the technical object'.

The process of invention reflects the coherence of mental schemas in dealing with the issue of matter and form. However, Simondon (1980, p. 63) argued that what determines the dynamic factors during mental operations in the process of invention is not form in itself, but its exchanges with the 'background'. After drawing on *Gestalt* psychology, Simondon argued that:

[t]he background is the harbour for dynamisms, and it is what gives existence to the system of forms. Forms interact not with forms but with the background, which is the system of all forms or, better still, the common reservoir of the tendencies of all forms even before they had separate existence or constituted an explicit system. (SIMONDON, 1980, p. 63)

According to Simondon's argument, what is at stake is the interrelation between virtuality and actuality. The background can be construed as the potentiality: the source of virtualities and the carrier of information from which the dynamics of form actualize new structures – a 'pre-individual field, a "metastable" domain composed of disparate virtualities' (TOSCANO, 2007, p. 201). As such, '[i]nvention is a taking into account of the system of actuality by a system of virtualities; it is the creation of a new system from these two' (SIMONDON, 1980, p. 64).

In this sense, we might say that the process of invention of technical objects is the establishing of resonance between coherent states of mental processes alongside that of the internal dynamics of the technical object being invented. The mental background, as a field of potentiality, plays a fundamental role in the process of invention, as well as in the associated milieu in which the technical object comes to life. When a technical object is viewed as an artwork, its associated milieu defines the level of physical coupling of that object with the observer; at the same time, the field of potentiality, inherited by the object through the process of invention, determines the quality of resonance in the observer's

mind. This does not mean that the technical object determines the meaning of the artwork; meaning is open and remains so whilst the system is able to carry not the final form. Instead, the dynamics between form and background determine its meaning, despite it having been intuited in the mind of its inventor. If the relationship is thought of in this manner, then it could be said that the technical object is able to project a coherent field of potentialities for its observer. Technical object and observer become an integrated whole with the associated milieu and may develop a symbiotic relation as aesthetic organisms.

Our claim is that in order to allow a symbiotic relationship to occur, the technical object cannot be considered a tool, or simply an application, of scientific theorems. What is at stake is not automatism, but the interplay of information and meaning between various interrelational fields: that of the artist's mind, that of the observer's mind and that of the artwork milieu. In that sense, we may state that technical objects, as artworks, are transducers of energy; more specifically, they are resonators of coherent fields that interconnect the artist and the audience into an integrated, dynamical whole. In order to work through this argument, let us review the concept of form according to Rudolf Arnheim's *Gestalt* theory.

FORM AS A DIAGRAM OF FORCES

What is an artistic form? In the article 'The completeness of physical and artistic form' (1994), Rudolf Arnheim claims for an essential difference between the concept of form and shape. Shape is a property of any object, indistinct of it being 'physical or mental, natural or artificial, complete or incomplete, accidental or planned' (1994, p. 109). In a strict sense of the concept, Arnheim (1994, p. 109) asserts that 'form is an abstraction'.

Arnheim (1994, p. 109) claims that when forms are conceived in geometry, they 'are devoid of forces'; however, in the domain of human perception, when forms are correlated to experience, movement and changes of form becomes a matter of great importance. Drawing on philosophy and modern physics – which identifies mass and energy as correlated concepts ($e=mc^2$) – Arnheim argued that a new understanding of form could be delivered from a world-view:

[...] which combines bodies and forces. In this more complex view, bodies in and by themselves remain as static as before, but now they are seen as inhabited by forces, forces that move them and let them act on other bodies. [...] This more unified notion

abandons matter as a separate concept and leaves organized energy as the only and sufficient substrate of the universe. What looked like bodies is nothing but an agglomeration of forces. (ARNHEIM, 1994, p. 109)

Therefore, form is primarily a result of this dynamic of forces and the principle by which these forces are organized. But what principles are these?

Arnheim drew on the work of one of the founders of *Gestalt* theory, the psychologist Wolfgang Köhler. Köhler developed a hypothesis whereby the organization of form is ruled prevalently by a tendency towards equilibrium, an idea that he developed in his 'Law of Dynamic Direction' (KÖHLER, 1966),⁴ which referred to a general tendency of nature to move towards the simplest available structure and equilibrium. According to Arnheim, nature is governed by such a principle affecting all physical and physiological processes, including the functioning of the human mind. Arnheim asserted that form could be defined as the interactions of two universal forces acting upon macrostructures, such as those found in works of art: the first force is the tendency towards equilibrium; the second is what Arnheim (1994, p. 111) came to call 'structural theme' (or, using a term borrowed from the biology of metabolism, 'anabolic structure'⁵). Arnheim summarizes the concept of form as 'the interaction between equilibrium and structural theme' (ARNHEIM 1994, p. 111).

Arnheim stated that the structural theme could be observed most clearly in the growing of organic forms, such as the bodies of animals and plants. To support his claim, Arnheim quoted D'Arcy Thompson, who stated:

The form, then, of any portion of matter, whether it be living or dead, and the changes of form which are apparent in its movements and in its growth, may in all cases alike be described as due to the action of force. In short, the form of an object is a 'diagram of forces'. (THOMPSON, 1961, p. 11)

The structural theme of form reveals itself in nature; for instance, through the rhizomatic movement of a growing plant, visible in the symmetry of its branches and roots. In the arts, the structural theme manifests in the striving of a dancer to bring about

4 Köhler derived this law from the work of the physicists Pierre Curie and Ernst Mach, who had identified that the approach to equilibrium is 'characterized by growing regularity, symmetry, and simplicity in the distribution of the material and the forces within the system' (cited in ARNHEIM, 1994, p. 110).

5 Arnheim defines anabolic structure as 'the shape-building cosmic for the structure of atoms and molecules, the power to bind and to loose' (ARNHEIM, 1974b, p. 31).

harmony of form and balance through choreographic movements. Thus structural theme and equilibrium are essentially related to organic life. Both these vectors are recognized as resulting from physical and immaterial forces acting upon the work of art as part of its ontological development. The artist's striving towards orderliness resonates the 'pulls and pushes' these forces exert upon his/her mind, with the artwork being the resulting balance between such a perceptual field and the physical attributes of his/her creation. Arnheim has identified the process of art creation as being self-regulatory, albeit with one condition:

Only if the shaping of aesthetic objects is viewed as a part of the larger process, namely, the artist's coping with the tasks of life by means of creating his works, can the whole of artistic activity be described as an instance of self-regulation. (ARNHEIM, 1974b, p. 34)

In other words, rather than construing the artwork itself as the final outcome, it is only when the invisible network of forces which model the form of the artwork in the process of creation – forces that are mirrored and perceived by the artist's internal organic apparatus – are taken into account that the process of creation can be considered an 'instance of self-regulation' (ARNHEIM, 1974b, p. 34). Like a living organism striving against death and towards life, the artist and the artwork could be seen as a self-regulating system developing towards a structural balance.

FORM AND COHERENCE

Moreover, when anyone of the parts or structures, be it which it may, is under discussion, it must not be supposed that it is its material composition to which attention is being directed or which is the object of the discussion, but rather the total form. Similarly, the true object of architecture is not bricks, mortar or timber, but the house; and so the principal object of natural philosophy is not the material elements, but their composition, and the totality of the substance, independently of which they have no existence. (ARISTOTLE, 1984)

Let us now consider the idea of form in the context that it was originally derived from: namely, the field of biology. In this sense:

Form is more than shape, more than static position of components in a whole. For biology the problem of form implies a study of genesis. How have the forms of the organic world developed? How are shapes maintained in the continual flux of metabolism? How are the boundaries of the organized events we call organisms established and maintained? (HARAWAY, 1976, p. 39)

These questions are similarly applicable to the field of arts; the difference being that the potential answers not only inform the origins and mode of natural organisms but orientate the processes in the invention of aesthetic ones: 'Form and process are essentially linked, logically and historically, in organisms' (HARAWAY, 1976, p. 39). This perspective suggests that rather than sustaining the prevailing dichotomy between form and process (as found in the earlier contrast of formalist aesthetic versus process-based aesthetics), which is often discussed in art and technology discourse (MARIÁTEGUI, 2007; PAUL, 2007), it is considered here as a way in which form and process work together in the genesis of what has been defined elsewhere as a 'hyperorganism' (NÓBREGA, 2009). Form can be perceived as a result of the interactions of forces; yet, as the new science of nanotechnology has demonstrated (VELEGOL, 2004), force precedes form. All these issues point to a fundamental question: Why and how do forces cohere in the constitution of living form? What does it mean to be a living organism?

The definition of life has been the objective of many studies (cf. DÜRR, POPP & SCHOMMERS, 2002; SCHRÖDINGER 1967), but it's essential nature is something that defies formulas and rigid concepts. In her own attempt, Mae-Wan Ho stated:

Life is a process of being an organizing whole. [...] It is important to emphasize that life is a process and not a thing, nor a property of a material thing or structure. [...] Life must therefore reside in the pattern of dynamic flow of matter and energy that somehow makes the organisms alive, enabling them to grow, develop and evolve. From this, one can see that the 'whole' does not refer to an isolated, nomadic entity. On the contrary, it refers to a system open to the environment, that enstructures or organizes itself (and its environment) by simultaneously 'enfolding' the external environment and spontaneously 'unfolding' its potential into highly reproducible or dynamically stable forms. (HO, 1993, p. 5)

Thus, organisms could be defined as 'coherent space-time structures maintained far from thermodynamic equilibrium by energy flow. This enables them to store and mobilize energy with characteristic rapidity and efficiency' (HO, 1993, p. 155).

Coherent organisms become individuals, a whole:

[A]n individual is a field of coherent activity. [I]ndividualities are spatially and temporally fluid entities, in accordance to the extent of the coherence established. Thus, in long-range communication between cells and organisms, the entire community may become one when coherence is established and communication occurs without obstruction or delay. (HO, 1993, p. 179)

These ideas lead us to Simondon. What Simondon means by ‘concretization’ or ‘individuation’ is similar to the way organisms or technical objects become coherent. While organisms are coherent by nature, technical objects become coherent through a process of invention and concretization. This process depends on states of resonance between the dynamics of internal mental/physical operations and that of the object being created. As a result, it could be assumed that the creation of art objects corresponds to the invention of coherent wholes that are linked to the artist by their internal resonance:

[T]he entire activity of the living being is not, like that of the physical individual, concentrated at its boundary with the outside world. There exists within the being a more complete regime of internal resonance requiring permanent communication and maintaining a metastability that is the precondition of life. [...] The internal resonance and the translation of its relation to itself into information are all contained in the living being’s system. (SIMONDON, 1992, p. 305)

Simondon terms an awareness of internal resonance as ‘affect’ (SIMONDON, 1980). This allows us to argue that the creation of artworks may imply the formation of affective bonds. In that sense, it could be suggested that interaction might be reviewed in terms of affective interconnection or interaffectivity. This would not be dependent exclusively on aspects of reciprocal actions between man–machine at the technical level, but between levels of resonance – an affective level. It is not a ‘melding of technology and aesthetics’ (KRUEGER, 1991, p. xii), but rather an entanglement of aesthetics and ‘technicity’.

FIELD AND CONNECTEDNESS

Our contemporary culture has witnessed an increasing amount of attention drawn to the invisible and immaterial dimension of our relations, now manifested through ‘elliptical zones’ or ‘interval zones’ (DOMINGUES, p. 1999; 2002, p. 31) that link body and technology synaesthetically. This newfound awareness reflects the decline of old dichotomies such as subject/object, body/mind, observer/observed and space/time. Contemporary focus has been placed on the interpersonal space of our interactions, nowadays conceived as hybrid

'formed by the blurring of borders between physical and digital spaces' (SILVA, 2004); or in the form of an 'aural society' (Susani, p. 2005) bonded by the flow of information, relationships and communication. Analogous to the effect that old technologies exerted on modern perception and empowered by a spate of telematic technologies, the new hybrid space has shaped a new imaginary, bringing our attention to the invisible relational space.

Beyond an artwork's formal structure, it is possible to perceive the matrix of forces that gave shape to even the most stationary of art objects. This matrix interconnects the visible structures of the artwork to the physiological organic nervous system of its creator and observer (ARNHEIM, 1974a, p. 437; 1994, p. 112). This diagram of forces can be conceived in light of the ideas of the French phenomenological philosopher Maurice Merleau-Ponty. In *The Structure of Behavior* (1963), Merleau-Ponty describes how the relation between the footballer and the football field appears to him:

For the player in action the football field is not an 'object', that is, the ideal term which can give rise to a multiplicity of perspectival views and remain equivalent under its apparent transformations. It is pervaded with lines of force (the 'yard lines'; those which demarcate the penalty area) and articulated in sectors (for example, the 'openings' between the adversaries) which call for a certain mode of action and which initiate and guide the action as if the player were unaware of it. The field itself is not given to him, but present as the immanent term of his practical intentions; the player becomes one with it and feels the direction of the goal, for example just as immediately as the vertical and horizontal planes of his own body. (MERLEAU-PONTY, 1963, p. 168)

Like the football field, the artwork appears to both the artist and the observer as a diagram of forces; a field of transformations against which the player/artist/observer 'become one'. The aim of this argument is to demonstrate that the field phenomenon – common and inherent to all creative impulses, and independent of the medium or technique involved or the subject addressed – becomes prominent in works of art in which the systemic organization of processes and behaviours acts as a fundamental characteristic of creative invention. The invisible matrix of forces, which in the traditional arts could only be perceived mentally, finds a physical resonance in modern process-based art. The interaction with the artwork's structure and behaviour triggers in the observer a potential affective connection. As a 'diagram of forces' (ARNHEIM, 1994), form reflects the dynamic of the structural theme and equilibrium that in the 'modern formalistic approach' were only active during the processes of its creation

or, subsequently, in the mind of the observer. This is why Arnheim (1974b, p. 34) identified the process of art creation as only being self-regulatory if the ‘shaping of aesthetic objects is viewed as a part of the larger process, namely, the artist’s coping with the tasks of life’. Art systems and behaviours fulfil such a condition by opening the artistic process to the external observer, allowing them to act as a co-creator with the artist. Moreover, as several authors have already observed (cf. ASCOTT, 1966–67; CLARK, 1980; DUCHAMP, 1957; PLAZA, 1990), works of art do not exist in plenitude outside of this co-creative process:

Art comes into being and exists within this dialogic network, both in the domain of interpersonal interactions as well as that between the latter and a context or medium. Art, then, can neither imply a ‘particular’ type of object or of autonomous meaning, nor represent an observer-independent experiential form. (GIANNETTI, 2004)

The interdependent condition of the complex artist–artwork–observer system provides it with the status of a field phenomenon, and thus figures as one of its most essential characteristics. This new condition mirrors a similar shift that occurred in modern physics when a new way of seeing reality was presented:

In marked contrast to the atomistic Newtonian idea of reality, in which physical objects are discrete and events are capable of occurring independently of one another and the observer, a field view of reality pictures objects, events, and observer as belonging inextricably to the same field; the disposition of each, in this view, is influenced – sometimes dramatically, sometimes subtly, but in every instance – by the disposition of the others. (HAYLES, 1984, p. 9–10)

In 1978, Roy Ascott proposed a ‘field theory for postmodernist art’, drawing attention to the character of transactional works of art in which a field of ‘psychic interplay’ between the artist and the observer takes place:

Art does not reside in the artwork alone, nor in the activity of the artist alone, but is understood as a field of psychic probability, highly entropic, in which the viewer is actively involved, not in an act of closure in the sense of completing a discrete message from the artist (a passive process) but by interrogating and interacting with the system ‘artwork’ to generate meaning. (ASCOTT, 1980, p. 179)

John Dewey (1979, p. 162) placed emphasis on the distinction between the artwork (art product) and work of art, thereby making the field concept even more clear: ‘The first is physical and potential; the latter is active and experienced’. He continues:

[The work of art] is what the product does, its working [...]. When the structure of the object is such that its force interacts happily (but not easily) with the energies that issue from the experience itself; when their mutual affinities and antagonisms work together to bring about a substance that develops cumulatively and surely (but not too steadily) towards a fulfilling of impulses and tensions, then indeed there is a work of art. (DEWEY 1979, p. 162)

It could be said that the artwork is a set of configurations, a system, the plate of a hologram; whereas the work of art can be seen as the experience of its interlinking parts. The artwork is a piece of information, while the work of art is 'an aggregate of interacting parts or components' (BATESON, 2002, p. 86), a body of ideas; part of a mental system that includes the artist and the observer, but which is triggered by difference. In our opinion, the work of art is the realization of a coherent, integrative system that might be accessed as a field phenomenon. We have previously termed the phenomenological space that resonates dialogically between the observer, the behaviourist artwork and the artist as an 'integrative field' – or iField (NÓBREGA, 2009) for short.

At this stage, it is necessary to mention that the introduction of the field concept is not an attempt to reduce entities to relations (an 'ambition in the physics of field' which did not succeed [PICKERING, 2003]). The aim here is to highlight that the field aspect in works of art is of as much importance as its counterpart, namely its physical unity⁶ (i.e. the artwork). Together they form an entangled whole that cannot be experienced separately. More importantly, the field concept opens up an unprecedented dimension wherein the artwork, embodied in a technological apparatus, is set up with models that require a non-reductionist system of analysis.

CONNECTEDNESS AND SUSTAINABILITY

Sustainability is a concept that is gaining more and more resonance in the fields of politics, economics, sociology, that is, beyond biology and the studies of nature. This emergence, whether because of the problematic or the urgency that is presented today, causes the term to be interpreted in several ways, extending it to the point where it loses its objectivity and becomes 'something' manipulated according to the interests of each.

⁶ A physical unity is a structure encompassing its material and immaterial parts. Flow of data, light and sound are considered immaterial but no less physical unities. As we have discussed in relation to Simondon (1980; 1992), it should be understood as the technical object and its associated milieu.

As artists and researchers working in the field of art and technology related to science and nature, we come across the term sustainability at various levels. But, considering the authors and concepts mentioned above, it is possible to open an observation about the work of art in the contemporary context that takes as a significant action the promotion of a range of connections in favor of generating a collective sustainability, beyond the survival of the human species, towards an integrated universe of beings and objects:

For the people today to understand, to use and to humanize the machine, it is necessary to start with crafts, both old and new one. For the crafts show, with a depth of sonance comparable to the sympathy of inter-subjectivity, the image of a lifetime of dialogue between the self and the other. (SIMONDON, 1958, p. XV)

It becomes easier to regard the art work as an expressive potency that explores sensitively and intelligently the humanity contained in technical objects if we take as a reference the proposed phenomena of interaffectivity as mentioned before. It is also possible today to perceive the speed at which these objects become naturalized culturally and couple to human bodies, or any living bodies, in their complementary and / or expanded functions. Within artist's creative processes the focus moves towards the potential of technical objects, and not solely their direct functions, thus in consonance with extended functions such as connectivity, symbioses and hybridity, towards the emergence of a field.

To complement the context of an integrated sustainability we quote from the book *Há Mundos por Vir? Essay on the fears and ends* by Débora Danowski and Eduardo Viveiros de Castro:

[I]n indigenous mythology, human food consists of humans who have been transformed into animals and plants; humanity is the active principle at the origin of the proliferation of living forms in a rich and plural world. But the indigenous scheme also reverses the myth of the Garden of Eden. In the Amerindian case, humans are the first to come, the rest of creation comes from them. In this case, it is as if from the "rib of Adam" came out much more than its feminine complement - the whole world, the infinite rest of the world. (DANOWISKY, CASTRO, 2014, p. 91-92)

According to the authors, in Amerindian Indian mythology, all living beings come from a principle of humanity, not from man, but from the power of being man. Each insect, each mammal, each leaf is part of our principle as humans and the notion of sustainability is composed of a great network and connections between all beings of the same origin.

POETIC DIALOGS AND METHODS

The Nucleus for Art and New Organisms (NANO) and its NANO Lab were established in September 2010. The organization aims to develop practical and theoretical art research (with specific focus on their intersection between art, nature and telematic technology), offering laboratory space for practical and theoretical research into the thematic area of hybrid natures. The motivation of the NANO Lab is to consolidate a transdisciplinary space for reflection and the promotion of new cognitive models based on practical and dialogical exchanges. Coordinated by Guto Nóbrega and Malu Fragoso, it invites researcher-artists, undergraduate and graduate students, visiting scholars, technicians, scientists, indigenous groups and others to be part of a variety of projects that invest in contemporary artistic research. The created artworks are related to a large field of experimentations with technical tools integrated with handmade objects, where the blend between artificial systems (digital or analogic) and natural organisms is explored creatively. Investigation is driven towards promoting experiences which may propitiate poetically sensorial and intuitive integration between species, beings and organisms. We believe that this semantic intersection is possible because a reinvented aesthetics is able to emerge from these hybrid mediums.

Artistic processes are conceived in order to foster possible states of awareness, which are provided by the expression of phenomenon in coherent poetic systems. Logic and coherence are borrowed from scientific methods of experimentation, but are applied to the poetic systems through their natural way of blending in. We assume that the 'work' of contemporary art happens rather than represents; it is the action itself, and the contemporary artist is a mediator who reveals processes and creates conditions for the works to happen. We also believe that technology and computerized telecommunications are an irreversible influence on contemporary artistic production, and that this practice is a significant factor in social transformation (FRAGOSO, 2005). According to Boaventura Souza Santos (1988), scientific knowledge in postmodern society seeks common-sense constructs. Knowledge seems to be based on self-knowledge, and so it should be recognized as local and total. Scientific environments are now adopting humanistic conceptions from social sciences to act as 'catalyst' agents towards the fusion between natural sciences and social sciences, situating the person as author and subject of the world to become reference of knowledge.

Considering that nature today ‘emerges from the confluence of (silicon) dry computational systems and wet biological processes to produce a new substrate for creative work, consisting of bits, atoms, neurons and genes’ (ASCOTT, 2015), then every person will eventually experience moistmedia in daily life: ‘To creatively play with natural processes in its natural substrate is horticulture; to play with its principles in an alien or oppositional substrate could constitute art’ (ASCOTT, 2015). In this latter phrase, Ascott sums up that which becomes so difficult to convey with our work in most commercial artistic environments. As researchers in a pioneer field of contemporary art, we question ourselves on what basis the work is sustained, particularly given how we are sometimes overwhelmed by a state of incomprehension at its current complexity. Understanding moistmedia is a starting point for convergence; practicing with the concept is inevitable; sharing and collaborating is part of the process of constituting the work. The flow of informative and sensitive experiences based on collaborative strategies (such as events, meetings, immersions and interactive platforms) provide opportunities for the necessary comprehension.

NANO Lab’s involvement in artistic research is not only as a physical space for experimentation, but also an environment in which the practice reflects the concepts applied in the artistic work. Although it can be confusing and chaotic, there is always an intention and effort to organize coherently:

Artistic approach to technology and science has adopted interdisciplinary strategies and is evolving towards transdisciplinary knowledge constructions. Scientific fields of research are restless about such approaches and collaborative projects rarely accept artistic premises. Since transdisciplinary knowledge is fundamental for our investigative processes, NANO has developed specific strategies in order to stimulate collaborative proposal and initiatives. We have adopted a constructive conception where art and science, aligned with technology, bring together concepts and models to propose the construction of associative, approximate, empiric knowledge under aesthetic values.

- **Laboratorial Integrative System** – Adequate to visualize experiments; group’s working place, where processes can be shared on practical basis; local reference for external partners; space for systematization and organization of theoretical and practical research for better efficiency and productivity.

- **Academic Integrative System** – Creation of the series *Transdisciplinary Dialogs*, that promotes and articulates between research groups, professionals and institutions that have recognized achievements in their specific areas of cultural and academic research activities eligible for collaborations with NANO projects. Events that open a space for the emergence of new ideas stimulated by meetings and conversations open to the public participation. [...] Also the creation of the Series

SET – Transdisciplinary Exploratory Seminar – open seminars focused on the presentation of on going research projects, favouring experience exchange and the out coming of new projects.

• **Artistic and Cultural Integrative System** – promote, organize and participate in collaborative projects, local or remote, exhibitions and shows, residencies and performances, with the support of commissions, prizes, and institutional grants from galleries, government offices and university's funding's. NANO created the event *Hiperorgânicos*, on its fourth edition 2013, that unites in one week activities most of our experimental interests and methodology. (FRAGOSO & NÓBREGA, 2013).

The three strategies mentioned above are complemented by a fourth – 'nature immersions' – which overrides the others as the essence of the transdisciplinary approach to our research objectives. Nature immersions are moments in which all members travel to a place outside the city in order to engage in a programme specially created for that specific time and space. These programmes can be proposed by any member of the Lab who feels there is a need for group focus, concentration and co-creation. This usually happens two or three times a year and require specific planning for each detail of the proposition. Immersions in natural environments are usually stimulating for our senses and perceptions, and are conceived to construct sensitive coupling between natural/organic and artificial systems. When one returns to nature after a tremendous technological immersion (normally stimulated by the Lab's research practice), these technical apparatuses are carried with and on the body. These syncretic interactions and hybrid intersections are extremely relevant to the artistic processes developed in NANO Lab. It is not only the natural environment that we are interested in, but more specifically the sense of being enhanced by technology and connected to nature. This is made possible only when our bodies (flesh and machine) are provoked and demanded by the environment.

Immersions last for three days, with documentations made through photos, videos, drawings and texts. Collaborators are invited to participate, and the groups are usually made up of around twenty people directly or indirectly related to the Lab's team. Most activities are experimental; some are proposed after arriving at the chosen location, stimulated by the environment itself. There is little time to sleep, and all interactions are intense and challenging. After each immersion, results and processes are organized and relocated at the Lab to become objects of reflection and further research. The intense group activities during

the immersions contribute to the laboratory's integrative system by promoting academic dialogues and favouring forms of experimentation that highlight processes in artistic or scientific events, thus creating a coherent flow of creative initiatives within its collaborative works. Immersions allow us to return to the essence of the nucleus of new organisms, stimulating 'conversations' and 'autopoiesis'.

Apart from Roy Ascott's work, two other theoretical references influence this methodological approach to the art-lab environment. The first is Humberto Maturana and Francisco J. Varela's (1980) idea of 'autopoiesis', a systematic medium (space) where all recursive dynamics of reciprocal interactions occur to sustain the survival of life, processes and systems. The second is Jorge de Albuquerque Vieira's (2006; 2009) approach to art as a type of knowledge essential to the *umwelt* (and its possible *poiesis*), and to any process that guarantees the permanence or survival of a living system. Very briefly, Maturana and Varela envisioned self-referring systems in which life is centered on maintaining and reinforcing the vital parts (i.e. organs) that the system needs to survive. Environmental influences are absorbed and processed, yet their essence is maintained; this is advocated from an understanding of the 'biology of cognition'. This essence is what defines or differs one organism from another. Interaction with the environment is referred to as 'conversation', a consensual braiding of emotions, behaviour and language which reinforce the construction of networks. According to Maturana and Varela (1980), technology is seen as a powerful instrument/medium to expand our knowledge about structural and sensitive coherences within living and non-living systems.

In this sense, Jorge de Albuquerque Vieira (2009) quotes three major characteristics for the survival of an open system: sensitivity (to operate information flows); memory (to transfer and retain information); and capability (to elaborate or prepare information according to its needs). Vieira applies the term *umwelt* (first introduced by Estonian ethologist Jacob von Uexküll) to propose understanding art as a type of knowledge, deeming it an open system related to the survival of any living organism. According to the Vieira (2009), before philosophy or even science, art served as an 'evolutionary adaptive strategy' of survival. This is possible if we consider survival as directly related to deliberate conditional couplings of each organism with its *umwelt*. Vieira tells us that our *umwelt* has long been technologically

constructed, and that art, when understood as a type of knowledge, incorporates all necessary technology to favour processes of consciousness and thus survival. Creativity and innovation are aspects in artistic processes which reinvent our relations with our *umwelt* to construct possible realities. Rather than a scientific approach to understanding the truth of biological systems, artists may be more interested in understanding the possible relations between humans and nature; or other living organisms with humans and nature; or technology with organisms, humans and natures, and so on.

Practical and theoretical investigations held at the NANO Lab in Rio de Janeiro intend to explore notions of biotelematics, hybridization and transcultural experimentation in fields of art and technology. From field theory to the concept of coherence in processes of autopoiesis and environmental consciousness, there is a constant need to understand this emerging hybrid organic structure, which may be thought of as an aesthetic organism that increasingly becomes a product of our own bodies and lives. From experimental processes applied to strategic methodologies, dynamical flow is necessary to intercommunicate natural (humans and other living systems) and artificial (machine) organisms in the process of invention, as well as in the fruition of the artwork. Methodological approaches are in processes of experimentation; informative and sensitive experiences are based on collaborative strategies. As such, the concept of moistmedia helps us to understand that contemporary art, emerging from hybrid organic forms, is dynamically provoking and transforming our notion of existence and co-existence with a symbiotic environment. We could argue that it plays a fundamental role in helping us to understand our *umwelt*, thereby enabling us to better comprehend our role as aesthetic organisms.

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