

Gianna Maria Gatti's *The Technological Herbarium*

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NOTE: Later in 2009, the AVINUS Verlag/Press of Berlin (<http://verlag.avinus.de/>) will publish Gianna Maria Gatti's book *The Technological Herbarium* in both English and German editions (the original book is *L'Erbario Tecnologico*, Bologna, Clueb, 2005). The Italian-to-English translation is by Alan N. Shapiro, and the Italian-to-German translation is by Dr. Helene Harth. This is the Preface to the book written by Alan N. Shapiro.

Gianna Maria Gatti's book *The Technological Herbarium* (subtitled: "Vegetable Nature and New Technologies in Art Between the Second and Third Millennia") is a study of 'interdisciplinary' works of art that exemplify the increasing importance of science and technology in artistic creation. Her analysis, however, goes beyond that of a journalistic or curatorial survey of artworks. Her work embodies the invention of a strong philosophical concept that enables the glimpsing - in the coming together of nature and new technologies in the domain of art - of a *new real*. The hybrid of art and technoscience is the carrier of a new worldview, a new era for cyberspace, new cognitive thought and cybernetic epistemology, and the emergence of authentic post-metaphysical thinking as pointed to by twentieth-century philosophers like Martin Heidegger, Jacques Derrida, Maurice Merleau-Ponty and Gregory Bateson. Metaphysics is distanced from existence and cogitates the employment of knowledge in the service of 'man's unfettered freedom' requiring the certainty of an 'unshakable ground of truth' to establish its validity. It is the anthropocentric arrogance of Man vis-à-vis the environment and other living beings - leading ultimately to His suicide - that will be brought into question and actively deconstructed by this oeuvre-in-movement co-authored by new media/new technologies artists and their muses who, to express it *eco-poetically*, are secretly transmitting knowledge and inspiration to them from the elsewhere of the wounded planet Gaia finally starting to defend herself and her future. This fascinating

collaboration carries out what the epistemologist of second-order cybernetics Francisco Varela called "the co-definition between knower and known," declaring artists to be "the proclaimers of the core knowledge of the real."¹ To the cooperation between artist and world is added the contribution of the user or 'immersant' in the shared communicative aesthetic experience of virtual reality environments. In this context, Gatti considers the *Planetary Garden* exhibition of curator Gilles Clément ("Garden of Knowledge" and "Garden of Experiences"). Clément's 1999-2000 Parisian exposition at the Grande Halle de la Villette addressed the condition of separation between humanity and nature in their cohabitation of planet Earth, and the possible overcoming of this estrangement.

Gatti engages in a wide-ranging reflection on non-human life-forms. What is the identity of living beings which are Other than human? In pursuing this question, her two principal objects of inquiry are the vegetable kingdom and Artificial Life. She contemplates in a single conceptual framework the two extremes of the most ancient eons-old life-forms produced by Nature and the newest forms of life produced by our most advanced contemporary Technology. On the one side: trees, plants, and flowers. On the other side: the erupting vitality of informatic, virtual, and software objects-creatures. Gatti's research is a profound reflection not only on art's brush with computer technologies, but also on biology, deep ecology, the existent, the living organism, life itself. It is an Enlightened meditation on and recognition of the mutually beneficial potential relationship between the Natural and the Artificial, a significant departure from the critical thinking that defends the 'authenticity' of the former against the 'imposture' of the latter.

The breadth of Gianna Maria Gatti's *The Technological Herbarium* is reminiscent of Stanley Kubrick's epic film *2001: A Space Odyssey*. What is implied by Kubrick and Clarke is the imminence of a change in what technology is for humanity, shifting from being a tool for the 'domination of nature' and a weapon in the killing-madness of war to technology redefined as a Friend of the Earth" (T.C. Boyle) and a helper in the life-affirming organization of peace.

The twenty-five or so artworks investigated by Gatti are in dialogue with the field of scientific knowledge. The artists whose creations are brought together in her Herbarium have confronted the theme of vegetable nature while at the same time working with new technologies and new media. In their installations, they make

use of computers, electronics, video, Internet (net.art), telerobotics, telematic networks, remote telepresence, mechanical engineering, bionics, and transgenics. Hardware, software, and wetware. The virtual, the digital, and the informatic. Interactive participatory works and environments invite the user to discover her 'polysensoriality'. The perceptual-motoric-tactile dimension of embodiment is restored to equal standing with the symbolic-rational dimension emphasized by traditional art. The artist who utilizes information technologies designs "a semi-living entity, a work which in fact is 'open', since its outcome is not predefined by the artist, but is rather realized through the interventions and actions of the user." (Gianna Maria Gatti) The 'experience of metamorphosis' of virtual reality sensitizes us to, and enhances our awareness of, the real. "The 'virtual' proposes to us an other experience of the 'real'. In fact, it is the common notion of 'reality' that must be placed into question. Since 'virtual' realities are not less real than sensory experiences that we accumulate 'naturally'. Virtual images are not visual illusions, images of pure representation. On the contrary, these 'virtual' realities can be visited, explored and even touched."² (Philippe Quéau)

Gatti probes art projects and works from the last thirty years. She makes a collection of technological artworks and calls it a 'technological herbarium'. "A herbarium gathers together or illustrates with scientific methods a sampling of plants, indicating their names and describing their properties, for the purpose of documentation and practical use, for the most part medicinal." Gatti's *Herbarium* metaphorically recalls the classical herbarium, but has its own criteria of selection, arrangement and classification. In three principal chapters - on "Real Vegetables and New Technologies," "Artificial Vegetables: Electronic and Digital," and "Vegetables and Technologies of the Living" - the major groups within the Herbarium's structuring are presented. Gatti photographs artworks and installations, interviews the artists, but above all writes about each work – thinking it through while admiring it. She is a curator, a gardener, a cultivator, and an artist herself – in this case an artist of the collection. As Jean Baudrillard explains in *The System of Objects*, the subject's relationship to the object is inherently one of passion.³ In its non-practical mode, the pure or 'beautiful' object is held dear as part of an assortment or compilation. The human orderer of things may collect porcelain eggs, Persian miniature portraits, matchboxes, rare books, postage stamps of a certain country or baseball cards. But it is my own stature as a singular being that I civilize and refine as I exercise my taste and discrimination in seeking out objects

which are more and more singular. There is a secret rule - known only to the collector, but perhaps concealed even from her - that governs the choice or selection of the individual pieces in the collection. For Baudrillard, what I really collect is always myself. "The last [item] in the set is the person of the collector."⁴ The most complete collection is paradoxically the one with at least one member missing from its array of objects. Assignment for the reader: which important item is missing from Gianna Maria's collection? It is the subjectivity of the collector, according to Baudrillard, which finally makes its appearance as a sort of proxy for the last missing item of the collection.

In Chapter Two, "Real Vegetables and New Technologies," Gatti examines artworks that juxtapose aspects of these two 'kingdoms'. The artists either insert the technologies into natural environments or position the vegetation among specially designed pieces of equipment. The first works that Gatti considers are: Piotr Kowalski's "Dressage d'un cône" ("Erecting a Cone"); Nissim Merkado's "Bio-acoustic Garden"; and Erik Samakh's technological ecosystems, as well as his installations that reflect his fascination with bamboo. Then, in the sphere of net.art, Gatti ponders "The Telegarden" by Ken Goldberg and his collaborators; Eduardo Kac's "Teleporting an Unknown State"; Nicola Toffolini's "Naturale che piove: fare il bello ed il cattivo tempo" ("It's Raining, Naturally: Making Good and Bad Weather"); and Alessandro Quaranta's "Il mondo ridotto a minimi termini" ("The World Reduced to Minimal Terms").

In Chapter Three, "Artificial Vegetables: Electronic and Digital," Gatti contemplates artworks where technological languages play a major role. Vegetables are recreated as digital images, or in videos or virtual realities. They receive a new identity in the technological world as 'second nature'. Gatti examines the works "Planimetry of a Harvest", "Without Petals", "Like a Breath of Wind", and "Cabled Garden" by Pietro Mussini; Katsuhiko Yamaguchi's video 'gardens of the future' such as "Laser Tree", "Hello, Old Pond", "Stream", "Over the Garden", "Responsive Windows", "Galaxy Garden", and "Electronic Zen Garden"; the works "Sow to the Four Winds" and "To Breathe is Not to Play" by Edmond Couchot, Michel Bret, and Marie-Hélène Tramus; Tamás Waliczky's Trilogy of "The Forest", "The Garden", and "The Way"; Bill Viola's "The Tree of Knowledge"; Alain Josseau's "Tree Carried Shadows"; and Charlotte Davies' "Osmose".

In Chapter Four, "Vegetables and Technologies of the Living," Gatti considers artworks where there is a full-fledged emergence of the biological model. Informatic technologies are wielded by the artists to transfer life into digital beings. These A-Life creatures undergo evolutionary processes and enjoy growth properties mirroring those of real living organisms. Combining the characteristics of the Natural with the limitless potentialities of the Technological, the resulting entities are in important ways actually alive. Gatti deliberates both on Genetic Engineering and on its artistic parallels in transgenic and biotech art that are often making critical, ironic or parodistic commentaries on that practice. Artificial Life artefacts exhibit self-learning, self-organization, self-determination, and autopoiesis. Their development is sometimes affiliated with techno-scientific innovations like neural networks and genetic algorithms. Gatti examines Piero Gilardi's "The Trees" ("Unlikely", "Ixiana", "Nature Carpets", "Tree '88", "Fire", and "Talking Trees"); Christa Sommerer and Laurent Mignonneau's "A-Volve", "Life Species", "Phototropy", "Interactive Plant Growing", and "Trans Plant"; Bruce Damer's "Nerve Garden", "Sherwood Forest", and "The U"; Jean-Louis Boissier's "Flora petrinularis"; Eduardo Kac's "Green Fluorescent Proteins", "Alba" or "GFP Bunny", "The Eighth Day", and "Genesis"; works of the Australian collective *SymbioticA* such as "Fish & Chips", "Pig Wings", and "Disembodied Cuisine"; George Gessert's "The Family of 'Mark Tobey' from Origin" and "Scatter Project"; Amy Youngs' "Rearming the Spineless Opuntia"; Aniko Meszaros' "Plant Anima"; Heath Bunting and Rachel Baker's "Natural Reality SuperWeed Kit 1.0"; and Natalie Jeremijenko's "OneTrees".

In commenting poignantly on the work of the Swiss biologist Adolf Portmann (*Aufbruch der Lebensforschung: Der Mensch in einem neuen Weltbild*), Gatti gives us an insight into the important new area of research known as Holistic Biology.⁵ "What is auspicious in Portmann," writes Gatti, "is that, for him, a holistic biology regains, in the study of the living, this conception of interiority and of its self-presentation, taking them into account as primary properties of life." She adds: "Portmann elaborates the innovative concept of 'self-presentation': the distinctive and always different way that each organism shows itself to light and thereby relates itself to the surrounding environment; this demonstration is a symptom for Portmann of a precise albeit unknown 'interiority', the specific 'authentic' mode of being of each individual." "Life finds a way," as Dr. Ian Malcolm, played by Jeff Goldblum, remarks in *Jurassic Park*.

In another great book in the budding field of Holistic Biology (*Reflections on a Theory of Organisms: Holism in Biology*), Walter M. Elsasser argues that the task of elaborating a truly scientific biology still lies ahead of us.⁶ Physics and chemistry, in their current states of knowledge, are truly scientific, according to Elsasser. Physics, for example, reached scientific status with the unfolding of the twentieth-century theoretical systems of quantum mechanics and relativity. Biology, on the other hand - molecular, evolutionary and genetic biology - is not scientific. It is reductionist. Current biological paradigms reduce our understanding of the living organism to a combinatorial model or formula such as the genetic code. But the genetic message is only a symbol of the complete reproductive process. "The message of the genetic code," writes Elsasser, "does not amount to a complete and exhaustive information sequence that would be sufficient to reconstruct the new organism on the basis of coded data alone."⁷

This reductionism on the part of biologists corresponds to the computational paradigm of binary or digital computing that has been available to us in the twentieth century. It is almost as if the biologists decided, since this is the limit of the computing power that we have, we will devise a biology that functions within the restrictions of what we can compute. It is the question of how do we deal with complexity. Within the existing or dominant computing paradigm, in order to deal with a complex problem, we break down the problem into smaller, more manageable parts. This is essentially the Cartesian Method. But it is impossible to apply the Cartesian Method to quantum-mechanical generalized complementarities like the wave-particle duality or the Heisenberg Uncertainty Principle. Whereas the Cartesian method may work for mechanical systems, it cannot be of much use when we aspire to the understanding or creation of something that is living. The more correct approach that would correspond to a breakthrough into twenty-first century science would be to identify relationships of similarity, to find *samples* or *patterns* that capture something of the vitality and complexity of the whole without breaking it down in a reductionist way.

We need a Holistic Biology where we consider the living organism in its true complexity. The structural complexity of even a single living cell is 'transcomputational'. Elsasser writes that the computational problem of really scientifically grasping a living organism (or organic structure) is a problem of

unfathomable complexity. The single living cell is involved in a network of relationships with all life on the planet, with the planet itself, and with the history of life. The individual member of a species decodes in real-time, as it faces each new circumstance, its species-memory. It creatively retrieves this species-memory through a process of information transfer that is effectively 'invisible', and does not take place via any intermediate storage or transmission media. Holistic information transfer happens over space and time, "without there being any intervening medium or process that carries the information."⁸ Whereas the genetic code is memory considered as 'homogeneous replication', holistic memory is one of 'heterogeneous reproduction'.

As a 21-year-old student at the Massachusetts Institute of Technology (MIT), Claude Shannon (the 'father' of information theory) wrote a master's thesis in 1937 called "A Symbolic Analysis of Relay and Switching Circuits," where he applied Boolean algebra to Electrical Engineering, and this was the beginning of modern digital switching theory. Harvard University Professor of Cognition and Education Howard Gardner has dubbed Shannon's work "possibly the most important, and also the most famous, master's thesis of the century." Gianna Maria Gatti's *The Technological Herbarium* began life as a master's thesis. Gatti studied art at the Department of Drama, Art and Music Studies (DAMS) in Bologna, where Umberto Eco formerly taught. I predict that *The Technological Herbarium* will enjoy a long and prosperous life, and will eventually be recognized as a major work that will exercise a seminal influence in several different fields of knowledge. It will change the way that we think about works of art, and about visual culture. It will point towards the maturation of Holistic Biology, and of Holistic Computer Science as well. *The Technological Herbarium* tells us something very important about Artificial Life, about its meaning and where it is going. It is also a major contribution to Cybernetic Epistemology, which was originated by Gregory Bateson, and recently reinvigorated by Steve Valk, Jeffrey Gormly, and Michael Klien with their Radical Institute of Cybernetic Epistemology (RICE).

Finally, through Gatti's book, we learn a great deal about the fascinating and very valuable Italian reflection on technology and society, and on cyberspace and cyberculture, that has unfortunately not yet become well known outside of Italy. This large body of work in techno-theory expresses views and perspectives about computer technology which are extremely different from those which have

predominated since the 1990s in English-speaking countries and in Germany. Gatti refers throughout *The Technological Herbarium* to the impressive and prolific work of her mentors Franco Torriani (an art critic and theorist who is interested in artistic languages and multimedia, and is one of the leading exponents of *Ars Technica*, an association which brings together artists, scientists, authors and critics interested in new media – not to be confused with the same-named blog-style technology and gaming news website) and Pier Luigi Capucci (who has taught communications, multimedia, computer graphics and animation, simulation technology, new media theory and praxis, and visual arts at the University of Rome "La Sapienza", and at the Universities of Bologna, Florence and Urbino). Capucci is also the Founder and Director of the website NOEMA (<http://www.noemalab.org>), which, along with Arthur and Marilouise Kroker's CTHEORY (<http://www.ctheory.net>), I consider to be the very best online magazine for technology and media theory. The IDEAS section of NOEMA has been publishing great articles in Italian and English for about a decade. The writings of Torriani, Capucci, and other authors belonging to this Italian art and techno-theory scene clearly deserve more widespread translations and publications in English and in German.

The Italian reflection on cyberspace is more grounded in philosophy, more connected to art, and more related to social problems than any perspective on technology that has been familiar to us outside of Italy during these past twenty years. It is a worldview interested in bringing back play, creativity, freedom, variety, self-management and autonomy into that everyday life activity of modern civilization that we call work. My involvement with Italian language and culture began when I lived in Bologna for about two years in the late 1970s, in the wake of the Student Movement of 1977, which had its greatest power in Bologna and Rome. The constellation of radical leftist movements at the time included feminism, the struggle for homosexual rights, and the struggle for the rights of the unemployed and marginalized (the so-called *non-garantiti*). Different from Sylvère Lotringer of *Semiotext(e)* who interested himself in the Autonomia Movement (too connected to violence from the standpoint of my political ethics), or from some neo-Marxists in the English-speaking world who became especially interested in the works of Antonio Negri, what has interested me the most about the Italian Movement of 1977 was the group of artist-activists known as the Metropolitan Indians (*Indiani Metropolitani*). The Metropolitan Indians painted murals and drew graffiti on the

walls of Bologna (many of which are still to be seen today, for example in Via delle Belle Arti). They built buses out of papier-mâché. They danced and sang in the streets. They referred themselves to Native North American Indian cultures. They loved art and creativity and play. Theirs was a cultural revolution. I find an echo of this Italian Spirit of 1977 of the Metropolitan Indians in Gianna Maria Gatti's magisterial reflection on nature, technology and art, *The Technological Herbarium*.

I made the decision in 2006 to personally translate *The Technological Herbarium* into English because, of all the books about technology that I knew of, it was the one whose perspective was the closest to my own publication *Star Trek: Technologies of Disappearance* (Berlin: AVINUS Verlag/Press, 2004), and to the work which I have done since writing that book. It has been my pleasure to interact intensively with Gianna Maria Gatti during the preparation of this edition; to interact via e-mail with many of the artists whose works are discussed; to persuade Dr. Thomas Weber of AVINUS to also publish a German-language edition of *The Technological Herbarium*; to meet Dr. Helene Harth, a highly distinguished Professor of French and Italian Literature in Germany who agreed to do the German translation; to enhance many of the notes and bibliographical references in the context of an English-language publication; to select images of the artworks and check out many of the interesting websites referred to; and to have a crack at some very interesting translation challenges from Italian, French, and German into English, including doing an original translation of Goethe!

Notes

1 - Francisco J. Varela, "The body as an ontological machine: the real sense of the virtual," in Various Authors, *ArsLab. I sensi del virtuale*, (Milan: Fabbri, 1995); pp. 148-150.

2 - Philippe Quéau, "Le virtù e le vertigini del virtuale" ("The Virtues and Vertigoes of the Virtual"), in Pier Luigi Capucci, *Realtà del virtuale: Rappresentazioni tecnologiche, comunicazione, arte* (Bologna: CLUEB, 1993); p. 183. Originally published in French in *Art Press Spécial. Nouvelles technologies: un art sans modèle?* ("New Technologies: an Art without Model?"), (12:1991).

3 - Jean Baudrillard, *The System of Objects* (translated from the French by James Benedict) (London: Verso, 1996).

4 - Ibid., p. 91.

5 - Adolf Portmann, *Aufbruch der Lebensforschung: Der Mensch in einem neuen Weltbild* (Zurich: Rhein-Verlag, 1965). Italian translation: *Le forme viventi: Nuove prospettive della biologia* (translated by Boris Porena) (Milano: Adelphi, 1969).

6 - Walter M. Elsasser, *Reflections on a Theory of Organisms: Holism in Biology* (Baltimore, MD: The Johns Hopkins University Press, 1987, 1998).

7 - Ibid., p. 46.

8 - Ibid., p. 148.