JUAN DOWNEY'S COMMUNICATIONS UTOPIA
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> "The power of the arts to anticipate future social and technological developments by a generation and more has long been recognized. In this century Ezra Pound called the artist «the antennae of the race». Art as radar acts as «an early alarm system», as it were, enabling us to discover social and psychic targets in lots of time in order to prepare to cope with them. This concept of the arts as prophetic contrasts with the popular idea of them as merely a form of self-expression. If art is an «early warning system» to use the phrase from World War II, when radar was new, art has the utmost relevance not only to the study of media but to the development of media controls."

Marshall McLuhan, *Understanding Media*, 1964

McLuhan's statement reflects a shared sentiment within the artistic community in the 60s; that artists could pick up the signals emitted by scientific progress and put their particular sensibilities and discursive strategies at the service of society at large. Juan Downey was one such artist, who foresaw the future of technology as a social driving force, and in correspondence with this vision manifested a constant concern for the relations between humankind and technology throughout his prolific career. Downey's practice developed against the backdrop of cybernetics' systemic view of the world; one recast in computational terms as a series of homeostatic systems regulated by feedback dynamics. This essay thus attempts to map the influence of cybernetic thought on Juan Downey's entire *oeuvre*, identifying it as the connecting thread that runs through his diverse and heterogeneous bodies of work; from his early electronic sculptures to the deconstruction of the ethnographic canon in the works he produced as the result of his stay with the Yanomami in the mid-seventies. The focus on the specific time frame corresponding to the foundational period for many media-based art practices such as video art, electronic and computer-based or digital art responds to an attempt to trace some of the cultural, philosophical, and technological genealogies of the different bodies of work that Juan Downey produced throughout the course of his career, charting, in the process, the demise of cybernetics in the late 1970s and the shift from communications theory towards postmodern semiotic analysis as it was reflected in the artist's last body of work, *The Thinking Eye*.

The countercultural movements of the 1960s and 1970s provide a unique context for an understanding of the cultural implications at large of cybernetic thought, as they mirrored the cultural, ethico-philosophical, and theoretical shifts that marked the transition from first to second order cybernetics. The discussion on Juan Downey's work and its cybernetic affiliations will be framed within these specific shifts and some of the ideas that emerged from them (reflexivity, observer participation, information as action), in order to

identify the role that systemic thought played in Downey's particular engagement with art's social function.

SOME MORE BEGINNINGS: from the first machine age and art's desire for social transformation to the second machine age's quest for an information revolution

> "The Mussorgsky of the future is giving a coast-to-coast concert of his work, using the Radio apparatus to create a vast concert hall stretching from Vladivostok to the Baltic, beneath the blue dome of the heavens."

Velimir Khlebnikhov, *The Radio of The Future*, 1921

To understand Downey's particular vision of his role as an artist in the context of the information and technological revolution of the 1960s and 1970s it is necessary to revisit yet an earlier period, at the dawn of the 20th century, during which the complex intersection between art and technology was animated by art's utopian desire for social agency. Nowhere is this more evident than in the Soviet Constructivist ethos, which sought to manufacture a radical transformation of society through an alliance between aesthetic pursuits and the dynamics of industrial production.[1] The "first machine age"[2] thus provided the original impetus for many of the early 20th century avant-gardes, which incorporated the imperatives of the industrial age into their artistic practices, taking into account industrialization's social and economic implications. In their affiliation to the machine aesthetic, the productivists were concerned with the object, the commodity; they did not foresee the transformation of information into capital, and the shifts in power that this would bring about. Velimir Khlebnikov's utopian essay, *The Radio of the Future*, stands out, however, as exceptional in this sense as it foresaw the transit towards a "second machine age" and the role that information and communication would play in the construction of a new social ideal.

In his 1968 highly influential essay *Systems Esthetics* Jack Burnham proposed a new way of looking at the dematerialized and then-emerging conceptually-based practices from the standpoint of the systems theory formulated by Ludwig von Bertalanffy, and placed the productivist paradigm shift at the root of his genealogy:[3]

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[1] For the advocates of productivism it was of paramount importance to insert their work within the means of industrial production and distribution, and thus they engaged in experiments in industrial and textile design in the belief that these mass-produced objects would eventually by virtue of their widespread dissemination effect substantial change in everyday life (*byt*) that would gradually transform the proletariat into the utopian society envisioned by the revolution.[1]

[2] I use the term "first machine age" in reference to the arguments advanced by Reyner Banham in his book, *Theory and Design in the First Machine Age*.

[3] Burnham states in his essay that "the priorities of the present age revolve around the problems of organization. A systems viewpoint is focused on the creation of stable, on-going relationships between organic and nonorganic systems, be these neighborhoods, industrial complexes, farms, transportation systems, information centers, recreation centers, or any of the other matrices of human activity. All living situations must be treated in the context of a systems hierarchy of values. Intuitively many artists have already grasped these relatively recent distinctions, and if their "environments" are on the

For some readers these pages will echo feelings of the past. It may be remembered that in the fall of 1920 an ideological schism ruptured two factions of the Moscow Constructivists. The radical Marxists, led by Vladimir Tatlin, proclaimed their rejection of art's false idealisms. Establishing ourselves as "Productivists," one of their slogans became: "Down with guarding the traditions of art. Long live the constructivist technician." As a group dedicated to historical materialism and the scientific ethos, most of its members were quickly subsumed by the technological needs of Soviet Russia. As artists they ceased to exist.[4]

This was particularly the case of Karl Ioganson, whose 1922 *kredo* "From Construction to Technics and Invention" contains the phrase loosely quoted by Burnham in his essay: "down with art, long live technics." What Burnham implied by "artists ceasing to exist" would seem to be in line with Ioganson's view of himself not as an artist or even a technician, but rather as an inventor, proposing a new role for the artist that in some way approximated Ezra Pound's view of artists as "the antennae of the race." Ioganson was clearly aware of the technical limitations of artists at the time, in his view, technics was subordinated to invention; a concept that allowed him to circumvent the lack of technological know-how as it disengaged invention from purpose.[5] Moreover, it was Ioganson who actually fabricated the first structure resembling what decades later Buckminster Fuller would define as a *tensegrity*, based on a design by Kenneth Snelson, a student of Fuller's at Black Mountain College.[6] However, as Maria Gough argues in her book on productivism, Ioganson cannot be fully credited for the structural use that the tensegrity would have in architecture, as the technology of the time had not yet produced cables capable of withstanding high amounts of tensile stress, but in his self-fashioned role of the *artist as inventor* Ioganson posited an idea that would be taken up again by Snelson and Fuller decades later despite the fact that they were probably not familiar with Ioganson's *Spatial Constructions*.

We could thus say that is was within this paradigm of *invention* that artists working with technology in the 1960s and 70s, unwittingly or not, recast themselves. The "second machine age" was an age of dematerialization; of information, networks, flows, and miniaturization, where everything had the potential to be divided into bits and organized as systems. Its early stages brought about not only utopian visions of the future that found a voice in the arts, from architecture to music, literature and the visual arts, but, in a way similar to that of the "first machine age" avant-gardes, also a desire on behalf of artists to function within the logic of their own time. Juan Downey was no exception and it seems pertinent to frame him within the paradigm of *invention* when discussing his work in the light of cybernetic theories and the

unsophisticated side, this will change with time and experience." In "Systems Esthetics," *Artforum* (September 1968).

[4] Jack Burnham, "Systems Esthetics," *Artforum* (September 1968).

[5] For a lengthy analysis of the dichotomy between technics and invention in Karl Ioganson's work and writings see: Maria Gough, *The Artist as Producer. Russian Constructivism in Revolution* (Berkeley, Los Angeles, London: The University of California Press, 2005).

[6] Kenneth Snelson claimed that Buckminster Fuller took credit for the structure, coining the term *tensegrity*, a contraction of the words "tension" and "integrity", whereas Snelson has always called it a "floating compression." Gough also revisits this incident in her discussion of Ioganson's invention of the aforementioned structure in the early 1920s.

technologies of the information revolution that significantly defined both the Cold War era and 60s and 70s counterculture. In the same way that Ioganson conceived of a new constructive form that was not structurally feasible with the technical means of his time but which later provided the principle for megastructures, geodesic domes, and other forms that departed from the rigid structural schemes deriving from post-and-lintel construction, Juan Downey's works and writings proposed networks of communication that though intuitable were not technologically feasible at a time when the personal computer, the internet, and the social networks that shape our lives so significantly today only loomed in the distant horizon.[7]

PARADIGMS / CONTEXTS / MODES

> "We might say that in creative art man must experience himself–his total self—as a cybernetic model."

> Gregory Bateson, *Steps to an Ecology of Mind*, 1972

In one of his notebooks Downey outlines a diagram where the influences and lines of thought running through his work are distributed in the following categories: PARADIGMS/CONTEXTS/MODES. While it is difficult to decipher the internal logic underlying this diagram, we can read it as a map of influences in his work, it also gives us an insight into the operative modes that shaped his practice, making it possible to single out some of its elements in order to equally analyze the paradigms, modes, and contexts that framed his production.

A rather factual overview of the names listed in this diagram sheds light on the medullar function of cybernetic thought in Downey's conceptualization of his artistic practice. The names of the cyberneticians penned down by Downey in his diagram offer us more clues to a reading of his work in terms of a contextual analysis than the names of the artists that appear on the opposite side of the diagram (Marcel Duchamp, Man Ray, Antonin Artaud, Yves Klein, Piero Manzoni, and Joseph Beuys).[8] The mention of Einstein at the top of the list reveals Downey's interest in observer participation, which marked the shift from first order to second order cybernetics in the late 1960s; Einstein's theory of relativity highlighted the observer's crucial role in the determination of the quantitative measurements of time and space, which were relative to the speed of the observer. Claude Shannon's name introduces us to Downey's interest in information theory, and general notions of source

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[7] In an interview with Art 21 on *Radical Software*, Beryl Korot comments on the fact that while artists working with electronic media in the early 70s saw a radical potential in television and video, they never imagined that their visions would actually materialize in the computer-based technologies of today. See http://www.youtube.com/watch?v=hIXlB1CHmOQ

[8] Despite the fact that we may identify a range of influences of these artists on Downey's work: Yves Klein's "air architectures" on Downey's concern for dematerialization and his concept of invisible architecture; Downey's interest in channeling energy flows comes through as indebted to the experiments in this direction by Piero Manzoni and the Gruppo Zero; Artaud's theatre, cinema, and experience among the Tarahumara of Mexico may have been an inspiration for Downey's quest in the Amazon; Beuys and Downey shared a common interest in the shamanic and in the television medium.

code, pattern, and noise in communication. We can read Downey's interdisciplinary interest in cybernetics, beyond the realm of mathematics, in the names of Ross Ashby and Ludwig von Bertalanffy, pioneers of general systems theory, who respectively came from the fields of psychiatry and biology. Cybernetics' neurobiological genealogies--likewise referenced in the names of neurophysiologist Warren McCulloch, logician Walter Pitts, and Mexican physiologist Arturo Rosenblueth, who with Norbert Wiener and Julian Bigelow co-authored one of the first papers on cybernetics *Behaviour, Purpose, and Teleology*, in 1943--seemed to offer Downey a wide-ranging speculative ground, evidenced in his recurrent allusion to neural systems of communication, and his general conception of systems anchored in the body that ultimately bypassed the role of machines enabled by technology. But perhaps it is in the figures of Buckminster Fuller and Gregory Bateson that we can find more profound influences on Downey's work by virtue of their own close relations to the countercultural context in which Downey's work was inscribed.[9] Downey's interest in "invisible energies" and his later conception of "invisible architecture"[10] were undoubtedly akin to Fuller's characterization of our epoch as one defined by a concern with what lies beyond the visible spectrum.[11] Downey's life-long investment in ecology, which I will address further on in this essay, was very possibly informed by a reading of Bateson's theories. Ultimately, and beyond the technological dimension of the cybernetic rhetoric, Downey seemed to be interested in its philosophical aspect, as it widened the scope of scientific advances (information theory, mathematical models, topology, set theory) that ushered the world into the era of information towards a wider cultural arena that encompassed the human sciences, anthropology, sociology, psychology and psychiatry, as well as art.[12]

What appears as modes in his diagram --which includes "ecological, technological, ontological"[13] as well as "ideological, heuristic, and didactic"-- underscores the prevalence of a technologically inflected approach in his practice. Downey's work operated within those parameters either addressing each one individually or at their intersection. Framing Downey's position, as well as that of other artists working in a similar vein at the time, in relation to

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[9] Both Fuller and Bateson were significant figures, if not outright *gurus*, of the counterculture. Fuller's sphere of influence extended to include diverse manifestations such as the artist commune Drop City in Colorado. Bateson and Fuller's writings were featured in publications such as the *Whole Earth Catalog*, which promoted Fuller's technocratic utopian vision of the Earth as a spaceship, new forms of communalism, and Bateson's ecological epistemology.

[10] Which I have analyzed at length in a previous essay, *From Utopia to Abdication: Juan Downey's Architecture without Architecture*, in the catalogue of the exhibition *Juan Downey: The Invisible Architect* curated by Valerie Smith at the MIT List Visual Arts Center, Arizona State University Art Museum and the Bronx Museum of the Arts, 2011-2012.

[11] "Up until the 20th century reality consisted of everything that humans could see, smell, touch, and hear. Then at the entry into the 20th century the electron was discovered. A century after the time of Malthus much of science became invisible with the introduction of an era of electronics, electromagnetics, and atomics." R. Buckminster Fuller in collaboration with E. J. Applewhite, *SYNERGETICS. Explorations in the Geometry of Thinking* (New York: Macmillan Publishing ,1975, 1979), PDF online version http://www.rwgrayprojects.com/synergetics/s00/p0000.html

[12] As Norbert Wiener states: "besides the electrical engineering theory of the transmission of messages, there is a larger field which includes not only the study of language but the study of messages as a means of controlling machinery and society", see: "Cybernetics in History" in *The Human Use of Human Beings: Cybernetics and Society* (Cambridge, MA: Da Capo Press, 1988), 15.

[13] In this essay I have chosen to work with the first set of modes described by Downey in his diagram.

technology within the paradigm of *invention* allows us to understand his approach to cybernetics, not just from the standpoint of the cybernetician or the scientist but rather as the artist who was able to make projections beyond technology and his own time.

technology

After Downey's move to Washington in 1965, his early representations of cyborg-like figures soon gave way to installations and electronic sculptures that engaged the active participation of the spectator.[14] While in Washington he met Douglas Davis and Ed McGowin with whom he founded The New Group. As a member of The New Group, Downey participated in and organized a series of happenings in Washington DC, including collaborations with Ant Farm's Doug Michels, and Douglas Davis, where the notions of feedback and energy transformation already began to emerge as operative principles. Downey's happenings addressed energy transformation (*A Fire Sculpture*, 1969, action performed during *The Gene Davis Giveaway*, a happening organized by Gene Davis, Douglas Davis and Ed McGowin at the Mayflower Hotel in Washington DC), and relied on acts of communication (*Check a Space*, 1968, *Communication*, 1968, and *The Human Voice*, 1968), oftentimes without the mediation of technology. According to his statement for *Communication* Downey assembled a group of people in a place and then sent them away, using the most varied means of transportation (foot, bus, taxi, boat, car, plane) to gather information about random places, register it and send back messages using once again an assortment of mediums that included telephone calls, telegrams, and even the pigeon post. *The Human Voice* brought together a group of people in a space where tape recorders registered conversations and played them back engaging the audience in a feedback dynamic as they would react and interact with the recordings of the conversations.

These *happenings* and *events* are remarkable in the sense that they reveal Downey's interest not so much in technology itself but in cybernetic theories of communication and information. Although ephemeral and seemingly isolated incidents in his production (in part due to their scant documentation), they paved the way for Downey's later experiments with electromagnetic waves and highlighted his primordial interest in communication for which technology was only a means, albeit an important one as we can assess in his electronic sculptures, where his diverse interests in cybernetics, communication, and audience participation would finally begin to consolidate. On the occasion of his first exhibition of electronic sculptures at the Corcoran Gallery, on which he worked with engineer Fred Pitts to develop the technology that would enable his sculptures to perform different feedback dynamics, he also presented a text-based work titled *A Novel*.[15] This singular work has received little, if any, critical attention but offers important

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[14] Downey's hybrid figures of humans with machine extensions, and the first projective drawings for what would become his electronic sculptures a few years later, evidenced a clear interest in McLuhan's writings of the time as well as in concepts such as the cybernetic organism or cyborg, as they explored the connections between man and machine proposing technology as an extension of the body.

[15] Included in this catalogue as part of Juan Downey's writings and essays.

clues as to Downey's cybernetic concerns. According to the description in the catalogue:

> It consists of several dialogues, each of which Downey, as one of the participants, keeps alive by a pre-conceived pattern of yes or no answers. The sparse nature of these replies places the whole burden of communication on the other participant. In like fashion in the exhibition, it is some person or extreme thing which activates the sculpture and enables it to communicate its message. [16]

The systemic nature of Downey's endeavor is made evident not only in the group of electronic sculptures he presented in this exhibition but in this novel whose binary structure evokes the operative principles behind the Turing machine. Much like the hypothetical device invented by Alan Turing in 1937 that enabled the simulation of algorithmic logic in computing machines, Downey's novel transformed a conversation into a computable task, modulating it according to a set of pre-defined rules, that is, the pattern of 'yes' and 'no' answers that is already decided a priori creating different feedback responses from the other participants. This work also evidenced Downey's interest in working with algorithmic structures, patterns, and codes; the set pattern of yes and no answers, like the binary pattern of zeros and ones in the Turing machine, can be used to generate a program, that is, the text that we can read as Downey's novel; a text generated by the set responses which elicit feedback on behalf of the participants in dialogue with the artist-coder.[17] The novel is kept in a sort of state of homeostasis through negative feedback, as the preset negative responses seem to elicit more questions about the nature of the novel itself from the participants; occasionally when the answer is a 'yes' then the system seems to open, allowing for a narrative that departs from the tautological structure of the work.

This procedure, analogous to the operating principles of the Turing machine, serves to assert Downey's position as an artist working in a world increasingly dominated by technology, where his agency as an artist would necessarily be carried out from and have an effect within the parameters of the technological. At the same time, it evokes Norbert Wiener's theories on the parallel between living organisms and machines, which he saw in their "analogous attempts to control entropy through feedback."[18]

In *Systems Esthetics* Jack Burnham states that "the specific function of modern didactic art has been to show that art does not reside in material entities, but in relations between people and the components of their environment."[19]

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[16] *Juan Downey, Electronic Sculpture*, The Corcoran Gallery, Washington DC., 1969. Exhibition brochure.

[17] We can find many similar endeavors in the tautological and text-based experiments of 1960s conceptual art that exhibited a kinship with cybernetic notions of pattern, coding, noise, and redundancy. Dan Graham's 1966 *Schema* is a notable example. On the internet we can find an interesting analogy between Graham's *Schema* and present-day XML coding, http://www.mbutler.org/schema/ that contributes to a cybernetic reading of such works.

[18] Norbert Wiener, *The Human Use of Human Beings. Cybernetics and Society* (Cambridge, MA: Da Capo Press, 1988), 26.

[19] Jack Burnham, "Systems Esthetics," *Artforum* (September 1968).

Likewise, we can find in Downey's dematerialization of the art object[20] a desire to create spatial experiences that highlighted the social dynamics of the exhibition space, and even more complex affinities to cybernetic ideas, especially regarding context, observer interaction, and the conception of the artwork as an element within a system. Downey's electronic sculptures engaged the public in diverse acts of communication and energy exchange, all articulated by feedback-loop structures.[21] The objects themselves were part of the system as much as the spectator. These sculptures--which also anticipated Downey's later transit to video as they operated on the basis of feedback-- organized the spatial relation between spectator and the work; they were essentially the means for relaying a host of "invisible energies," and spectator interaction with them triggered visual, and more often sonic, manifestations that were a translation of these invisible energies into perceptible form.

ecology

The ecological mode outlined by Downey in his diagram is a natural consequence of working with feedback loops and engaging audience participation to produce veritable media ecologies. Downey indeed conceived of the systems he created--both in his electronic sculptures as well as his later works with invisible energies, and architecture--as inscribed within the realm of the ecological in the widest sense. Downey's writings of the time are also clearly guided by an ecological perspective, particularly *Technology and Beyond*, and *Architecture, Video and Telepathy. A Communications Utopia*, and in many instances manifest affinities to Gregory Bateson's particular concepts of *ecology*, *flexibility*, and *adaptation*, employed concurrently with the notion of systems, which met with widespread use in the late 1960s and 1970s, through countercultural magazines such as *Radical Software* and Stewart Brand's *Whole Earth Catalogue*, essentially framed around this systemic conception of ecology.

The group of works gathered in the exhibition under the title of "Life Cycles" is demonstrative of ecology as a way of thinking in Downey's work; at the center of his program is the life cycle structure, where nature, man and technology enter a symbiotic relation of positive interdependence and exchange. A 1972 work, *A Vegetal System of Communications for New York State*,[22] is exemplary in this sense. Fittingly this work was shown in the 1975 exhibition *A Response to the Environment*, at the Rutgers University Art Gallery, in New Jersey, an exhibition that featured the works of artists such as Hans Haacke, Robert Smithson, Rafael Ferrer, Alan Sonfist, and Michael Snow, among others. The installation consisted of a large panel with a map of

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[20] I am mostly referring to the events he staged as well as *A Novel*, but even though the sculptures were objects, their material presence was undeniable, they were basically vehicles for the production of a series of acts of communication.

[21] Downey's electronic sculptures have been analyzed in depth by Carla Macchiavello in her essay "Vento Caldo," in *Juan Downey. El ojo pensante* (Santiago de Chile: Fundación Telefónica, 2010), 19-41. Also available on line: http://www.fundaciontelefonica.cl/arte/downey/archivos/parte_1.pdf and http://www.fundaciontelefonica.cl/arte/downey/archivos/parte_2.pdf. I have also previously discussed Downey's electronic sculptures in "From Utopia to Abdication: Juan Downey's Architecture without Architecture," in the catalogue of the exhibition *Juan Downey: The Invisible Architect* curated by Valerie Smith at the MIT List Visual Arts Center, Arizona State University Art Museum and the Bronx Museum of the Arts, 2011-2012.

[22] Reconstructed for the first time in decades, for this exhibition.

a portion of New York State over which Downey had painted in white the areas that were devoid of vegetation, indicating "the absence of woods-brushwood." Adjacent to this map was a copper planter--Downey used copper to insulate the plants but also on account of its ductile properties which facilitated the transmission of electric impulses—with a philodendron plant inside, electrodes attached to each of its leaves, each electrode was assigned a musical note, and depending on the energies it perceived from the public the plant would respond and its reaction would be "translated" into a specific sound. The core principles behind this work resonate with a passage in Downey's essay *Architecture, Video, Telepathy: A Communications Utopia*:

> Due to its fully electromagnetic fiber the future is artificially natural. An aspiration to a man-made and natural harmony expressed in a media environment. An enjoyable landscape where each plant talks about a higher order of proportions, numbers, energy, through each one of its petals. [23]

Downey's communications utopia resided in this ecological, total, and telepathic communication between humans and the natural world, ideas that seem recurrent in all of his writings. [24] *Technology and Beyond* clearly states the need for this symbiosis of man and environment, but clarifying that technology is the way to achieve this:

> Ironically, the man-nature chasm can only be closed by technology. The process of reweaving ourselves into natural energy patterns is Invisible Architecture, an attitude of total communication within which ultra-developed minds will be telepathically cellular to an electromagnetic whole (…) Human beings would share with all other species the benefits of natural cycles: communicant balance. [25]

Downey, like Bateson, was aware of the fact that the unrestrained path of technological progress would inevitably lead to the demise of the human race through a destruction of the natural environment, and this frail symbiotic relation is what he set out to demonstrate with *A Vegetal System of Communications for New York State*.

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[23] Juan Downey, "Architecture, Video, Telepathy: A Communications Utopia,, in *International Review of Video and Mass Media, Journal of the Centre for Advanced TV Studies, at Fantasy Factory Video Resource Centre*, London, England, Vol. 5, No. 1, 1977, pgs. 1-4.

[24] The idea of telepathic communications also features prominently in Buckminster Fuller's introduction to Gene Youngblood's *Expanded Cinema*: "for the last two decades scientists probing with electrodes have learned a great deal about the human brain. The brain gives off measurable energy and discrete wave patterns disclosed by the oscillograph. Specific, repetitive dreams have been identified by these wave patterns. The neurological and physiological explorers do not find it extravagant to speculate that we may learn that what humanity has thus far spoken of mystifiedly as telepathy, science will have discovered, within decades, to be ultra-ultra high-frequency electro-magnetic wave propagations." Moreover, Fuller saw this as an imminent reality, "for humans to have within their cerebral mechanism the proper atomic radio transceivers to carry on telepathic communication is no more incredible than the transistors which were invented only two decades ago, and far less incredible than the containment of the bat's radar and range-finding computer within its pin-point size brain. There is nothing in the scientific data which says the following thoughts are impossible and there is much in the data which suggests that they are probable." Gene Youngblood, *Expanded Cinema* (New York: P. Dutton & Co., 1970), 15-17.

[25] Juan Downey, *Technology and Beyond*, in Radical Software, Volume 2, No. 5, 1973, p. 2-3

Another work from the early seventies *Life Cycle: electric light + water + soil →
flowers → bees → honey*, exhibited at the Electric Gallery in Toronto in 1971,
was an experiment in video feedback and how it could be used to create
artificial and topological environments. The work consisted of an installation
of beds of flowers inside the gallery space that provided a setting for
beehives, cameras, and television monitors connected in closed-circuit
feedback loops that contributed to create an environment in which the bees
adapted to, perceiving themselves in the television monitors, and were able to
produce honey as if in a natural environment. This work can be read in the
light of Bateson's notions of flexibility and adaptation, which for him were
crucial to regaining an ecologic balance in a world dominated by technology,
where a return to a primitive state of harmony and balance with the
environment would not only be unfeasible but also unwise, as he argues in an
article published in Radical Software titled *Restructuring the Ecology of a Great
City*.[26] In this article, Bateson defines flexibility according to Ross Ashby's
systems theory stating that "any biological system (e.g. the ecological
environment, the human civilization, and the system which is to be the
combination of these two) is describable in terms of interlinked variables such
as that for any given variable there is an upper and a lower threshold of
tolerance beyond which discomfort, pathology, and ultimately death must
occur. Within these limits, the variable can move (and is moved) in order to
achieve adaptation."[27]

Bateson's systemic ecology also seems to be at the base of the life cycle
Downey installed in his own home, *A Clean New Race* (1970),[28] using specific
lighting situations of his loft's architecture to create different environments
that would foster plant and animal life. A no-longer extant super-8 film was
made documenting the experience and the project only survives in the
drawing with the same title, and preliminary sketches in his notebooks,
where we can see how a combination of natural and artificial light situations
could enable plants to grow inside the domestic space, providing oxygen, and
food for animals (fish, poultry, goats, dogs) and the apartment dwellers, in
this case Downey and his family. The cyclical, feedback-based, homeostatic,
ecological balance proposed by a cybernetic view of ecology would continue
to inform Downey's other architectural conceptions, most notably his project
for the *Roosevelt Island Competition* (1975), where he envisioned a closed, self-
regulating system that would even provide work for its inhabitants. Alveolar
structures that recycle air appear in these drawings, as well as in other ones in
his notebooks, notably one that bears the inscription "an oxygen religion." For
his exhibition at Howard Wise and the traveling group exhibition *Air*
organized by Jim Harithas, Downey had already experimented with lung-like
structures that simulated breathing patterns. The cycle of oxygen renewal as a
life-sustaining force was clearly central to his concerns, and in 1972 he
collaborated with Gordon Matta-Clark on *Fresh Air*, a street performance that
consisted in distributing oxygen to passersby on the street from a fresh air
cart built by Matta-Clark.

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[26] A slightly different version of this text is included in *Steps to An Ecology of Mind* under the title of
"Ecology and Flexibility in Urban Civilization."
[27] *Radical Software*, Vol.1, No. 3, 1971, 2-3.
[28] Not shown in the exhibition.

ontology

One way of reading the ontological mode in Downey's diagram addresses the systemic relation between technology and ecology. The second machine age's imperatives of invisibility and micro-structures that guided Downey's experimentation with electromagnetic waves also called into question the conception of the real, as we have mentioned before in relation to Buckminster Fuller's writings on the subject, and as such called for a redefinition of our ways of existing in and knowing the world we live in.[29] The technological era was marked by the pressing concern for new ontologies and epistemologies that would make sense of humankind in an environment drastically changed by technological progress. In *The Human Use of Human Beings. Cybernetics and Society* Norbert Wiener had already in 1950 raised the issue of a new ontology at the intersection of technology and ecology: "We are the slaves of our technical improvement […] We have modified our environment so radically that we must now modify ourselves in order to exist in this new environment. We can no longer live in the old one."[30] Gregory Bateson called for a reconsideration of ontology and epistemology, preferring to use epistemology to "cover both aspects of the net of premises which govern adaptation (or maladaptation) to the human and physical environment."[31] Furthermore, Bateson states that "an entirely new epistemology must come out of cybernetics and systems theory, involving a new understanding of mind, self, human relationships and power." [32]

An ethical dimension was also inscribed within these ontological reconsiderations of the time. In the context of Cold-War politics, the nuclear arms race, escalating conflicts worldwide, including the war in Vietnam, social unrest, the turmoil and guerrilla warfare that ensued during and after the decolonization struggles of many countries in the Third World, the scientific and theoretical community began to express reservations about the role that cybernetic theory had played in the development of the military apparatus during WWII, and their own involvement in these developments. If unchecked, technological advance could prove lethal to the human race and provoke its self-destruction. Norbert Wiener's open refusal to engage in further military-related work as well as Gregory Bateson's critical position, are exemplary in this regard.

The editorial of the first issue of *Radical Software* clearly takes sides with the growing perception that technological progress in the field of cybernetics and information technologies was a double-edged sword; it also made manifest its advocacy to promote alternative uses of technology that would contribute to the greater good. The editorial is clear about the new ontology brought about by scientific advance in the information era, in which the rules of the game had been completely and irrevocably changed:

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[29] R. Buckminster Fuller in collaboration with E. J. Applewhite, *SYNERGETICS. Explorations in the Geometry of Thinking* (New York: Macmillan Publishing ,1975, 1979), PDF online version http://www.rwgrayprojects.com/synergetics/s00/p0000.html

[30] Norbert Wiener, "Progress and Entropy" in *The Human Use of Human Beings: Cybernetics and Society* (Cambridge, MA: Da Capo Press, 1988), 46.

[31] Gregory Bateson in "The Cybernetics of "Self": A Theory of Alcoholism" in *Steps to An Ecology of Mind*, with a new foreword by Mary Catherine Bateson (Chicago and London: The University of Chicago Press, 2000), 314.

[32] *Ibidem*, 313.

As problem solvers we are a nation of hardware freaks […]meanwhile, unseen systems shape our lives.

Power is no longer measured in land, labor or capital, but by access to information and the means to disseminate it. As long as the most powerful tools (not weapons) are in the hands of those who would hoard them, no alternative cultural vision can succeed. Unless we design and implement alternate information structures which transcend and reconfigure the existing ones, other alternate systems and lifestyles will be no more than products of the existing process.

Fortunately, new tools suggest new uses, especially to those who are dissatisfied with the uses to which old tools are being put. We are not a computerized version of some corrupted ideal culture of the early 1900s, but a whole new society because we are computerized. […]

Only by treating technology as ecology can we cure the split between ourselves and our extensions. We need to get good tools into good hands—not reject all tools because they have been misused to benefit only the few.

[…] So six months ago some of us who have been working in videotape got the idea for an information source which would bring together people who were already making their own television, attempt to turn on others to the idea as a means of social change and exchange, and serve as an introduction to an evolving handbook of technology."[33]

Between 1970 and 1974 *Radical Software* played a central role in the dissemination of video's social potential and responsibility. It was published by the Raindance Corporation; an "alternative think tank" set up in 1969 by artists Frank Gillette and Ira Schneider, journalist Michael Shamberg, philosopher Victor Gioscia, and writer Marco Vassi, with Beryl Korot and Phyllis Gershuny as editors. The name *Raindance* was an ironic reference to the Rand Corporation, a global policy research and development non-profit initially founded by Douglas Aircraft to provide technological support to the United States Air Force and which played a significant role in shaping US military strategy during the Cold War.

In 1973 the magazine devoted an issue to "Art and the Environment" extensively featuring the work of Juan Downey; including the cover where he appeared inside a tent along with members of his *Video Trans Americas* crew and the editors of *Radical Software*. A dossier on his recent video-feedback performances was published in this issue along with Downey's essay *Technology and Beyond*, a text that not only contains important keys to an understanding of the intersection of these three *modes* in his work and thinking, but also sheds light on the ethico-philosophical shift with regards to

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[33] *Radical Software*, Vol. 1, No. 1 (Spring, 1970): 1.

the application of technology that informed some of the countercultural movements and initiatives of the 1960s, which also played a key role in the transit from first order to second order cybernetics that had already begun to take place during the Macy Conferences, held between 1946 and 1953.[34]

FROM THE AGENCY OF INFORMATION TO FEEDBACK NATION(S)

> "Cybernetics is a call for social change: a revolution within the detection, processing and dispersal of information. I am calling for an Information Revolution. I aspire to a society with strong communications networks of multi-directional potentials as opposed to our present-day pyramidal oppressive hierarchy that misinforms the base in order to remain at the apex. I call for a diversity of signal in multi-directional networks!"
>
> Juan Downey, *Architecture, Video, Telepathy. A Communications Utopia*, 1977.

The notion of reflexivity brought about by second order cybernetics, placed the observer at the forefront of the debate during the Macy conferences. In her book *How We Became Posthuman* Katherine Hayles analyses the tensions and theoretical struggles that marked the discussions, where "participants wavered between a vision of man as a homeostatic self-regulating mechanism whose boundaries were clearly delineated from the environment and a more threatening reflexive vision of a man spliced into an informational circuit that could change him in unpredictable ways."[35]

In first order cybernetics, as Hayles asserts, the homeostatic mechanism's boundaries were clearly demarcated from the environment, or context. According to Hayles' account of the Macy Conferences, the challenge to scientific objectivity posed by the inclusion of the observer in the system was met with emphatic resistance from some of the participants, notably Warren McCulloch.[36] The opposition between homeostasis and reflexivity in the diverging conceptions of information that emerged during the conferences is an important issue in the context of this discussion due to the effects this would have on a generation of artists working within the framework of systems and communications in the 1960s and 1970s. Homeostasis implied the reification of information, whereas reflexivity advanced the conception of information as action. For Hayles "making information a thing allies it with homeostasis, for so defined it can be transported into any medium and

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[34] The Macy Conferences were a series of interdisciplinary meetings organized under the patronage of the Josiah Macy Jr. Foundation between 1946 and 1953. These conferences marked the emergence of cybernetics as a field of knowledge in the mid 20th century. The core group members of the Macy Conferences came from a wide range of disciplines, anthropologists Margaret Mead and Gregory Bateson, physiologist Arturo Rosenblueth, mathematicians John von Neumann and Norbert Wiener, neurophysiologist Warren McCulloch, physicist Heinz von Foerster, among others.

[35] Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: The University of Chicago Press, 1999), 34-35.

[36] Who nevertheless had developed major research leading in this direction. Despite the opposition that surrounded it, the notion of reflexivity lingered on and was refashioned over the next two decades by some of the original participants in the conferences such as von Foerster, Mead and Bateson, as well as others like Humberto Maturana who with Francisco Varela developed the theory of autopoiesis.

maintain a stable quantitative value, reinforcing the stability that homeostasis implies. Making information an action links it with reflexivity, for then its effect on the receiver must be taken into account, and measuring this effect sets up the potential for a reflexive spiral through an infinite regress of observers."[37]

We can illustrate this paradigm shift in a more schematic way so as to facilitate a visualization of its implications:

1st order cybernetics ⇒ SYSTEMS, FEEDBACK LOOP⇒HOMEOSTASIS ⇒ INFORMATION AS A THING // decontextualized

2nd order cybernetics ⇒the system widens to include the observer (who in turn influences the system) ⇒ INFORMATION AS ACTION // contextualized

The distinction between what information is (Macy conferences) and what information does (Donald McKay's theory, in general terms followed up by Bateson's notion of information as the 'difference which makes a difference') is crucial to an understanding of the way art practices in the 60s and 70s approached "information", not as an object, or a thing, but rather as a form of agency.[38] Context and agency were fundamental imperatives of media-based and conceptually oriented practices of the period; the debates surrounding these ideas took place in different arenas, and as far as artistic practices based on new media, especially video, were concerned, most notably through the pages of *Radical Software*. The new role bestowed on information by second order cybernetics was one that many artists working with video at the time seemed eager to put to good use.

The inclusion of context and the observer, which marked the transition towards second order cybernetics, when extrapolated to the realm of art constitutes one of the fundamental underpinnings of a large number of art practices of the time period that concerns this essay, including Juan Downey's. Art in the 1960s became increasingly aware of its context-specificity. The 1960s and 1970s in particular are characterized by dispersal, dematerialization, de-hierarchization, deterritorialization, embodied in the non-object practices of the time, which placed the artwork's constantly changing position and meaning in a relational system-like structure between the artist, the spectator, and context or the exhibition space. This conception of context as active and behavioural is clearly demonstrative of the imperatives of second order cybernetics, as context here becomes an active and influential factor in the feedback system.

In an article published by Paul Ryan in Leonardo in 1988 titled "A Genealogy of Video," Ryan retrospectively analyzes the bifurcating concerns that guided video's early years, more specifically the period between 1968 and 1971;

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[37] Katherine Hayles, *Op cit*., 56.
[38] In the context of the debates that took place during the Macy Conferences, British physicist Donald McKay was one of the most keen advocates of reflexivity, and of the roles of the observer and subjectivity. According to Katherine Hayles' account, for MacKay subjectivity did not pose a problem for scientific objectivity, as McCulloch argued, but rather enabled the connection between information and meaning.

namely the differing positions that posited video as a tool for social transformation on the one hand and video as an art medium on the other, which for the author resulted in video's metamorphosis "from a countercultural gesture to an art genre." In his writings and several recent interviews, Ryan has highlighted his interest in video's potential for social agency, an idea that related to second order cybernetics conception of information as action: "I was looking for both social change and aesthetic concern."[39]

It is important to note the influence that Paul Ryan's writings and ideas regarding video may have exerted on Juan Downey.[40] In the seventies Ryan designed an environmental television channel, developed the concepts of the *Klein Form* and *Relational Circuits*, in turn deeply influenced by the ideas of Gregory Bateson, Teilhard de Chardin, and Charles Sanders Peirce. Ryan's book *Birth and Death of Cybernation. Cybernetics of the Sacred*, published in 1973, is a compendium of many of the ideas he published in *Radical Software* and other publications. It contains descriptions of some of his art works, including *Everyman's Moebius Strip*, in which he translated the concept of the Moebius strip into a video-feedback experience.[41] In the book he outlines the role of video feedback, not only in terms of his artistic concerns—"sculpting time and space," "participating in your own audience participation"—but also in regard to a wider project for social agency—"strategy for schools: feedback process," "videotape in the classroom." The book also introduces us to Ryan's more complex topological explorations and to the notion of *infolding*, in a series of topologic triadic models, *Klein Forms*, that establish a three-fold relationship between part contained, part uncontained, and part containing, which he explains related to different forms of video feedback and playback. Ryan, like Downey, had a serious interest in cybernetics, both were deeply aware of the possibilities that video feedback presented the artist with a desire to have an incidence outside the boundaries of the gallery space, and the shift brought about by second order cybernetics offered myriad opportunities to be explored with the medium of video and its feedback and playback specificities.

In *Birth and Death of Cybernation. Cybernetics of the Sacred* Ryan takes up on McLuhan's idea of the audience as a work force, as opposed to an audience of passive consumers, and the unlimited possibilities that this would imply for the television medium:

> Suppose we were to brief fifty million people on some extremely difficult problems facing top-level scientists. Inevitably, some dozens, hundreds of the fifty million audience would see instantly through any type of opaque problem, even on the highest scientific levels […] there are enormous possibilities for using an audience as

[39] Ayreen Anastas, René Gabri, "Paul Ryan: Two Is Not a Number," in *100 Notes-100 Thoughts*, No. 15 (Kassel: Documenta 13, 2011).

[40] Ryan has been the subject of an active revision by art historians in recent years and has given several interviews that shed light on his practice and its significance during video's early years.

[41] Ryan had presented the work in the 1969 exhibition *TV as Creative Medium* at Howard Wise Gallery, it is in fact the first work he showed in a gallery space. See letter to Howard Wise in the Smithsonian online Archives of American Art: http://www.aaa.si.edu/collections/viewer/paul-ryan-letter-to-howard-wise-9940

a work force in scientific research, or any other type of research. It is simply that we insist on beaming instruction at them instead of allowing them to participate in the action of discovery.[42]

The potential of the television medium to empower audiences may well be at the core of Downey's *Video Trans Americas*, perhaps his most ambitious project involving video-feedback, which he would carry out in three expeditions from New York to Central and South America between 1973 and 1976. Equipped with a van, video and sound equipment, and accompanied by his wife Marilys, and stepson Juanfi Lamadrid, as technical assistant. The VTA (*Video Trans Americas*) team was on occasion joined by other people from Downey's artistic milieu, photographer Bill Gerstein (first trip, New York, Tennessee, Monterrey, San Luis de Potosí, Mexico City, Mérida, Veracruz, Yucatán, etc.); Beryl Korot and Ira Schneider, who went along with the group from Mérida to Guatemala on that same trip; Willoughby Sharp and Frank Gillette, who appear in some of the footage filmed in California for *Moving* (1974). *Video Trans Americas* was edited after the trips and was filmed in locations in the United States, Mexico, Guatemala, Peru, and Chile, in black and white, and employing a documentary style that focused on the landscape, the peoples, and their architecture, customs, cultures, interspersed with some personal impressions and anecdotes.

Even if the work of Juan Downey during this period can be read through the precise codes of the New York context of the 70s, Latin America was still very much a major concern for him. The 1973 the *coup d'etat* in Chile that overthrew president Salvador Allende had a deep impact on Downey.[43] After this event he decided to turn towards Latin America in search for his native roots. *Video Trans Americas* comes across as a highly utopian project of integration of the indigenous peoples of the Americas through video-feedback. Perhaps Downey also realized the potential of an audience of millions of Latin Americans who could not only become a work force in McLuhan's sense but a political, social, and civic force through the agency of video. It is here that the artist, previously working under the model of *invention* in relation to technology, finally fashions his own paradigm of the artist as *activating anthropologist* and *cultural communicant* by crossing the threshold of alterity.

> Many of America's cultures exist today in total isolation, unaware of their overall variety and of commonly shared myths. This automobile trip is designed to develop a holistic perspective among the various populations inhabiting the American continents, thus generating cultural interaction. A videotaped account from New York to the southern tip of Latin America. A

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[42] Marshall McLuhan quoted by Paul Ryan in *Birth and Death and Cybernation. Cybernetics of the Sacred*, "Social Change" series ed. Victor Gioscia (New York: Gordon and Breach Science Publishers/Interface, 1973), 6.

[43] It is interesting to note, in this context, that Allende had hired Anthony Stafford Beer to apply cybernetic theories to the management of the country's economy, a project that Stafford Beer developed in Chile between 1971 and 1973, better known as Project Cybersyn (from Cybernetics and Synergy). Noted cyberneticians and neurobiologists Humberto Maturana and Francisco Varela collaborated by giving workshops to its team, as the system's type of internal and external organization borrowed from Maturana and Varela's theory of autopoiesis.

form of infolding in space while evolving in time. Playing back a culture in the context of another, the culture itself in its own context, and, finally, editing all the interactions of time, space and context into one work of art. Cultural information (art, architecture, cooking, dance, landscape, language, etc.) will be mainly exchanged by means of videotape shot along the way and played back in the different villages, for the people to see others and themselves. The role of the artist is here conceived as a cultural communicant, as an activating aesthetic anthropologist with visual means of expression: videotape.[44]

Video Trans Americas is Downey's way of approaching the role of the active observer prescribed by second order cybernetics' vision of information as a form of agency. Downey took the cue from Ryan's notions of *infolding* to generate different feedback dynamics that were central to his project. VTA is perhaps one of Downey's most ideologically invested works, supported, among other things, by the fact that he saw this act of playing back one culture in the context of another and a culture itself in its own context as an instrument of political and social transformation. [45] [46] In a 1984 interview he stated: "feedback is very important and goes beyond. I think it will allow society to look at itself. It is like a massive mirror."[47] Beyond the cybernetic implications of the project, it is also possible to frame the topological utopia that Downey attempted with his feedback experiences (infolding space) in *Video Trans Americas* within Mary Louise Pratt's concept of the "contact zone," as one that "invokes the space and time where subjects previously separated by geography and history are co-present, the point at which their trajectories now intersect."[48] The act of communication in *Video Trans Americas* is one that clearly positioned information as action, carrying within it the seeds of a *communications utopia*; that of empowering the audiences that Downey encountered during his expedition, through the experience of video-feedback.[49]

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[44] VTA travelogues

[45] Downey's use of feedback as a political and ideological tool has been analyzed in depth by Nicolás Guagnini, "Feedback in the Amazon," *October* 125 (Summer 2008). In his essay Guagnini frames the work of Downey, specifically *Video Trans Americas*, in the context of Marxist Catholic movements in Latin America during the 60s and 70s; Leonardo Boff's Theology of Liberation, and Paulo Freire's Pedagogy of the Oppressed, among others. Guagnini states that "without oversimplifying Freire's, Boff's, and Gutierrez's intertwined contributions, one can parallel Downey's approach to portable video technology with those thinkers' attempts to exploit Catholicism and the educational system in the service of liberation. All forms of image capturing and the representations arising from them have been an instrumental part of colonialist and neocolonialist domination. For that reason, within liberation struggles, many perceived advanced technology such as video as a tool of oppression. Downey clearly took colonialism and imperialism to be his subject matter and attempted to transform the role of video in shaping reality in this context."

[46] We must also not underestimate the fact that Downey's work had the potential of reaching large and international audiences. The diverse installations of *Video Trans Americas* were exhibited in major museums in the United States such as the Whitney Museum in New York, the Everson Museum in Syracuse and the Long Beach Museum in California.

[47] Unpublished interview, Juan Downey archives.

[48] For more on this see: Julieta González, "Notes on Juan Downey's program for a fake anthropology," in *Juan Downey. El ojo pensante* (Santiago de Chile: Fundación Telefónica, 2010), 61-83.

[49] What is not possible to appreciate in the present-day version of the installation—the final form Downey gave to the work in 1976 when he exhibited it at the Contemporary Art Museum in Houston—is the feedback dynamic that structured the entire project, which only survives in the photographic documentation of the trip. However, previous installations such

SELF AND OBSERVER

> "Biology … shows us that we can expand our cognitive domain. This arises through a novel experience brought forth through reasoning, through the encounter with a stranger, or, more directly, through an expression of a biological interpersonal congruence that lets us see the other person and open up for him room for existence beside us. This act is called love, or, if we prefer a milder expression, the acceptance of the other person beside us in our daily living. This is the biological foundation of social phenomena: without love, without acceptance of others living beside us there is no social process, and therefore, no humanness."

Humberto Maturana and Francisco Varela, *The Tree of Knowledge*, 1992.

Soon after the VTA experience, Downey embarked on a voyage to the 'point of no return' which resulted in what could also be considered one of his landmark bodies of work, produced in the Venezuelan Amazonian basin during the year he lived among the Yanomami between late 1976 and 1977. There in the midst of the tropical forest he found the cybernetic utopia he had been looking for throughout his entire life as an artist; however, one without the mediation of technology. This encounter made a profound impression on Downey, a cultural shock, after which he was never to return to the techno-utopian propositions that marked his previous bodies of work.

The architecture of the *shabono* the communal dwelling of the Yanomami, revealed itself to Downey as the most perfect expression of a cyclical and ecological architecture. The circular lean-to structure is built within a clearing in the forest with the leaves and branches of the trees felled down to make the clearing, its 'posts' and 'beams' tied with fibrous palm leaves. Every two or three years, the *shabono* begins to naturally disintegrate; it is then abandoned and the tribe moves to another spot in the forest to make a clearing and begin the process all over again. Aside from its function as shelter, the *shabono* regulates the social structure of the Yanomami; there are no hierarchies, and families are distributed around hearths placed along the *shabono's* circular frame, what Downey called the "circle of fires," while the collective and ritual activities take place at the centre of the structure, open to the sky and the elements.

Beyond Downey's discovery of an ecological utopia in the midst of a primeval tribe in the Amazonian forest, it is pertinent to analyze the impact that cybernetics had on his own perception of the experience among the Yanomami; as his whole endeavor hinged around the act of observation and a

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as those at the Everson Museum in Syracuse and at the Whitney Museum highlighted the feedback structure at the base of the work. In Syracuse, Downey created a hanging pyramid with suspended monitors at the centre of which Carmen Beuchat performed a dance that was filmed in closed circuit TV. In the Whitney version, the monitors were placed on an x/y axis with videos situated in the cardinal points, at the center of this arrangement a closed circuit system projected one of the videos on the floor on which spectators could stand and be filmed by a closed circuit system which enabled them to 'enter' the video by way of feedback.

calling into question of the role of the observer, that is, the discussion that enabled the shift from first order to second order cybernetics. In the forest, Downey continued to work with video, having the Yanomami engage with its feedback and playback capabilities, an experience that was entirely new, though ostensibly not of great interest, to them.[50] But more importantly, he produced a series of single channel videos, which appropriate the form of the ethnographic documentary to dismantle the ethnographic canon, precisely through an interpellation of the act of observation,[51] which takes us once again to the intersection of the ecological, the technological and the ontological in Downey's work and thought, since this reflection on the observer also entailed one on the *self* and the *other*, and a cybernetic view on the construction of subject positions.

As mentioned before, the question of the observer was a core issue in the context of the debates that informed the transition from first order to second order cybernetics. A paper co-authored by Jerome Lettvin, Humberto Maturana, Warren McCulloch, and Walter Pitts in 1959, titled "What the Frog's Eye tells the Frog's Brain" sparked the debate on the observer. The authors demonstrated that the frog's optical system *constructs* rather than *represents* reality, in other words, the frog's eye would send an already organized and codified message to the brain, rather than sending a *scan* of "reality" that the brain would then codify. This paper not only galvanized the discussion on the influence of the observer on the system being observed but also opened the way for ideas such as Bateson's concept of the immanent mind, and to new considerations on the biological roots of cognition. By constructing reality and relaying this construction to the brain the eye, and in this sense the body, becomes part of the thought process and is tied to subjectivity (the frog's *reality* is conditioned by its survival instinct and shaped by the perception of targets that will potentially become its sources of nourishment).

We can read Downey's feedback experiences with the Yanomami in the light of these ideas. When Downey gave the Yanomami the camera so they could film themselves, he was struck by the fact that when filming each other, instead of framing the *subject* they would instead use an open frame where the figure would not occupy a central position, that is they would give as much importance to the landscape around the figure as to the figure itself. The Yanomami explained to Downey that the environment was part of the person they were filming, this subject did not exist isolated from its environment but as part of a *system*, a view that came very close to Bateson's questioning of the self and its boundaries, and his notion of the immanent mind. Bateson's cybernetic epistemology proposed the immanence of the mind, not only in the body but in the "pathways and messages outside the body […] there is a larger Mind of which the individual mind is only a

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[50] They had been filmed before but not with video, so they did not have the possibility to see themselves in real time. Downey observes that the videos of other cultures did not have much appeal for the Yanomami who only showed interest for the "desirable objects that appear in them: guitars, motor boats, rifles."

[51] A topic I will not discuss here as I have devoted an entire essay to this subject in the catalogue of the exhibition I organized of Downey's work at the Fundación Telefónica in Santiago de Chile, in 2010, which can also be found on the internet at :
http://www.fundaciontelefonica.cl/arte/downey/archivos/parte_1.pdf and
http://www.fundaciontelefonica.cl/arte/downey/archivos/parte_2.pdf.

subsystem […] still immanent in the total interconnected social system and planetary ecology."[52] The Yanomami's construction of reality, one where the *self* was contingent in regard to a greater whole, was reflected in their gaze through the video camera.

We could summarize Downey's main endeavour in the videos produced during his stay in the Venezuelan Amazon in terms of two central concerns, both informed by the cybernetic rhetoric, that converged in his attempt to dismantle the Western subject. On the one hand a questioning of the self close to Bateson's epistemology, and on the other, possibly informed by Maturana and Varela's later research into the observer, his dismantling of the purported objectivity of ethnographic observation, which rather than representing a preexisting reality, creates one that responds to Western subjectivity through the actual act of observation.

THE THINKING EYE

> "In the long run, technology may, like art, be a form of cognitive bootstrapping, an illusionary form of conquest over the forces of Nature. Both are vaguely deceptive in that they hold out the possibility of human transcendence, yet they only lead us back to a point where we can understand how we are dominated by our own perceptual illusions."
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> Jack Burnham, *Art and Technology: The Panacea That Failed*, 1980.

Before his trip to Venezuela, and in the midst producing *Video Trans Americas*, Downey began to work on a parallel project, a series of documentary-style videos, that reflected on Eurocentric and Western culture through semiotic analysis. The title of this series was *The Thinking Eye* and according to unpublished handwritten notes, Downey envisioned it as "a parallel strategy" to *Video Trans Americas* that would project the anthropological gaze on Western culture. The title, *The Thinking Eye*, and the premise of this series of works could very well follow up on the previous argument on the cybernetic refashioning of the role of the observer and how Downey's interpellation of ethnographic observation was inflected by the cybernetic rhetoric.

This series of videos, initiated in 1975 and continued throughout the 1980s, marks an important shift in Downey's work. As I mentioned before, following his experience in the Amazon, Downey would never return to his techno-utopian proposals and the cybernetic inflection that ran through his different bodies of work seemed to dissolve to give way to an interest in semiotic analysis. However, some of these videos continue to engage with the concepts of communication and feedback, *Information Withheld* (1983) for example, is in his words "a video essay about signs, in "high" art and in the everyday world (…) the signs we encounter in our everyday life such as road signs, traffic signals, and Olympic sports symbols, convey information clearly and rapidly while signification in the fine arts reveals its full complexity gradually and ambiguously."[53] Downey takes an essay by Leo Steinberg as a point of

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[52] Gregory Bateson, *Steps to An Ecology of Mind* (Chicago and London: The University of Chicago Press, 2000), 467.

[53] Juan Downey, *The Other Within*, unpublished draft for a conference, ca. 1989.

departure to speak to a lay audience about using linguistics as a method of interpreting art. In terms of a time-frame it is interesting to note that this shift occurs at the moment in which the forward-thinking technologically oriented discourse of the counterculture lost ground to the allegorical modes of address of postmodernism, intent of recuperating a historical past mediated by a nostalgic and melancholy gaze but also by adhering to the empty signifier as the quintessential figure of allegory. In this sense videos like *Information Withheld* (1983) and *Shifters* (1984) are clearly inscribed within the discourse of postmodernism. The series of videos he made on the subject of Velásquez' *Las Meninas* [*The Maids of Honor* (1975)] and *The Looking Glass* (1982) point to the persistence of feedback, the observer and other cybernetic themes in his discourse, made manifest in Leo Steinberg's analysis of the triangulation of gazes and reflections that articulate Velásquez's painting in *The Looking Glass*:[54]

> The painter gives us the real, the depicted and the reflected, as three interdependent modes, as three modalities of the visible that cause and succeed one another in a perpetual present, coexisting in ceaseless circulation:
> I see you seeing me […] I see you seeing yourself being seen— and so forth, beyond the reaches of grammar. Partaking of an infinity that is not spatial but psychological: an infinity not resident in external space, but in the mind that knows and knows itself known.[55]

Aside from pointing to the semiotic shift of the late seventies and early eighties, *The Thinking Eye* seems to mirror the demise of cybernetic thought as a driving force in culture and in the arts, as reflected in Jack Burnham's essay *Art and Technology: The Panacea That Failed*. After having been one of the most enthusiastic and articulate writers on the intersection between art and technology in the late 1960s, Burnham published this open disavowal in 1980 and proceeded to analyze the cause of that failure citing as significant examples the corporatization of E.A.T (Experiments in Art and Technology), and several exhibitions, in two of which Juan Downey participated, such as *Some More Beginnings*, *Cybernetic Serendipity*, and his own exhibition *Software* at the Jewish Museum. For Burnham, the lack of technological know-how eventually resulted in "dismal failures," but in essence he concluded that the nature of the rift between art and technology was metaphysical and not technical.

Though not necessarily in agreement with Burnham's rant, Downey may have come to a similar realization after his experience with the Yanomami, which would in some way account for his disengagement from techno-utopian proposals in his last body of work. However, we can trace in Downey's life-long investment in the cybernetic rhetoric parallel pathways that connect his heterogeneous bodies of work to the developments in cybernetic thought, from the extensions of man that he explored in his early drawings, the feedback dynamics that informed his electronic sculptures and his video works, his research into the invisible energies that enable modern telecommunications, to the questioning of the Western subject the he

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[54] Also the motif of a drawing entitled Leo's *Triangles* (1981).
[55] Author's transcription of a fragment of the video.

undertook with the works produced as a result of his stay with the Yanomami and *The Thinking Eye*.

Recent curatorial, academic revisions, and critical rehabilitations have demonstrated that the utopian promise of cybernetics is still very much alive, and despite his own disavowal, Jack Burnham's writings on systems and real time are reread today in the light of "relational aesthetics" and "institutional critique." A reading of Juan Downey's work on his own terms of engagement and commitment to cybernetic thought makes sense of his entire production as the exploration of an inquisitive mind into the new ontologies brought about by technological progress. Downey's relation to technology, working within the paradigm of *invention*, was certainly a metaphysical one and went far beyond technology itself to engage in a reflection on the different ways of understanding our mind, body, and their systemic relation to the environment. His use of the video medium in his successive bodies of work was at the service of his *communications utopia*, one that failed to materialize, like all utopian undertakings, but also one that perhaps persists in declaring: the medium is the message!

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