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INTRODUCTION

LEONARDO JOURNAL

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by Roger Malina
leo@mitpress.mit.edu

The Leonardo Network at Work

 The Leonardo network is still glowing from the success
 in the Leonardo lawsuit. There is no doubt that our
 ability to defend ourselves was in large part due to
 the mobilisation of the professional community. Working
 on line has become so ingrained to our way of being, that
 we perhaps do not always realise how much it has changed
 our instinctive behaviors. The late Francisco Varela in his book
 ÒEthical Know-How: Action, Wisdom and CognitionÓ
 (Stanford University Press 1999) insisted that cognition
 should not be viewed as the building of systems of representations
 but as embodied action. Ethical behavior taking, as he
 viewed it, the middle way between spontaneity and rational
 calculation. The lawsuit against Leonardo triggered
 spontaneous actions by several thousand people across
 the globe, systems of organised behavior were put into
 place, money was raised and hundreds of thousands of others
 became aware of the issues through broad international
 media coverage. It is hard, having lived through this,
 not to think of what happened in terms of emergent
 behaviors of complex systems ,the mind at large, and
 other metaphors that are now very much part
 of the intellectual history of the Leonardo network. All
 I know is that our cognition was changed in the process
 and a desired, right, outcome was obtained.

 Meanwhile the Leonardo network is very much at
 work, on line and face to face. You will soon see
 announcements from the following Leonardo working groups :

 Barbara Williams and the Leonardo Prize and Awards
 Committee will soon be announcing the winners of
 the Leonardo Award for Excellence for an article published
 in Leonardo. They have issued a call for nominations for
 the Leonardo Lifetime Achievement Award.

 Stephen Wilson and the Search Committee for a new Editor
 in Chief of this publication, the Leonardo Electronic Almanac
 have made their decision and will shortly be announcing the
 name of the new LEA Editor in Chief.

 Joel Slayton and the Leonardo Book Series Committee have
 recently concluded agreements with MIT Press for several
 new books that will be appearing in the series.

 Beverly Reiser and the ISAST International Advisory
 Committee are reviewing a number of new collaboration
 Proposals for Leonardo that will be approved at the July
 ISAST Board meeting.

 Annick Bureaud and the Frieda Ackerman Working Group
 will be releasing a number of new art historical
 texts as part of the Leonardo Pioneers and Pathbreakers
 Art History Project.

 Jocelyne Rotily and the Leonardo Virtual Africa Working
 Group will be announcing a workshop on the Power and Spirit

Of Water.

All of these Leonardo working groups work on line,
and in most cases the members have never met physically.
Working on line is so part of their very being that
much of their way of doing has become instinctive,
and indeed their group cognition is enabled through
mediated action. Our success in the Leonardo lawsuit
is a communal success, and the achievement of a group mind.

We take this opportunity again to thank all those that
responded spontaneously and helped the Leonardo network
survive.

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[Following is an abstract and excerpt of an article currently being
reviewed for publication in Leonardo.]

< The Dilemma of Media Art: Cybernetic Serendipity at the ICA
London >
Rainer Usselmann, E-mail: <Rainer@usselmann.fsnet.co.uk>

Abstract:

One year after the 1967 "Summer of Love," and at a time of
considerable political unrest throughout the United States and
Europe, Cybernetic Serendipity---The Computer and the Arts opened at
the Institute of Contemporary Art in London to much critical and
popular acclaim. This paper outlines the remit of this seminal
exhibition and investigates some of the accompanying press echo in
order to address a key question: how media art deals with its own
historicity and the underlying socio-economic forces that render it
possible. More than a quarter-century later, Cybernetic Serendipity,
a paradigm for the ever-shifting boundaries between digital art,
commerce and technology, epitomizes some of the complicated dynamics
that comprise the gamut of media art today.

Happy Accidents

One year after the "Summer of Love" and at a time of considerable
political unrest throughout the United States and Europe, Cybernetic
Serendipity---The Computer and the Arts opened at the Institute of
Contemporary Art in London on 2 August, 1968. Under the curatorship
of Jasia Reichardt, then assistant director of the Institute, the
exhibition brought together work from a total of 130 contributors, of
whom 43 were composers, artists and poets, and 87 were engineers,
doctors, computer scientists and philosophers. One of the ICA's most
successful projects, Cybernetic Serendipity drew an audience of
between 45,000 and 60,000. According to Reichardt, the exhibition
"had visitors of all ages, all types, all nationalities, all

classes." The exhibition closed on 30 October, 1968.

The title of the exhibition suggested its remit: to make chance discoveries in the course of using cybernetic devices, or, as the Daily Mirror put it at the time: "the use of computers to find unexpected joys in life and art. It was structured into three main areas; the first was made up with computer generated graphics, film, music and poetry. The second section was devoted to cybernetic devices, ie. interactive installations, robots and painting-machines. The third area was a "learning zone," which dealt with the history of cybernetics and the demonstration of computer uses. Overall, a strong emphasis was placed on computer graphics and electronic music with countless examples of pendulum drawings and abstract geometrical patterns. A number of "environments" by Wen Ying Tsai, James Seawright and Gustav Metzger amongst many others, deserve mention as do Lowell Nesbitt's opaque, monochrome paintings of IBM computers. Presentations by General Motors and Boeing concluded the collection of exhibits.

Embracing a whole new gamut of technological processes, the curators and administrators at the ICA had to deal with an unprecedented level of logistic complexity. Instead of handling traditional artifacts, they found themselves in charge of exhibits of extremely fragile computer technology, which proved difficult to set up and maintain. Interactive systems in neighboring exhibits interfered with one another and sound insulation proved a major problem. When compared to traditional projects, the difficulties involved in keeping the exhibition in working order were greater by several orders of magnitude. Due to the unprecedented cost involved in mounting Cybernetic Serendipity, the pressure towards commercial success was considerable. Substantial funding and expertise from industry sources had to be procured, inevitably compromising a critical attitude towards technology. However, the resounding success of the exhibition seemed to vindicate the project.

The media reception of Cybernetic Serendipity was on the whole extremely favorable, too. In a review symptomatic of much of the press for the event, The Evening Standard enthused: "Where in London could you take a hippy, a computer programmer, a ten-year-old schoolboy and guarantee that each would be perfectly happy for an hour without you having to lift a finger to entertain them?" The Guardian agreed that it "lured into Nash House people who would never have dreamed of attending an ICA exhibition before." Fun for the whole family could be had, since Cybernetic Serendipity attracted not just "art-gallery haunters. Children, scientists and the simply curious could spend fascinated hours in this world of computer art." The press seemed in unanimous agreement that, finally, there was an art exhibition that was "guaranteed to fascinate anyone from toddling age to the grave." Even the writer in The Lady felt compelled to urge that "one must go to the present exhibition at the Institute of Contemporary Arts, [É] not to understand in the least what is going on but to experience that particular tingle which is inherent in an act of threshold-crossing." Art critic Jonathan Benthall declared that Cybernetic Serendipity would be remembered as a "landmark," not least due to its "breeziness and catholicity." Others were less obtuse but agreed in principle: "For breaking new ground, revealing new fields of experiment, seminal importance, sheer hard work and enormous organization, the exhibition Cybernetic Serendipity [...] is arguably the most important exhibition in the world at the moment." Aside from the almost unanimous consensus that Cybernetic Serendipity was worth seeing, two recurring themes can be identified in the wake of the exhibition...

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< Statements from the Burning Man Festival >

[Following are statements by artists who have participated in the
Burning Man Festival, an annual arts/cyberculture festival in the
Black Rock Desert of Nevada. See LEA Vol. 9, No. 4 for additional
statements. These are part of a Leonardo project undre the
coordination of Louis Brill]

Draka: The Flaming Metal Dragon
Lisa Nigro
E-mail: <zedragonlady@hotmail.com>; WWW:
<http://www.wigglebiscuit.com/dadragoncrusade>,
<http://www.drakathedragon.com>.

Draka is the Flaming Metal Dragon I built as a mobile Art
Installation for the Burning Man 2000 festival. In relation to the
Burning Man theme of "the Body," this creature was designed to
function as the Man's SPIRIT. I named my art installation Draka, a
more feminine interpretation of Draco the constellation.

From the onset, the beast was to be mobile, so we could transport
people to other art installations and events around the Playa. The
Dragon became a four-vehicle Party Wagon Extraordinaire. Her
impressive 25-foot bursting breath-of-fire was hard to miss. She was
gothic in size and expression; everyone wanted to jump on an over-
crowded compartment for fun and a tour of Black Rock City. At birth,
she measured 124 x 12 x 22 ft with a wing-span of 30 feet; her train-
like appearance being attributed to the connection of one truck to
three trailers.

The "Belly" was built on a 1980 Ford Econoline one-ton box truck.
This section supported her head, neck and wings plus a saddle on her
back with the rear of the belly being secured by two hand-made
medieval-looking wooden doors. Her wings were made from square
tubing, steel rod and parachute material spray-painted gold. Designed
to open and close with a rope and pulley system, we met failure with
high winds and a dust storm, which mangled them enough to where we
had to keep them either opened or closed.

With a core crew of about ten, mostly women, and another 40
volunteers trickling in and out, we managed to build her within three
months. Draka's exterior was covered with metal "scales," which were
cut with a torch from 55-gallon barrels, spray painted, arranged and
connected in rows then welded into place. The underside of the Dragon
was completed with wood shingles and, like the barrels, these were
gathered from local Nevada ranches.

The driver's "cockpit" ended up having a real "road-warrior" feel,
with its red-washed walls, fur and leather-wrapped steering wheel and
no windshield. There was just enough room for the driver and flame-
thrower controller to sit cozily next to the 30-gallon propane tank.
By flipping a switch, we released 75psi of pressurized propane from a
plenum chamber through a solenoid valve, causing a large burst of
fire at the ignition source seated strategically in the Dragon's
mouth. With safety in mind, we had at least one flame-patrol person

in front of us to clear the way.

The second trailer, "Bar, Lounge and Kitchen Compartment," featured curved benches lined with red velvet quilting and backed with black fur, zebra print rug and bar covered with shingles. The third trailer, "Entertainment Car," was created for carrying musicians, equipment, djs and performers. The fourth and smallest trailer, "Tail Section," finished off the piece and was utilized for storage of maintenance supplies and a generator.

Draka is currently being modified and will operate as Burning Man's first mode of public transportation in Black Rock City 2001---Dragon Public Transportation (BRC-DPT). Eventually, I'd like to see Draka travel to outdoor sculpture parks across the country and possibly even in Europe.

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Audio Fractal Adventures by An Audio Fractal Scientist
Doctor Friendly
E-mail: <drfriendly@earthlink.net>; WWW: <www.eternalnovelty.com>

The Nebulous Entity was the nerve center of an alien civilization, a mobile sculpture, a performance piece, a technological satire of our society and a shambling mass of tentacles and bric-a-brac. It roamed Burning Man 1998 with a sea of extraterrestrials in tow, emitting fractally structured gibberish and calling into question all notions of reality, information theory and life itself.

The Nebulans began as a pageant play, a story of an alien culture incestuously merged with its own technology, scouring the universe for new sources of information. The Entity was their info consumption nexus, embodied by sculptor Michael Christian. When I heard of the project, I had been working on the use of biologically-inspired fractal algorithms to create sound. I proposed creating a voice for the Entity.

The Nebulous Entity sound system consisted of a laptop computer running software I wrote in Matlab, driving four large speakers. Its hard drive stored over 500 samples---commercials, television, radio and movie clips and other sounds frequently heard in our culture. The system also automatically collected samples from its environment through a microphone on the Entity itself. The software continuously generated fractal waveforms and used them to layer randomly selected samples, playing them at varying speeds, forward and backward, and at multiple times.

The system ran night and day, giving rise to moments of great serendipity. One afternoon as a sudden windstorm rose, The Entity began to emit multiple copies of the dish-washing detergent tag-line, "It's not nice to fool Mother Nature!", complete with a punctuating thunderclap, at several speeds simultaneously and at enormous volume, causing considerable amusement among the occupants of the surrounding flattened tents.

Encountering a 32-ft tall pulsating mass of tentacles, surrounded by a wild mob of glowing aliens in the middle of nowhere, belting out orgasmic cries and sped-up commercials for the Army National Guard is enough to give even the most over-stimulated hipster pause. The Entity sought to annihilate preconceptions of standard culture, and for those days in 1998 it stomped them flat.

The Friendly Fractal Dome arose from my continued work on the use of biological metaphors to create sound. I had developed some autonomous

systems capable of producing fascinating soundscapes entirely from scratch---without using samples or conventional synthesis techniques. The sound's primitive, evolving and enveloping quality seemed perfect to share at the festival. I envisioned a womb-like space, inverting the usual BM environment---bright, exposed, windy, loud, unpredictable---into a sound-insulated dome, 16 feet in diameter, lined with foam and artificial fur, dim, with four studio monitors producing a quiet mix of quadraphonic audio fractals. The entrance was a 2-foot diameter tube, 3 feet long, encouraging those who entered to stay a while. The dome got rave reviews, and was jammed full for the whole week; as many as 2000 Burners experienced the work. (A stereo version of the soundtrack is available at my website, www.eternalnovelty.com.)

I have been involved with two other large installation works at Burning Man: The Futura Deluxe (1999) and Doctor Friendly's Friendly Fractal Dome (2000). (The Futura Deluxe is described above by my collaborator and colleague Steven Raspa.) For BM 2001, I will be using a larger version of the Dome to share the new video-audio form of my fractal work. It will be situated in the Center Caf□.

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The Tele Stereoscope
Cassidy Curtis and Chris Whitney
E-mail: <cassidy@eyestilts.com>; WWW: <http://www.eyestilts.com>.

The Telestereoscope is an optical device that alters one's perception of the world by increasing the distance between the eyes. This has a subtle but often profound effect on one's sense of depth, size and distance. People have a wide range of reactions to the experience. Some say it makes the world seem miniaturized: cars become toys and landscapes look like model train sets. For others, the environment deepens and splits into many distinct planes.

What causes this range of perceptual effects is a conflict between incoming information and deeply wired visual expectations. The device greatly exaggerates interocular disparity while leaving most other cues intact. One's visual system is forced to resolve this dissonance when calculating depth, size and distance. The results vary from person to person.

The piece was inspired by the overwhelming scale of the Black Rock Desert, which I experienced for the first time at Burning Man 1999. The other inspiration was a stereo photograph I once saw of the Grand Canyon, shot with two cameras ten feet apart. In the photo, the canyon looked much smaller, like a very detailed movie set. I realized that if one's eyes were really that far apart, the desert would seem to shrink down to a much more comprehensible size. I envisioned a device that would use mirrors to create this effect. Chris Whitney, an expert at metal fabrication, enthusiastically joined me in the design process and made it possible to actually build such a device.

To function at Burning Man, our device had to be sturdy enough to withstand heat, cold, rain, wind and the playful hands of thousands of participants. It had to spin in all directions, have an unobstructed view, but be within reach of viewers short and tall. This combination of engineering constraints gave rise to a familiar form: a stick-man with upraised arms, not unlike the Burning Man effigy.

In the desert, the Telestereoscope took on its true nature as an interactive toy. People climbed onto it and spun around as fast as

they could. The other participants, with their elaborate costumes,
vehicles and sculptures all became a part of the surreal three-
dimensional show. And the ever-changing environment of dust storms,
thunderclouds, sunsets and lasers brought many people back for return
visits. There were some surprises even for us: on one hot afternoon,
I found I could see shimmering heat mirages leap out from the horizon
in sharp relief, a visual treat I never would have dreamt possible.

On a personal note, the Telestereoscope was the quintessential
Burning Man experience for us. We conceived it as a gift to the
community, and as a challenge to ourselves. The result was the most
rewarding artistic collaboration imaginable.

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    |      LEONARDO DIGITAL REVIEWS     |
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Three fascinating reviews lead this month's Leonardo Digital Reviews
listing. Quite coincidentally, they each draw attention to the
centrality of the binary opposition between technological and the
organic that (it is argued) forms the foundation of modernism. Sean
Cubitt's review of Architectural Disorders makes this most explicit
in his discussion of Pierre Francastle's elegant thesis. Wilfred
Niels Arnold also identifies this debate in Philip Steadman's book on
Vermeer's techniques as the enduring controversy over the extent of
technical means "permitted" in an art-work. In this context, the
discussion of Vermeer's use of the camera obscura as a draughting aid
derives its currency from the deep, restricting structure of
modernism. The resistance to this constraint is drawn out in Robert
Pepperell's review of Palumbo's book New Wombs: Electronic Bodies and
Architectural Disorders. From David Topper's report on Structure in
Science and Art, it sounds as though this is a discussion that could
well have been more fully developed in the lecture series on which
the book is based. As Topper points out, the lectures are about
either science or art rather than science and art. A more ubiquitous
opposition is reflected in an art history viewed as an inevitable
drive toward realism and mimesis. Pepperell's second review this
month takes issue with this in a critique of The Life of a Style:
Beginnings and Endings in the Narrative History of Art by Jonathan
Gilmore.

In addition to the fortuitous juxtaposition of a debate that is
crucial to our intellectual community, this month's LDR has valuable
short reports from Mike Mosher and Roy Behrens on the more material
manifestations as they appear in The Whole Earth Review, and a number
of books on the processes of art and design (both digital and
applied). Carlos Palombini discusses Steven Feld's Rainforest
Soundwalks: Ambiences of Bosavi, Papua New Guinea, which also has an
ethnographic resonance that has been deployed in extracting us from
the crisis of theory. Finally, Roy Behrens draws our attention to
three videocassettes that appear to be close to this month's emerging
theme. The fact that in such diverse material there is a certain
unity may be a consequence of chance or an indication of something
much more significant---an overdue revision of history regarding the
idea of art and technology on the scale that Francastle's
intellectually ambitious work suggests.

All these reviews can be viewed in full at the LDR web site

(http://mitpress.mit.edu/e-journals/Leonardo/ldr.html) and many will
appear in an edited form in Leonardo.

Michael Punt
Editor in Chief
Leonardo Digital Reviews
Ldr@leonardo.org

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New this month at Leonardo Digital Reviews:

New Wombs: Electronic Bodies and Architectural Disorders, by Maria
Luisa Palumbo
Reviewed by Robert Pepperell

Art and Technology in the Nineteenth and Twentieth Centuries, by
Pierre Francastel
Reviewed by Sean Cubitt

Vermeer's Camera: Uncovering the Truth behind the Masterpieces, by
Philip Steadman
Reviewed by Wilfred Niels Arnold

Structure in Science and Art, edited by Wendy Pullan and Harshad
Bhadeshia
Reviewed by David Topper

The Life of a Style: Beginnings and Endings in the Narrative History
of Art, by Jonathan Gilmore
Reviewed by Robert Pepperell

Whole Earth Review
Reviewed by Michael Mosher

Digital Design: New Frontiers for Objects, by Paolo Martegani and
Riccardo Montenegro
Reviewed by Michael Mosher

Icons of Architecture: The Twentieth Century, edited by Sabine Thiel-
Siling
Reviewed by Roy Behrens

Icons of Photography: The Twentieth Century, edited by Peter Stepan
Reviewed by Roy Behrens

Icons of Design: The Twentieth Century, edited by Volker Albus, et
al.
Reviewed by Roy Behrens

John Sloan on Drawing and Painting: Gist of Art, by John Sloan
Reviewed by Roy Behrens

Camouflage Simplified, by Eric Sloane
Reviewed by Roy Behrens

Rainforest Soundwalks: Ambiences of Bosavi, Papua New Guinea, by
Steven Feld
Reviewed by Carlos Palombini

Air, Light and Utopia: The Modern Movement in Architecture, produced
by Ava Beer for Artel Productions Ltd. (1994). Available from Films
for the Humanities and Sciences at 800-257-5126 or <www.films.com>.
Reviewed by Roy R. Behrens

Paris 1900: Une Capitale des Arts, produced by Patrice Gather for
CNDP (1995). Available from Films for the Humanities and Sciences at
800-257-5126 or <www.films.com>.
Reviewed by Roy R. Behrens

1900: Art at the Crossroads, by Robert Rosenblum et al.
Reviewed by Roy R. Behrens

Russian Avant-Garde: A Romance With the Revolution, A Quadrat Film,
produced by Alexandre Krivonos for Vesterholt Film and Television.
Available from Films for the Humanities and Sciences at 800-257-5126
or <www.films.com>.
Reviewed by Roy R. Behrens

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International Compendium Prix Ars Electronica 1998

Springer Verlag: Wien, Germany; New York, NY, 1998. ISBN: 3-211-
83135-5.

Reviewed by Frieder Nake, Germany. E-mail: <nake@informatik.uni-
bremen.de>

It is uncommon for a book with an annual volume to be reviewed only
three years later. In the present case---the compendium recording the
entries and winners of the Prix Ars Electronica in 1998---the
successive 1999 and 2000 volumes have already appeared. However, a
new look at the older volume may reveal to what extent the book
offers more than a quick look at the most recent happenings in Linz,
Austria each summer.

The Prix is well-established in the field of electronic arts. It is
the most prestigious prize in the field, with considerable amounts of
money awarded to winners in four categories: Internet, interactive
art, computer animation/visual effects and computer music. The 1998
event also included a special award, cybergeneration, for those under
19 years of age. Although the contest has taken place for a long
time, the compendia have kept changing their publishers and formats.

Since they have now been moved to the Austrian branch of Springer
Verlag, the volumes have taken on a consistently attractive and
easily used format. They come in full color, with about ninety
percent of the pages illustrated. As always, the book is divided into
four sections, corresponding to the prize categories. There are also
two introductory articles by Leopoldseder and Schšpf, the editors who
have been the chief organizers of the event since its start. The book
is bilingual (German and English), and the reader can easily follow
the format although the German text occupies more space. The volume
ends with photographs and brief biographies of the members of the
five juries. Finally, there are lists of the names of participants,
complete with addresses and, in most cases, e-mail addresses. In
1998, there were 1,845 participants from 47 countries.

With the inclusion of the category of "cyberarts" beginning in 1997,
the prix is now better able to distinguish its thrust from the
historic computer art movement. The "under 19" special award drew
more than 500 entries from entrants as young as 3 years old. These
youngsters have a unique chance because they are the first to grow up
in a technology-influenced style, whose influence can be seen in
dance and music. 1998 was also the first year that the category
"computer animation" was expanded to include "visual effects." Each
category includes two awards of distinction besides the winner, who

takes away one Golden Nica, and there are also honorary mentions. In
the book, each category is presented by an introductory jury
statement and, if the jury so decides, statements justifying the
selection of each one of the awardees. Winners and honorary mentions
then get a chance to present their work. There are usually two pages
per entry, but winners are afforded more space.

Juries of the 1998 competition were generally rather enthusiastic,
although they expressed occasional critiques of individual awards.
The most critical appeared to be the computer music jury. They asked
what direction composers of digital music were going---backwards or
forward. Those most surprised about the quantitative and qualitative
turnout of applicants were the cybergeneration (under 19) jury. Works
in this category constituted the largest turnout, mainly via WWW
appearances or CD-ROMs.

As a resource of names, works and specialties, one should not miss
this compendium. Together with the other volumes, it constitutes an
important record of developments in the electronic arts. This entire
book series should be on the shelves of every institution offering
study programs in digital media or art.

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New Wombs: Electronic Bodies and Architectural Disorders

By Maria Luisa Palumbo. BirkhŠuser, Basel, Switzerland, 2000. 96 pp.,
illus. ISBN: 3-7643-6294-4.

Reviewed by Robert Pepperell. E-mail: <pepperell@cwcom.net>.

New Wombs is issued as part of a series called "The Information
Technology Revolution in Architecture" which, as the blurb explains,
reflects "on the effects the virtual dimension is having on
architects and architecture in general." In a critical reassessment
of the practice of making buildings in the context of new technology
and the (so-called) "information age," Palumbo starts with the
Renaissance projection of the idealized human body in mathematical
space (Leonardo's Vitruvian figure) and concludes with a scherzo
through some radical contemporary architectural projects. In reading
the book, it soon becomes apparent that the text is translated,
presumably from the Italian, since it has the air of a slightly
faltering interpreter. The sentences are often long, wordy and
sometimes unreadable: "The exploration of the limit between formed
and formless matter is translated into the articulation of enveloping
or folded cavities, capable of mediating organic and inorganic
inspiration, natural and technological fascination." (p. 56). This
does not mean, however, that the book is unable to impart ideas. The
huge diversity of material gathered together in such a small space
gives some sense of the fluid information overload that Palumbo sees
as an alternative to rigorous classical form, even if the effect is
sometimes like listening to numerous chords being played
simultaneously on a piano. The dissolving of static physical space
and boundaries in favor of semi-structured flow and continuity is,
Palumbo argues, the new "shape" of architecture which, womb-like,
extends beyond, and into, the human body. The world-view she
describes as "postorganic" is a familiar brew of biotech fusion,
Deleuzeian social theory and virtuality which, like much theory
written in this vein, tends to be impressionistic rather than
precise. There are moments, however, of revelation and humor: the
concept of compact form dissolving into spatial vibration is a
beautiful idea (p.53) and her re-visitations of experimental 1960s
architects like Archigram with their "walking cites" (1964) and Haus-
Rucker-Co's "Mind Expander I" (1967) are refreshing and amusing. The

book makes a strong case for regarding the human body as entirely
continuous with its environment. She discusses the driver's ability
to "feel" the car as an extension to their own body, thus allowing
tight manoeuvres (the driver winces if the car is bumped) and the
nomadic sense of space in which the "nomad incorporates the whole of
space under his own skin, because his tent is a house that never
interrupts his progress, but on the contrary accompanies it: space is
an extension, a prosthesis or vehicle for his own movement." (p. 71).
The book certainly improves towards the end, the writing style
becomes relatively lucid and the text is concluded with a useful
overview of relevant literature and sources.

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Art and Technology in the Nineteenth and Twentieth Centuries

by Pierre Francastel. Foreword by Yve-Alain Bois. Translated by
Randall Cherry. Zone Books: New York, 2000. 336 pages, illus. Trade
US$30.00. ISBN:1-890951-02-1.

Reviewed by Sean Cubitt. E-mail: <seanc@waikato.ac.nz>.

Pierre Francastel's most significant work, a book that had an
enormous impact on French architectural culture, was first published
in 1956 and, like most books on aesthetics of any serious interest,
bears the scars of its era. As Bois notes in his foreword, Francastel
is a chauvinist. He sees his book as correcting not just the
intellectual and historical errors of such major figures in the study
of technology and art as Siegfried Giedion and Lewis Mumford; he also
wants to attack their Americanism. In the post-War period of
reconstruction, as the Marshall Plan impacted so profoundly on
Europe's sense of its identity and its fading hegemony, Francastel
gives voice to a ferocious French nationalism. Only an Epistle
Dedicatory to de Gaulle could make this any clearer.

In itself, this is not a problem. Francastel gives a powerful
analysis of the Anglo-Saxon tradition. From Henry Cole, founder of
the Victoria and Albert Museum, John Ruskin and Herbert Read, whose
writings still inform the British art school tradition, through
Giedion and Mumford, Francastel digs out a binary opposition which,
he argues convincingly, structures modernism for a generation. It is
the opposition between the technological-mechanical and the natural-
organic. Design, art and especially architecture are formed over a
period of a hundred years, from mid-century to mid-century, by the
effort to make technology conform to organic principles. Yet, he
argues, the organic is not a category without its own history, and
cannot therefore be taken as a permanent principle.

Moreover, the organicism of Mumford, for example, is grounded in an
earlier, aristocratic disdain for trade, a disdain which gets its
strongest voice in Ruskin, for whom Francastel reserves his finest
rancor. "In these enlightened times," he writes, "it is unnerving to
see the accumulation of archaeological errors that turn a book like
The Stones of Venice into a veritable museum of scientific horrors,"
adding that the book "has a pompous, pontificating style and a
strained poetic tone that has lost much of its appeal" (p.40). On the
other hand, he reserves a warm regard for Giedion, and especially his
wonderful chapter, in Mechanisation Takes Command, on the history of
locks, and of the entirely new principles of mechanics embodied in
the innovation of the Yale lock.

Francastel's goal, beyond settling accounts with the U.S.A., is to
analyze and then to attack the thesis, largely presumed as axiomatic,
that art must elevate itself above commercially developed, machine-

produced goods. Accurately assessing the origins of this belief in the thought that civilization is the art of leisure, not that of work, he sets out to name and shame those who have promulgated the ideology of art's elevation above labor, describing the antithesis at one juncture, rather illuminatingly, as that between "sensibility and reason" (p.77). This he pursues through what is now a normative art history, in which the French Impressionists and the Cubists play egregious roles. That Francastel was well ahead of the field in noting the impact of current physical theories of light on these painters is not in itself enough reason to translate a book which is so often and so deeply of its own time.

What may perhaps rationalize the translation for contemporary readers is a second expression of the antithesis as "a confrontation between the concrete and figurative activities of our era" (p.74). The meanings of "figurative" slip from page to page, as we can expect from a writer who just predates the turn to language in cultural analysis. More significantly, so does the term "concrete," which is anchored in an idiosyncratic and fluid definition of the plastic "object." What we gain from this is sudden flashes, for example the realization that speed is a key category of contemporary experience and impacts on, for instance, the movement from raw material in need of shaping to amorphous masses of stuff that can be ordered in any quantity: the effect of steel, glass and, most of all, for Francastel concrete technologies in building. The reference to speed and quantity should remind us that among the late twentieth century's most influential figures we find two architects: Virilio as theorist and Xenakis in music. I would go so far as to argue that Xenakis' microtonalities and blocks of sound are the clearest exposition of Francastel's conceptualization of the new terms under which creativity takes place in either order.

A bold thesis underpinning much of the book is that architecture expresses more vividly than other media the social and technological relations of its epoch. There is a deal of sense to this, not least because it is clear that architecture has served throughout the last 150 years as a tool of empire, a forerunner of globalization and, not only in the imagination of Albert Speer, as monumental propaganda. A similar claim might have been made for film, a medium on which Francastel is largely silent; that this claim has not been made, or not with this sense of authority, has much to do with the cinema's lack of ambition.

If we are not so now interested in stories as in virtual worlds, not as riveted by psychology as by knowledge architectures, we can do worse than observe the intellectual conditions under which the computer came to have its contemporary shape. Far more than art, technological or architectural history, histories of computing have been decidedly US-centered: even Francastel's chauvinism has a counterbalancing role to play in contemporary studies of the art-technology interface.

The reader unfamiliar with architectural history will prefer to have an illustrated guide at hand: there are few illustrations, presumably only those selected and authorized for the first edition. Likewise, a copy of some of his key references would be useful. This is not a book for beginners, but it is a historical document of a stage in the critical interface on which this journal is founded, and has a great deal to tell us about where we came from.

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Vermeer's Camera: Uncovering the Truth behind the Masterpieces

Reviewed by Wilfred Niels Arnold. E-mail: <warnold@kumc.edu>

Many modern artists have incorporated mechanically derived images
into their pictures. Robert Rauschenberg (1925-) and Andy Warhol
(1928-1987) spring to mind for their applications of photographically
generated silkscreens, with or without color manipulations and hand-
painted areas. David Hockney (1937-) has used photographs as the
starting point for many of his paintings. It is worth mentioning that
none of them started his career that way nor enjoys the universal
admiration of a Rembrandt van Rijn (1606-1669) or a Vincent van Gogh
(1853-1890). But their successes are sufficient to conclude that a
sizable segment of contemporary viewers will accept almost any device
as a means to an artistic end.

Accordingly, a measure of paradox attends the recent depth of
scrutiny of Johannes Vermeer (1632-1675) and his supposed utilization
of an optical machine, the camera obscura. The essence of this bright
idea (or distasteful notion, depending on your stance) is that
Vermeer set up a lens system at the position that would become his
painting's "viewpoint" and projected an image of the scene into a
black box and thence to a sheet of tracing paper, or even directly
onto his painting surface. A number of his exquisite little paintings
suggest the same room with recurring architectural features in the
patterns of leaded panes in the windows, of tiles on the floor, and
of ceiling joists. Could the actual room be part of Vermeer's home?
Did the artist set up a curtained work area against the far wall,
behind the viewpoint? The site of the house is known, but it was
demolished in the nineteenth century. Even the suggestion that an old
master should resort to such an approach is regarded by some patrons
as unthinkable. One art historian was overheard to mutter the non
sequitur "... if Vermeer had used such a device, then he certainly
would have written about it." Again, no documentary evidence survives
about Vermeer's working methods.

Is the use of the camera obscura a form of artistic cheating? The
answer that comes out of this elegant book is a resounding "no."
Based upon 20 years of fascination with the Dutch artist, Philip
Steadman provides a well-reasoned argument that Vermeer explored and
developed a new way of looking and yet, in little but significant
ways, embellished or modified his final paintings to his own artistic
preference. All of these ideas are documented and illustrated. The
admirable approach of Steadman, the thing that sets him apart from so
many others in this field, is that he does experiments and interprets
the findings as either supporting of damaging his working hypotheses.
By exploiting the great precision of Vermeer, he was able to
reconstruct the architecture of the subject room and to measure
absolute sizes from extant museum pieces of furniture, maps and other
pictures that the artist incorporated into his domestic scenes. The
geometric evaluations suggest that Vermeer worked optically rather
than through the painstaking mathematical methods of perspective.
However, I was left wondering about the intensity and contrast of the
projected image inside a camera obscura cabinet. I have never been
inside one, more's the pity, but I cannot imagine it being much fun
for an extended period. Some structured experiences by contemporary
artists under similar circumstances might be instructive.

Vermeer's Camera is written in a clear style with an enthusiasm that
sweeps the reader towards the author's conclusions. As becomes a
scholarly work, Steadman also analyzes the evidence against the
camera obscura and dismisses most of it in balanced fashion. The
coverage of published works in related areas is adequate. The quality

of the paper, printing, and the reproductions of artistic works is consistently high. One production criticism concerns the ten color plates which appear without page or plate numbers, ganged together between pages 114 and 115 of the text, and thus take on the curiosity of a "late addition." The index is accurate but skimpy. For example, if you look up "tiles" or "floor tiles" you will not find them under "T" or "F" but rather as a subheading under "Vermeer's paintings." There is no excuse for this and one always hopes for a friendly and intentionally redundant index. But overall this is a very attractive book, full of useful information and intelligent argument. The nicely appointed and well-attended Vermeer exhibitions in the U.S.A. and Europe during the last decade make this publication timely and recommend it to a wide audience.

Philip Steadman is Professor of Urban and Built Form Studies, University College London. He has taught at Cambridge University and the Open University, in departments with other engaging titles such as Urban Morphology. He has authored or edited several volumes in a field that strikes me as "living geometry."

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< The Gombrich/Gibson Debate >

Richard Woodfield, e-mail: <richard.woodfield@ntu.ac.uk>.

Leonardo is internationally recognized as a prime site for the discussion of the interfaces between art and science. In 1971, Leonardo published James J. GibsonÕs article, ÒThe Information available in pictures,Ó which led to a response from Ernst H. Gombrich that, in turn, led to a debate.

One of the difficulties of constructing cross-disciplinary debates is that they get marginalized through academic citation conventions. A psychologist, for example, is more likely to cite material from psychology journals than from any other source. This practice is based upon assumptions of peer review and source respectability. Artists and art historians quoting psychological material and advancing psychological arguments are not likely to be treated as seriously as specialists presenting such arguments. This situation creates a real problem for scientific advancement. More often than not, however, scientific advance is precipitated by happy accident or an observation that upsets the applecart. It is my contention that Gombrich upset GibsonÕs applecart in the pages of Leonardo.

GombrichÕs direction of interest is in the psychology of pictorial representation, which entails an interest in the psychology of perception. GibsonÕs major interest was in the psychology of perception, regarding pictures as a nuisance factor that had to be accommodated within his general theory. Both directions of interest meet in cognitive science, where the image plays a central role in accounting for visual perceptual processes.

I will not attempt to pre-empt the date about the implications of the Leonardo debate for the discussions of cognitive scientists, though I do have views of my own. Instead, I have made the material available on a website, located at <http://www.gombrich.co.uk>, and I am calling for contributions to be published on that website.

Contributions should be up to 5,000 words in length and should have
no more than 12 illustrations; the usual copyright conventions apply.

We will give the debate 18 months to unfold and then, if there is a
sufficient amount of interesting material, compile a publication for
Leonardo to revisit the debate 30 years on.

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< Looking for information re. "Poet in a Box" >

I understand that The Leonardo@Rhizome.org Collaboration and Research
service can assist with, among other things, hard-to-find answers to
research questions in the art/tech/sci field. I am looking for a
review or piece of art criticism (preferably online) about Michael
Ferraro and Janinne Cirincione's 1997 piece, "Poet in a Box," which
was shown at Sandra Gering's gallery in New York City. I have tried
Nettime, Rhizome, the archive of Gering Gallery, Artbyte, Wired,
search engines, etc. Does anyone have any suggestions?

Please contact me at the address below.

Thank you,
Portland Green. E-mail: <PortlandGreen@aol.com>

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