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EDITORIAL
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by Michael Punt

LEONARDO DIGITAL REVIEWS

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< Highlights of LDR Special >

For the next two months, *Leonardo Electronic Almanac* will
feature the work of the panel at Leonardo Digital Reviews. This
exposure is intended as a celebration of what has been achieved
and an anticipation of things to come. Leonardo Digital Reviews
has had a distinct presence in the *Leonardo* network for a
number of years and, thanks to the solid commitment of its panel
of reviewers and the production team, it has forged a distinct
intellectual identity as it underpins the *Leonardo* project in
all its various manifestations. It is a particular delight for me
to be asked to guest-edit these two editions in my capacity as
editor-in-chief of Leonardo Digital Reviews. This will allow me
first to underline its objective as it has developed in response
to the work of the panel and, second, to say something of the
mechanisms that are in place to ensure its relevance, currency
and objectivity. Finally, it provides an opportunity to present a
cross-section of reviews that, although they are all only three
clicks away, explicitly demonstrate the trans-disciplinarity of
the panel's collective output.

The Mission

The mission of Leonardo Digital Reviews is to further the aims of
ISAST and *Leonardo* through the agency of critical commentary on
a full range of events, exhibitions, publications and expositions
that are significant to the developing field and modalities of
collaboration in art, science and technology. In the process of
reflection on important interventions by artists, scientists and
engineers, Leonardo Digital Reviews expects to open new
provocations in the central debates relevant to the ISAST
community through a variety of literary strategies made available
on a broad publishing platform. In short, as much as we see it as
our responsibility to inform our community of relevant material
as it becomes available, we see no obligation to present that
information uncritically or, for that matter, as the sole topic
of the reflection expressed. We take the view that the primary
purpose of our work is to liberate intellectual property so that

it may be used (in the best sense of the word) and Leonardo Digital Reviews expects to be one of the arenas where material is used first.

The Process

Leonardo Digital Reviews receives unsolicited materials from an array of publishers, artists, musicians, scientists, engineers, cultural analysts and philosophers on the basis of their familiarity with ISAST, *Leonardo,* Leonardo Digital Reviews and the work of the panel. It also actively gathers material that seems important or relevant to the developing debates. A list of this material is circulated monthly to a panel of reviewers and, although we make every effort to support those in our field, receipt of material does not necessarily result in a review (although of course, everything is acknowledged in *Leonardo*).

The key to our work is the review panel, which comprises around 70 artists, scientists and engineers, drawn from the widest cultural spectrum that we can achieve. They commit to write a minimum number of reviews, selecting their own topics and filing either brief informative accounts, extended critical engagements or articles structured around the innovative aspects of the intervention. These are published on a monthly basis with the minimum of editing, on a dedicated website managed by a web-coordinator Robert Pepperell, to a strict deadline of the first day of the month for updating the website in order to provide a predictable service to our readers. Some of these reviews are subsequently drawn to the attention of the readers of *Leonardo Electronic Almanac,* and finally some are used in the Reviews section of *Leonardo* (occasionally, a review is also syndicated to another journal). As you can imagine, the second most demanding task in this process is the administration and tracking of the various stages of the process, from submitted item to published review, and we are grateful to our managing editor Bryony Dalefield for her diligent management, without which there would be little intellectual coherence.

The most difficult and relentless task is, of course, that undertaken by the panelists, who commit to an item and are then charged with producing an article that honestly reflects the artist or author's intentions as well as engaging the *Leonardo* community in a relevant debate without entirely masking their own voice. All this must be done in around 700 words, an imposed limitation that recognizes that most readers will come to the reviews through the website. Moreover, since we see ourselves as essentially an academic service, we insist that there is an appropriate critical distance between reviewer and author. Given the nature of our intellectual community, this is inevitably a difficult balance to strike, since most authorities in the field are inevitably within the ISAST orbit as either producers, teachers or critics, and in the case of Leonardo Digital Reviews, very often all three. In fuller recognition of the intellectual resource that Leonardo Digital Reviews has gathered, we have made space for longer review articles dealing with more than one item, their purpose being to make more explicit the nature of the intervention in a particular context in which the reviewer is an authority. These are of course much more difficult to read on-screen but, given the intensity and lucidity of the argument, we have taken the view that the reader's motivation overcomes the "noise" in the system.

Producing a steady stream of good-quality copy takes its toll on

other aspects of one's professional life, and not surprisingly
panel members tend to go through cycles of heightened activity
and dormant reflection. For this reason, a critical mass of
reviewers committed to the project is seen as essential and we
have found a properly distributed array of interest between 70 or
so members is an optimum number - with more, it becomes a babble
of voices, with less there is no time for retrenchment and
reflection. Most members of the panel have arrived through
invitation or recommendation, but some of our most valuable
contributors have initially suggested themselves. Depending on
the current constitution of the panel and evidence of a person's
previous reviews, contributions are welcome from anyone who is
familiar with the work of Leonardo Digital Reviews and has the
inclination to engage with the demands and to apply to join.

The Anthology

Given this introduction, producing an anthology of reviews from
the past 12 months is neither a process of omission nor of
constructing a hierarchy of talent. In order to make more evident
the intellectual resource, its output and potential, what follows
is a representation of 12 months' reviews - in these 12 months,
Leonardo Digital Reviews published around 150 items that would,
in hard copy, be sufficient for two quite daunting books. In one
sense, the selection criteria is mechanistic: each panel member
who has contributed more than one review will be represented.
However, the selection of which pieces to put alongside one
another is determined by the intention to explicitly demonstrate,
through analogy, the trans-disciplinarity of the panel's
collective output. I hope in this way to make more visible the
full potential of what has been achieved over the past 12 months.

In the first part of this special edition of *Leonardo Electronic
Almanac,* we will look at the panel's response to books and
journals and, in the second part next month, we will focus on the
films, videos, exhibitions, websites, CDs and events that have
been covered in Leonardo Digital Reviews.

Michael Punt
Editor-in-Chief
Leonardo Digital Reviews

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           | LEONARDO DIGITAL REVIEWS |
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< Origins, Imitation, Conventions: Representation in the Visual Arts >
by James S. Ackerman, MIT Press, Cambridge, MA, 2002. 328 pp.,
illus. Trade, $45.00. ISBN: 0-262-01186-7.

Reviewed by Stefaan Van Ryssen, <stefaan.vanryssen@pandora.be>

This collection contains some dozen studies, written over the
past decade by Harvard art historian James S. Ackerman, on the
origins and evolution of architectural representation. Ranging
from a detailed analysis of "The Origins of Art History and

Criticism" to a more sketchy "On the Origins of Architectural Photography," it includes studies of Leonardo da Vinci's church designs and Thomas Jefferson's affection for classical Italian architecture. Each study can be read separately, but together they form a multi-faceted, impressionistic view of the earliest stages of the formation of architectural representation as we know it and of the continuing influence of classical aesthetics on Renaissance and early modern architecture.

Ackerman's original problem appears to have been: How did modern representational conventions (orthogonal drawing, elevation, ground plan, etc.) develop from pre-modern architectural drawing? He answers this question in four detailed and amply illustrated studies, starting with an analysis of, among others, Villard de Honnecourt's drawings of Reims cathedral and progressing on to a discussion of Hippolyte Bayard's photographs of the Church of the Madeleine in Paris. In each study, the author emphasizes the interplay of tradition and imitation, on the one hand, and innovation on the other. He certainly makes it clear that development cannot be understood in a teleological sense, and that what we call "progress" or the process of modernization is an incremental, sinuous and piecemeal transformation that has taken place in small steps, scattered throughout hundreds of representations by architects and artists in different places and times. What has actually driven this development has been a combination of the creation of meanings, the pressure of technologies, new building practices (the emergence of the professional architect, among others) and the adherence to tradition.

Three essays punctuate the collection: "On the Origins of Art History and Criticism," "Imitation" and "The Conventions and Rhetoric of Architectural Drawing." Here, Ackerman reflectively synthesizes the results of his more detailed and analytical work. In each, he discusses one leg of the tripod upon which architectural representation rests.

"The Conventions..." is perhaps the most interesting study for anyone generally interested in architectural practice. Ackerman convincingly argues that no representation is "objective" or the result of a Cartesian move. In every single drawing or plan, several layers of meaning lay hidden and consequently, the representation becomes first, a goal in itself and next, a way to convey ideas and theories. This is exemplified in works by, for example, Tschumi, Koolhaas, Himmelblau and Asymptote. Paradoxically, the expression of new ideas calls for the use of well-understood and traditional conventions of representation. "Therefore," writes Ackerman, "unlike architectural styles or drafting techniques, they have almost no history. . . Although it is interesting for a historian to examine the reasons, the ideology, and the conditions of the invention, issues of evolution are of only minor historical interest. This field of investigation, then, is more closely related to semiology than to standard architectural research."

Origins, Imitation, Conventions is well-written and well-illustrated. Although it covers a wide range of material, it is neither a bedside nor a coffee table book; it thinks deeply, but is not a proper theoretical treatise. One wonders what its audience could be - apart from LDR reviewers and anyone who is just genuinely interested in architecture as a language or in what could possibly connect Vitruvius, Leonardo, Thomas Jefferson and Rem Koolhaas.

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< The Activist Drawing: Retracing Situationist Architectures from
Constant's New Babylon to Beyond >
Edited by Catherine de Zegher and Mark Wigley. 152 pp., illus.
Trade, $29.95. ISBN: 0-262-04191-X.

Reviewed by Mike Mosher, <mosher@svsu.edu>.

As bookish 12-year-olds, another "faculty brat" and I redrew the
map of Europe, arbitrarily grouping countries and simplifying
boundaries with our Crayola crayons and colored pencils. In
second-empire Paris, city planner Baron Hausmann called himself
an "artist-demolitionist" as he leveled old neighborhoods to make
room for new boulevards and blocks of elegant apartments lining
them. In Germany's Third Reich, the creative young Fascist Albert
Speer envisioned heroically wide thoroughfares leading to mammoth
state buildings. All of these tendencies seem to be found in the
work of Constant Nieuwenhuys (b. 1920), though his major
political influence may be the Situationist theorists of the
1950s and 1960s, with whom he associated. Centered around a
quintessential Parisian named Guy Debord, the Situationists made
the city their subject matter and their canvas, and saw many of
their slogans adopted for posters by radical students in Paris in
1968.

Constant's work began with drawings resembling those of the COBRA
group, comprised of artists in Copenhagen, Brussels and Amsterdam
(hence the acronym), who sought a childlike expressionist purity
after the devastation they had witnessed in the Second World War.
He soon moved on to creating works incorporating a methodical,
serial alignment of small cubes on the surface of a canvas. Less
organic than Larry Poons, less colorfully decorative than Victor
Vasarely, the works strike me as resembling computer punch cards,
appropriate for the cover of an IBM annual report or *MIT
Technology Review,* circa 1962.

These works led Constant to create architectural-looking works,
where his forms' movement into space came in concert with
Situationist ideas of "unitary urbanism." He produced a multitude
of sketchy drawings, which look like the plans of an architect as
she or he moves towards a grand vision. Constant also proposed -
then created - models of huge, labyrinthine interiors with
reconfigurable walls, floors, lighting and environmental
experience (color, texture, smell), their internal configurations
supposedly driven by public desire, almost by whim. His
high-level views of Lego-like "sectors" zig-zag diagonally over
vast terrains and straddle national boundaries on the map, as if
to render such boundaries irrelevant in a globalized world and
interconnected European Community - one wonders if maybe they are
irrelevant.

Constant's work fits into the utopian tradition of Boull e, Le
Corbusier and Britain's Archigram group, or the more recent genre
that mixes conceptual plans and gallery objects, like Christo and
Jeanne-Claude's work or Mike Kelley's recent architectural model
of remembered school buildings. Kelley's contemporary, Spelman
Evans Downer, created many textured and scribed map-like
paintings in the 1980s and 1990s, but these more often focused on
natural topography than urban phenomena.

Constant must enjoy Minneapolis, Minnesota, where downtown
buildings are connected by walkways to facilitate urban life and
circulation during cruel winters. I could not help also seeing

his "sectors" realized in ungainly and insecure Logan Airport in Boston - one imagines Constant spending a lot of time roaming airport terminals. His forms are echoed somewhat more successfully in 1960s buildings on campuses of public universities such as U.C. Berkeley, San Francisco State, San Jose State or Cal State Hayward (all in California). Their shadowy concrete plazas, beneath several floors of classrooms and offices, should be used more often in movies as settings for lovers' miscommunication and emotional strife.

The problematic "sectors" that Constant exhibited over the past three decades display urban life that is off the ground, away from the street-level existence that makes a city most vibrant. If built, they would keep the homeless and the unemployed at bay, serving as an easily-policed bulwark against the rabble and the rabble-rousers. They would function much as a shopping mall does in daily life. Their changing characteristics sound like little more than the aesthetic shifts of the department store window, delightfully entertaining, but spaces where nothing significant really changes as it remains a theater of its commodities.

Though it is germane to examine utopian architectural precedents for Constant's work (as it is to examine its science-fiction ones), comparisons of his projects to the Web in some essays in *The Activist Drawing* seem forced. Granted, he envisioned mammoth New Babylon buildings to snake over political and national borders, but water, sewer and electric power systems do the same thing. Constant's "scientific-esque" drawings, diagrams and other artworks are very much of their own time and straddle the borders between architecture and vintage-1970 conceptual art. Allusions to the Web seem an unnecessary marketing device to make contemporary and relevant creative works by a mid-century artist, works that are worth examining and are enjoyable in their own right.

The handsome book includes Benjamin Buchloh's interview with Constant and contributions by Rosalyn Deutsche, Catherine de Zegher, Elizabeth Diller, Tom McDonough, Martha Rosler, Bernard Tschumi, Anthony Vidler and Mark Wigley.

Catherine de Zegher is Director of the Drawing Center, New York City, which exhibited in 1999 many of Constant's works pictured in *The Activist Drawing.*

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< Leon Battista Alberti: Master Builder of the Italian Renaissance > By Anthony Grafton, Harvard Univ. Press, 2002, 417 pp., illus., $18.95, paper. ISBN: 0-674-00868-5.

Reviewed by Amy Ione, <ione@diatrope.com>.

Anthony Grafton's well-researched and extensively annotated biography of Leon Battista Alberti is a superb book. Reading through this engaging publication, I was particularly impressed with Grafton's ability to effectively breathe life into Alberti as a human, and to simultaneously place his achievements in the context of his culture. Born out of wedlock (in 1404), Alberti's illegitimacy created some measure of complication for him within the structure of his society. Grafton exposes this and examines how the social difficulties were abated due to his father's commitment to providing him with a quality education. Building on this fine educational foundation, Alberti went on to achieve recognition in a number of fields.

When examining the various trajectories, Grafton acquaints the reader with Alberti's role in building the Italian Renaissance in art, architecture and engineering. We come to better understand how this historical figure made manifest his desire to fuse distinct cultures and occupations. In addition, Grafton not only analyzes Alberti's work as a humanistic writer but also speaks in great detail about how his training in rhetoric influenced his theories in other areas. As a result, we come to see why Alberti defined creativity as "not making something completely new but as reusing a classic idea or theme in a novel way." Finally, Grafton's evaluation of Alberti's extensive use of rhetorical techniques and facility in applying them in other domains is useful today. As we re-examine how pictorial communication interfaces with efforts to communicate using language, be it written or spoken, looking at historical approaches will no doubt prove useful.

The author's deft balancing of perspectives in this biography is at its strongest when he examines Alberti's talent with words and the degree to which this facility was tied to his later success. By 1432, Alberti's literary accomplishments led him to become a secretary in the Papal Chancery. His ongoing employment in the service of the Church insured him the income he needed to pursue his many interests. Grafton's review of these pursuits, including his balanced approach to the theoretical and applied components of Alberti's work, is also well done. Equally noteworthy is Grafton's excellent summary of where his analysis of Alberti fits in relation to earlier scholarship. The author reminds the reader that contemporary discussions continue to see Alberti through the lens of Jacob Burckhardt's *The Civilization of the Renaissance in Italy* [1]. Burckhardt established Alberti's reputation as the quintessential renaissance man, claiming that no less a figure than Leonardo da Vinci was merely a second to Alberti when he wrote, "Leonardo da Vinci was to Alberti as the finisher to the beginner, as the master to the dilettante" (p. 107). Grafton, to his credit, grounds Burckhardt's exuberance without diminishing his (or Alberti's) achievements. Exposing more of Alberti's human struggles, while still recognizing his far-reaching influence, is perhaps Grafton's most significant contribution.

A close second is Grafton's discussion of emendation. Before reading this study, I did not realize the importance of this practice to Alberti's work. Emendation, a process of circulating texts among other scholars for correction, was a common practice in Alberti's time. While occasionally described by classical Latin writers, it was the humanist writers that worked with Alberti who turned this approach into an art form. Alberti, in particular, was among those who saw emendation as a stage in composing a work as well as a specialized service the learned could offer to others. The author conveys the degree to which Alberti valued the collaborative nature of this practice and how he used emendation in conjunction with his work in rhetoric. More fascinating is seeing how he adapted the technique when moving from rhetoric to art, architecture and engineering. Even his theory of perspective was open to emendation, as becomes clear in Grafton's excellent description of the two versions of *On Painting* that Alberti published. The Italian version was dedicated to Filippo Brunelleschi with a request for emendation and, as Grafton explains, Alberti offered the book to Brunelleschi because he saw him as the most learned of his time. We learn, too, that Alberti made this offer with a flair that served to elevate his own position.

In summary, all who want to enlarge their understanding of Leon Battista Alberti will welcome this easy to read, thoughtful and comprehensive book. Grafton writes with grace and his survey of Alberti's work as a humanist, inventor and engineer reads like a novel. I particularly appreciated Grafton's sensitivity to the difference between theory and practice in general and how he applied this appreciation to Alberti's work.

Reference
1. Jacob Burckhardt, *The Civilization of the Renaissance in Italy.* 1860/1995, New York, N.Y., Random House/Modern Library Edition.

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< The Dream Drugstore: Chemically Altered States of Consciousness >

by J. Allan Hobson, MIT Press, Cambridge, MA, U.S.A., 2001. 333 pp., illus. b/w. $27.95. ISBN: 0-262-08293-4.

Reviewed by Wilfred Niels Arnold, <warnold@kumc.edu>.

The main title of this book will attract those interested in popular culture, while the trailer promises scientific development of the subject. Although the overall format and titillating line drawings that introduce each chapter help to meet the riffling test of a new book, I am not sure about the audience that this will reach or satisfy.

The book presents schematics of the human brain with labeled anatomical regions and subsequent depictions on similar templates of pathways of modulation by acetylcholine, norepinephrine, serotonin and dopamine (Figs. 2.1 - 2.5), which are an instructive feature.

Early on, the author adopts a cubic model, based on the acronym "AIM" ("activation, input and modulation"), to explain the multiplicity of targets and interactions among the brain and chemicals. This approach may be less successful than the first: while it has the charm of a three-dimensional approach, and the arrows darting back and forth supposedly summarize the action, it tends towards the simplistic. On the other hand, the overall treatment supposes that the reader has considerable previous exposure to this complex subject. The black-and-white graphics are modest, and while there are 47 figures and a few tables, the publisher did not include a list.

Portraits of Sigmund Freud, William James, J-M Charcot, Pierre Janet, Aldous Huxley, Milton Erickson, Albert Hofmann, Thomas de Quincey, William Wordsworth and Heinrich KlŸver appear at appropriate locations. The index was adequate for the items I tried, although the text locations of chemical structures were not identified directly. Occasional errors, for example the chemical structure of acetylcholine in Figure 10.1 (but correct elsewhere), occur but are not extensive. The bibliography is limited to 15 items, of which five are by the author.

The author, J. Allan Hobson M.D., is a Professor of Psychiatry at Harvard Medical School, where he has been director of the Laboratory for Neurophysiology since 1967. His major research interests embrace mind and behavior; sleep and dreaming; and the histories of neurology and psychiatry. Previous publications include *The Dreaming Brain* (Basic Books, 1988), *The Chemistry of Conscious States* (Little Brown, 1994) and *Dreaming as

Delirium* (MIT Press, 1999).

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< Behind the Scenes: With David Hockney >
Co-produced by Learning Designs and Thirteen/WNET. Produced and
directed by Ellen Hovde and Muffie Meyer.

Hosted by Penn and Teller. VHS video, Color. 1996. 30 minutes.
Available from First Run Features, 153 Waverly Place, New York NY
10014, U.S.A.
http://www.firstrunfeatures.com

Reviewed by Roy R. Behrens, <ballast@netins.net>

This video is one in a series of ten arts-related children's
films, titled *Behind the Scenes.* Starring in each film is a
prominent guest artist or performer, while the hosts throughout
the series are the popular team of magicians, artists or
comedians named Penn and Teller. In this case, the star is
supposed to have been David Hockney, the British painter who now
resides in California and is known for his various interests in
pictorial representation and perspective in particular. I say
"supposed to have been" because, while Hockney has the announced
lead role, there is a hidden star whose name is never mentioned,
not even in the credits. That person is Adelbert Ames II
(1880-1955), the American lawyer, artist and optical
physiologist, who is best known for having invented the Ames
Demonstrations in perceptual psychology, which include such
astounding phenomena as distorted rooms in which people appear to
shrink and grow, demonstrations of spatial overlapping using
trumped-up playing cards, and a rotating trapezoid window.

As this film opens, Penn and Teller are standing in an Ames Room
and appear to be of equal height, although one is actually much
taller than the other. When they exchange positions, their
difference in height becomes greatly exaggerated. Soon after, we
are introduced to Dawn and Debbie, identical twins who are made
to appear to grow shorter or taller without using an Ames Room,
merely by photographing them from a low vantage point, by which
the viewer is denied any information about the ground plane.
Other Ames-indebted scenes include one of an enlarged playing
card that appears to be overlapped by (that is, to lie behind) a
smaller and presumably more distant card and a giant coffee cup
that looks at first as if it were a close-up view of a
normal-sized cup.

It is sad but not surprising that no credit is given to Ames,
spoken or otherwise. Were he still alive, it is unlikely that he
would object, since, according to William H. Ittelson (who worked
with him and later wrote *The Ames Demonstrations in
Perception*), he was "truly humble" and believed that a person's
greatest tribute is "to remember his work and forget his name."

(Reprinted by permission from *Ballast Quarterly Review,* Vol.
17, No. 4, Summer 2002.)

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< Where the Action Is: The Foundations of Embodied Interaction >
by Paul Dourish, MIT Press, Cambridge, MA, 2001. 229 pp., illus.
ISBN: 0-262-04196-0.

Reviewed by Robert Pepperell, <pepperell@ntlworld.com>.

The fact that we can now comfortably omit the hyphen between "post" and "human" suggests that the emerging field of posthuman studies is reaching a certain level of maturity, even though it is perhaps only a decade old. It seems to occupy an intellectual space somewhere between science, technology, philosophy and cultural studies and, as with all academic fields, is already displaying signs of internal tension. Perhaps the most divisive issue is the varying levels of emphasis given by different authors to the notion of "embodiment." There are those who, on the one hand, regard the human body as a passing encumbrance, shortly to be erased by the flow of "pure information" (see Katherine Hayles' *How We Became Posthuman* for an account of some who take this line). On the other hand there are those, such as myself, who emphasize not only the role of the body in the experience of being, but the presence of the wider environment as well. *Where the Action Is* is a timely interjection in this debate, and one that firmly endorses the latter persuasion: that a more coherent understanding of our interaction (or intersection) with machines will involve consideration of human mental activity as embedded in a wider physical context.

Paul Dourish's case for "embodied interaction" proceeds from two foundational ideas describing how we interact with technology Ñ "tangible" and "social" computing. Each is an aspect of his general thesis that regards, "the history of interaction as a gradual expansion of the range of human skills and abilities that can be incorporated into interacting with computers" (p. 17). Tangible computing may be more familiar to some as "ubiquitous computing," that branch of HCI research that seeks to move beyond the desktop metaphor towards more distributed and tactile environments.

Much of the author's research background and data derives from his time spent working at Xerox Palo Alto Research Center, widely acknowledged as the place where the "graphical user interface" was developed but, famously, not exploited. Interestingly, on page 26 an illustration appears of a mid-1970s Xerox personal computer, clumsy but otherwise remarkably similar to the desktop set-ups we have today, except in one respect: the monitor is aligned vertically. Given that the greater number of the documents we work on are in portrait ratio, it seems odd in retrospect that hardware designers and manufacturers have insisted we spend so much time scrolling up and down on horizontally aligned screens. The 1970s Xerox PC may be another example of an unexploited good idea.

To unfold the implications of tangible computing, Dourish presents a number of examples where users collaborate with combinations of computer systems and physical objects that more closely emulate the way we interact with things in the real(ish) world. This, he suggests, is a necessary corrective to the mid-1990s over-enthusiasm for the entirely virtual and digital, represented by thinkers such as Negroponte. Like the ubiquitous computing projects that inspired it, tangible computing seeks to integrate the virtual with the physical in a seamless information-rich process. Such technologies might support a wider range of human interactions than those normally attended to in workplace-driven research. Dourish cites the work of Strong and Gaver (p. 42), whose elevating feather signaled distant acts of affection.

If tangible computing emphasizes the role of the physical apparatus in interaction, then "social computing" draws attention

to the sociological, cultural and historical context within which we use technology. The point for Dourish is that "social action is embedded" (p. 96) rather than free-floating and abstracted. The consequence, as far as interactive design is concerned, is that we must take much greater account of the way technologies are used in actual practice Ñ ways that sometimes diverge from or conflict with the prior expectations of designers. To contextualize this part of his argument, Dourish draws on a variety of sociological research programs concerned with human-machine and work-place interaction, in particular the "ethnomethodological" work of Harold Garfinkel and the "situated action" studies of Lucy Suchman. Such research characteristically rejects the formalized, abstracted assumptions made by analysts and systems designers in favor of a more concrete, "action-oriented" evaluation of real practice and behavior. For Dourish the theme of this research is to show a concern with "the mundane aspects of social life, the background of taken-for-granted everyday action" (p. 96).

To further support his ideas, the author attempts to root them in deeper philosophical subsoil. Taking what is, by his own admission, a "whirlwind tour" (p. 124) through a century of phenomenological thought, Dourish whisks us through the ideas of Husserl, Heidegger, Merleau-Ponty and Wittgenstein to show how they represent a tradition in Western thought concerned with the human agent as situated in, and active within, a pre-organized world of physical demands and possibilities. Accordingly, the mind is firmly embodied in the physical presence of the body (rather than separate from it), just as the body is rooted in the extended domain of the "real world" of objects and events. These references allow Dourish to define his key term, "embodied interaction," as "the creation, manipulation and sharing of meaning through engaged interaction with artifacts" (p. 126).

The problem of "meaning" then becomes critical to the analysis (as it usually does), in particular, how meaning in HCI is most economically generated and sustained. Drawing again on the philosophical concepts previously discussed and from some examples from research projects at Xerox and MIT, Dourish tries to show how interactive media can illuminate and enrich our understanding of mediated information. A somewhat abstracted discussion of "intentionality," "ontology" and "intersubjectivity" gives way to what the author suggests is a more practically oriented section on how certain design principles arising from the ideas discussed might be applied to the construction of real systems. However, as Dourish honestly acknowledges, it is no straightforward matter to convert generalist philosophical analyses into prescriptive guides for action. Instead, his solution is to offer a series of principles intended to alert potential designers to aspects of interface construction that are less frequently considered by "traditional" or "disembodied" methods. These principles, to do with evaluating the social and physical context in which interaction occurs, are less a set of specific rules than a more general "stance" to be adopted (p. 172). And although the author states, "Embodiment is about engaged action rather than disembodied cognition; it is about the particular rather than the abstract, practice rather than theory...," one leaves the book with a sense of unease about what "embodied interaction" looks like, and why it is so different from any "disembodied" system we might imagine. In this sense, the practice-theory divide remains un-bridged.

Other than suggesting (through examples presented) that interface design in complex situations might benefit from greater degrees

of user configurability and internal state feedback, the
potentially radical repercussions of Dourish's foundational
analysis remain largely unexplored. Questions, for example, about
the degrees of separation between humans and machines, about
pleasure and frustration, and about the sensual qualities of
interactive experience are often implicit, but rarely
foregrounded. A more "extensionist" development of the ideas
might have moved the debate on further and more quickly by
considering the actual consequences of removing the
mind-body-world split that has so constrained Western thought.
Notions, for example, of distributed consciousness or of the
"extended mind" are now gaining currency and influencing the way
we think about the "locality" of human being and action in ways
far beyond those suggested by this book.

I would happily commend this book to the non-specialist reader.
It is a vigorous and worthy attempt to frame questions of
interactive design within a wider and deeper intellectual
context. I imagine it will also serve well as a textbook in a
number of fields, from information design to the contemporary
philosophy of technology. And while I strongly welcome it as
further evidence of a shift in ideas away from disembodied
abstraction towards embodied action, it also points up the
dangers of falling between the practical and philosophical
stools, by being unable to sit on both, or securely on neither.

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< Experimental Cinema in the Digital Age >
Malcolm Le Grice, British Film Institute, London, 2001. ISBN
(trade): 0-85170-872-2; (cloth) 0-85170-873-0.

Reviewed by Mike Leggett, <legart@ozemail.com.au>.

In *Experimental Cinema in the Digital Age,* Malcolm Le Grice is
sparing in his use of the term "new media." This wins my undying
gratitude, and in this revealing and thorough book there is much
else to challenge such tropes associated with the tools of
expression and communication. Le Grice's engagement with the
institutions of cinema and the visual arts has infected many
others over the years but he refrains from obsessing over the
"features" that media technologies, new or old, can offer to the
"creative" person. He is intent upon re-examining the exchanges
that occur and the economy that can exist in the spaces that we
call the filmic or cinematic experience.

From the early 1960s to the present, as a film-maker, television
program-maker and painter, Le Grice has kept track of his
thoughts and expressed them through a series of published
articles and an earlier book, *Abstract Film and Beyond* (1976)
[1]. Collected together here for the first time, the articles
provide access to a series of discourses that excited and
stimulated, for many of us, the production of a group of films
that, in moving through a range of descriptors, became known more
widely as "structural materialist" (though this term risks
misleading audiences) [2].

Written comfortably in the first person, the order of the essays
(with one excerpt from his previous book) is by theme - History,
On Other Artists, Debates, General Theory, Digital Media - and
the materials are thus chronologically out of order. However, for
those wishing to follow the processes that make up the
ontological whole, the order can be reconstructed using several
pre-chapter sections, and there is a full index. A colorful

preface by Sean Cubitt makes some useful links to the contemporary world of cyberculture and anaux armes: "...we take responsibility for art, or there is no art at all" [3].

"Thoughts into action" was the rhetoric put into practice by the London Film-makers Co-operative group, of which Le Grice was a founder, chief negotiator and ambassador. In the face of a film and cinema industry run by Hollywood, television dominated by ratings and a gallery culture still coming to terms with the "conceptual and art," the discourse the group's work produced was not based on criticism but on the polemics concerning film. Le Grice was able to maintain a sense of investigation and an air of the provisional. The range of articles he produced from the 1960s to 2000 (and into the present) fed the minds of magazine and journal readers [4], together with fellow film-makers at the Co-op and elsewhere, in the U.S.A., Europe and Australia. The common intention was the pursuit of a rational creative process, separated from narrative form at best and Hollywood melodrama at worst.

Le Grice's articles on film appeared between 1970 and 1980 and most are reprinted here with only minor editing, providing the background that progresses towards the major summarizing article, *Towards Temporal Economy.* It was "...an ambitious attempt to synthesize a range of concepts and ideas at the same time [as] promoting the debate about experimental film practice among the - largely hostile Ð critical academics then in the ascendancy within the British Film Institute and Screen" [5]. Fittingly, the article was published by *Screen* in 1980.

Le Grice only occasionally hints at the context of the times. This was the period when the left in Britain, as elsewhere, was factionalizing, as the anarcho-libertarianism of the "alternative culture" at the beginning of the period was becoming the "counter-culture" of the 1980s, where enclosures were being thrown up and redoubts being built from where to insult the neighbors. Allies were mostly recruited from France, to stiffen the resolve of the cultural shock troops and, as Le Grice confesses in his introduction, "...I did my duty reading Metz, Lacan et al" [6], along with the earlier luminaries of nineteenth and twentieth century thought. This helps reveal the layers contained in the text, rather than reading as an argument, and reveals the processes of deliberation occurring as his own work and that of others develops.

Le Grice writes that "Almost by habit, now I begin an article with a health warning. The reader should know that firstly I am a film, video and digital artist. My theoretical work is almost completely based on the issues I have encountered in analyzing my work and understanding its relationship to other artists, culture, technology and society" [7].

His use of computers goes back to the 1960s, when he was able to access Britain's largest computer to output material incorporated into several later films. He speculatively wrote in 1970 about computer networks, describing a state we now know as "video-on-demand." He experimented later with early personal computers, interrogating their potential for expressing form, color and sound in the service of the ongoing campaign against linear and narrative constraint. His own realization of the difficulty of extending materialist polemics into the digital domain enticingly bounces on and off of some of the issues (cyberspace and presence, the non-linear and interactivity, memory and consciousness), raised in a torrent of literature by

others over the last decade, at least some of whom would also demand "... a priority for physical experience over interpretation" [8]. I have a sense that Le Grice would be hugely productive in the digital arena, as he has been with film, if the structural-materialist trope was regarded as a marker behind rather than a pointer in front.

My own assessment of the period, the films and the polemics, on paper and in person, is that while it was the institution of cinema that was addressed, the strategies (theorized but unplanned) emerged from the modernist project of twentieth-century visual artists described by Le Grice. The traditional cinema audience was unprepared for the importation of rigorous and reductive codes, an experience and education that was largely eclipsed by the significant simultaneous development and establishment in the tertiary sector of courses in cinema history and media studies. (The book's excellent introduction refers to the long-running arguments with *Screen.*) The traditional visual arts audience, though engaged, further confused wider acceptance of the work by celebrating a (false) appearance coinciding with the "minimalist" visual art aesthetic of the time, together with a reluctance by gallery spaces to manage the different demands of time-based and technology-presented work. In short, the polemics and much of the work arising from an ontological project commenced back in the 1920s, for much of the time, was hung out to dry between the two cultural pillars. Only recently has it been re-appraised by a new generation less intimidated by the contemporary media landscape but more attuned to the transparency of the apparatus, helping to develop some level of wider acceptance of the hybrid and cross-disciplinary artform.

Shoot Shoot Shoot, a retrospective of eight programs of films made at the London Filmmakers' Co-op between 1966 and 1976, is on a tour of international venues between 2002 and 2005. While the ample newsprint catalog provides a mass of contextual material, it is only able to hint at the rationale, the polemics and the theoretical substructure of the work that Le Grice's book addresses so whole-heartedly.

REFERENCES

1. Malcolm Le Grice, *Abstract Film and Beyond,* Studio Vista 1977 (Also MIT Press, 1977; MIT Press paperback edition, 1981).

2. Structure, structural, structuralism, material, materialist and materialism are all terms used by engineers, script-writers, anthropologists and philosophers, and are irrelevant to their use in this context, though convergence of meanings and uses, often encouraged by various authors, have been temptingly apt - hence the misleading usages.

3. Preface, p. xv.

4. Publications including *Studio International,* *Art and Artists,* *Afterimage,* *Millenium Film Journal,* *Undercut,* *Time Out,* *Screen,* *Screen Education,* etc.

5. Introduction, p. 7.

6. Introduction, p. 2.

7. Chapter 24, p. 297.

8. Chapter 23, p. 293.

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< Making Sense of Life, Explaining Biological Development with
Models, Metaphors and Machines >
by Evelyn Fox Keller, Harvard University Press, Cambridge MA,
U.S.A., 2002. 302 pp. $29.92, trade. ISBN: 0-674-00746-8.

Reviewed by Curtis E.A. Karnow, <cek@sonnenschein.com>

Each of us has dutifully learned an explanation of a physical or
biological process Ð why the planets have their course, or how
the phenotype of an anemic human is generated by the genotype
responsible for his blood cells' development. The explanations
sometimes are enough, sometimes not. Why and how does gravitation
work, we might ask? Why is it that DNA replicates? When have we
reached an "explanation" and what counts as a convincing one? In
Making Sense of Life, professor Evelyn Fox Keller shifts
directly to one of the largest of these questions and explores
explanations given for life itself, tracing the shifting
elucidations of life that have emerged in the last few hundred
years.

What counts as an explanation for life, not to say an adequate
explanation, depends on the time and its needs, Keller
establishes. This sounds tautological, but Keller's detailed
review of the differing criteria for explanation is a story about
the essential nature of scientific examination as it makes
different analogies and calls on shifting metaphors from time to
time. A century ago, the explanation of life took on the model of
mechanical simulacrum; today computers and artificial digital
"life" appear to capture some essential nature of life; so we
say. Keller establishes the link between, on the one hand,
technological and other developments in the world at large and,
on the other hand, the criteria of scientific explanation. She
carefully traces the use of language and its not-so-hidden
assumptions, the use of figures of speech and metaphors to
provide the sense that a phenomenon has been identified and
understood.

It is a convincing, thorough recitation, because she relies
directly on then contemporaneous sources. By the same token, for
those interested only in the epistemological and linguistic
issues, it can be slow going Ð there is more detailed history
here of quaint, superseded theories than one might wish. But one
cannot really argue with Keller's decision to let the old
explainers speak for themselves. It is a powerful lesson to see
that even in the last 100 years, the very nature of scientific
inquiry and its goals has shifted so profoundly. We may advance
in our scientific understanding, to be sure, but we are also
continuously changing the criteria by which such "advances" are
measured. Even questions such as "What is life," Keller notes,
are not absolutely answerable (p. 294); these questions pose
historical conundrums, and answers can never be better than good
enough for the time.

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< Spacefaring: The Human Dimension >

by Albert A. Harrison, University of California Press, Los
Angeles, CA, 2001. 324 pp. Trade, $27.50. ISBN: 0-520-22453-1.

Reviewed by Cliff Pickover, <cliffpickover@hotmail.com>.

In *Spacefaring: The Human Dimension,* Albert Harrison, a
Professor of Psychology at the University of California, Davis,
focuses on the human element in space flight. Topics in the book
include astronaut training, medical and environmental hazards,
psychological stresses and coping, group dynamics, and even
sleeping, sex and leisure in space. This book will provide
marvelous reading for science-fiction authors who desire to imbue
their novels with realistic information on space travel and its
psychological challenges. Of course, the book will also be
invaluable to aerospace engineers and future space travelers -
the psychological dangers of space travel are not to be ignored.
For example, cosmonauts only played chess against opponents on
the ground to avoid competition and tension that might arise
during competitive playing in space.

My favorite chapters include the later ones that deal with space
tourism, space settlements and interstellar travel. What are the
prospects for lunar and Martian colonies and even travel to the
stars? What would life be like on the high frontier? As many
science-fiction authors have correctly noted, Harrison suggests
that space tourism might provide the real impetus to get us into
space and to develop the necessary rockets and technical
facilities. In his view, "not only would making space accessible
to a broad segment of the population give people exciting and new
experiences, it would encourage many different kinds of human
activities in space. Thus, the space tourism industry could
develop both the technology and the popular support required to
accelerate human progress in getting off our planet...
Honeymooners and couples celebrating their anniversaries may be
attracted by the idea of experimenting with sex in space, so
perhaps there will be some honeymoon suites."

In addition to psychological issues, Harrison addresses many
practical challenges, such as how future space travelers will
maintain contact with Earth and how multi-generational missions
will cope. These journeys involve entire generations of parents
and their children and their grandchildren on board a space
vessel. Harrison really stirs the mind when he discusses the
possibility that we will one day explore the stars by uploading
the contents of our minds to powerful computers. A computer
representation of a person with memories, perceptions and
emotions may one day take the ultimate voyage.

Most of the excitement and promise of the 1960s space program has
died. Harrison wants us to restore our dream of flying to the
planets and stars, just as yesterday's settlers drove wagons
across the American plains. To embark on the journey, we need the
technological know-how and wealth. Harrison suggests that both
the dream and the journey are possible and important. I agree -
read this wonderful book and you too will learn to fly.

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< Spectacular Bodies: The Art and Science of the Human Body from
Leonardo to Now >
Edited by Martin Kemp and Marina Wallace, University of
California Press and Hayward Gallery, Berkeley, CA and London,
U.K., 2001.

Reviewed by Frieder Nake, <nake@informatik.uni-bremen.de>.

From October 2000 to January 2001, the Hayward Gallery in London mounted the exhibition *Spectacular Bodies,* curated by Martin Kemp and Marina Wallace, of which this book is a documentation. Even for someone like myself, who did not have a chance to visit the actual event, *Spectacular Bodies* invokes some of the awesome feelings visitors may have experienced when confronted with the sliced-up, wide open human bodies in the show. Scientific investigation meets aesthetic appreciation. The book reproduces a large number of the exhibits in full color and the extraordinarily informative and insightful text by the show's two curators takes us through the exhibition from station to station along the path of history.

The human body has, of course, been a prominent subject of art through almost all its eras and styles, with a few exceptions. However, the body as an art subject is not the focus of this exhibition and book; the focus here is rather on the human body as a subject of physiological and anatomical study. Such study, as a scientific activity, started with the Renaissance, where it immediately found, in Leonardo, one of its grand masters.

As with architectural drawings, precise renderings of the human body (or of selected features of it) represent a juncture between science and art. Medical science needs images of the body for various purposes and such images define one of the starting points for what is now called visualization. In order to generate such images, a considerable mastery of drawing, coloring, composition, selecting perspectives and other artistic capabilities is required. Following the proliferation of such artistic images, the photographic picture began to assume importance in this field, eventually taking over as a means of displaying views of the human body as perceived by new generations. More recently, the artist's and other living bodies themselves have become used as means of depicting the body.

Having been greatly impressed by the pictures of dissected bodies and of people performing the dissections and moved by the stories and history behind these pictures, my intention in this review is merely to bring readers' attention to this volume by describing its contents. There are, after the introduction, three sections: "The Divine Machine," "The House of the Soul" and "New Bodies." Roughly speaking, the first section concentrates on renderings of dissected bodies in their use for imparting information about human anatomy in all its aspects. The second section deals with attempts at deducing the inner feelings and conditions of a person from his or her outer appearance. Notable in this section are the notorious measurements and categorizations of facial structures of criminals or members of particular ethnic groups.

Section three differs from the previous two, both in terms of format and contents. Whereas the first two sections assemble and display works of art, explaining the circumstances, connections and evolutions pertaining to them, the third section presents eight artists with some of their works along with extended interpretations. The selected artists are John Isaacs, Katharine Dowson, Marc Quinn, Beth B., Christine Borland, Gerhard Lang, Tony Oursler and Bill Viola. These artists reflect, in various ways, on older methods of depicting the body as an anatomic fact or as the house of a soul. They do so in reaction to the modernist neglect of the human body and vis-ˆ-vis the trends toward disembodiment by way of cybertechniques and virtuality.

For readers of *Leonardo,* this precious volume is of interest as an account of Renaissance painting, nineteenth century

photography and contemporary installations in pursuit of a
visualization of the human body - without explicitly calling it
"visualization." Implicitly, these works tell us a lot about it.

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< La plante des esprits - pour une politique du cyberespace >
by Philippe Qu□au. Odile Jacob, Paris, 2000. 326 pp., trade. 25
Euro. ISBN: 2-7381-0909-8.

Reviewed by Julien Knebusch, <julien.knebusch@free.fr>.

Philippe Qu□au is a thinker as well as a man of action. In the
1990s, he organized the exhibition Imagina, which centered around
digital images. Since July 1996, he has been director of the
Information and Informatic Division of UNESCO and has written
many theoretical essays on the issues of technological art and
virtual reality.

In *La plante des esprits - pour une politique du cyberespace,*
Qu□au presents a political and philosophical reflection on
globalization, based on a philosophical questioning of the
virtual. The author claims that a new historical age - the World
Renaissance - has arisen, heralding a planetary civilization.
Like the Western Renaissance in the sixteenth century, the World
Renaissance has its own writing, which is digital or virtual and
succeeds printing. It also has its own America - cyberspace and
the worlds of financial abstraction - and its own reform, the
concept of a common world good.

The foundation of this renaissance is the invention of a new
system of writing - the virtual - based on the development of
communication and information technologies. The author invites us
to define the virtual not only as a tool for a better
understanding of the real, but also as a civilizing agent,
allowing for new modes of behavior. He sees the virtual as a
matrix of a new civilization that will succeed "material"
civilization. In fact, the virtual relativizes the categories of
classical reason - space, body, vision - and forces us to
reconsider our ontology. For example, one must renounce a spatial
and localized conception of being; in virtual reality one is not
where one stands physically, but where one acts and feels. The
consequences of the virtual affect the very foundation of being
human and thus open new possibilities for human communities.
Qu□au posits that the virtual may help the virtual community of
humans to represent themselves as a planetary society, thus
developing the ultimate utopia of the virtual. Nevertheless, he
does not forget the dangers of the virtual in relation to the
question of otherness - here, the virtual is used only as a
mirror of ourselves.

Although globalization and the virtual are abstractions, they are
real for those who believe that "ideas rule the world." Qu□au
argues that the fortune of the world depends on the reality we
lend to abstractions, making reference to the ancient scholastic
debate between nominalism and realism regarding the concreteness
of abstractions. A similar problem exists in terms of a concept
of a common world good, which Qu□au seeks first to define more
precisely in order to develop it into a political tool. He
analyzes the different world public goods - water, the oceans,
space - and is especially interested in immaterial goods, such as
the Internet and information society, in a broad sense. He
proposes different measures for guaranteeing these common world
goods. For example, he advocates creation of a virtual public

world library and wants above all to demystify international law, which, he writes, is too heavily based on nation-states and not enough on a world-oriented, supranational vision. Qu□au here makes a link (along with other theoreticians such as Herv□ Fischer) between his thinking about the virtual to a broader perspective of planetary civilization by emphasizing the relationship between the virtual and world politics. In so doing, this book is very useful in the actual debate on globalization. This debate is essentially economic, as recalled in Pascal Bruckner's, *The Misery of Prosperity* (Paris, Grasset, 2002), and only rarely seeks to define the ethical and political conditions necessary for a world civilization. Globalization has always been of interest to sociologists and political scientists and only more recently to philosophers.

One may criticize in this book the fact that the author ties the question of globalization too closely to the problems of the virtual or the question of otherness, thus marginalizing the question of geography in comprehending globalization. Even if the virtual produces another space, one should not forget the importance of planetary space and the conflicting interactions it implies in understanding the formation of globalization (as discussed by Henri LeFebvre. On the other hand, one should also consider the ontological relationship between humans and global space (which the virtual does not abolish), as described by thinkers such as Paul Virilio and, more recently, Peter Sloterdijk. Considering such relationships is important in discussing the future of the world, and its fortune or misfortune.

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< Synaesthesia: The Strangest Thing >
By John Harrison, Oxford University Press (Great Clarendon St., Oxford OX2 6DP, England), 2000. ISBN: 0-19-263245-0.

Reviewed by Paul Hertz, <paul-hertz@northwestern.edu>.

A valuable addition to the literature on synesthesia, John Harrison's *Synaesthesia* presents a cogent analysis of the phenomenon that will appeal both to scientists and to the general public. While the work focuses on a series of experiments on colored hearing, directed by Harrison's mentor Simon Baron-Cohen, it provides a careful expos□ of the historical and scientific framework of those experiments. Harrison's discussion of the changing historical nature of evidence in experimental psychology is particularly welcome and sheds light on a whole range of disciplines where cognitive processes are the object of scientific investigation. His chapter on notable synesthetes, while not integral to his argument, proceeds gracefully and will be of particular interest to those unfamiliar with synesthesia. The crux of his argument, hierarchically developed over anatomical, physiological, and psychological hypotheses on synesthesia, resolves around a series of experiments with synesthetes, where he brings neurobiology, statistics and genetics into play, with a brief but critical role for imaging technology.

Does this sound like a plot for a novel? In some ways it might be. Harrison provides a carefully constructed central argument, a number of fascinating subplots, and if the experiments are less than conclusive, well, such is life, if we wish to portray it accurately. Within the logic of his argument, Harrison exposes potential flaws in prior research, a particular service to

non-scientists with an enthusiasm for synesthesia, and reaches some limited but tantalizing conclusions. Highly recommended.

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< Ptolemy's Geography: An Annotated Translation of the Theoretical Chapters >
By J. Lennart Berggren and Alexander Jones, Princeton University Press, Princeton, NJ, 2001. 232 pp., illus. Trade, $39.50. ISBN: 0-691-01042-0.

Reviewed by David Topper, <Topper@Uwinnipeg.ca>.

Ptolemy's *Cosmographica* (Geography) is, without a doubt, a landmark in the history of cartography, one of the "Great Books" (if we may still use the term) in the Western canon of science. For over 1,400 years, it constituted the major map of the Western world, yet until now there has been no adequate translation into English. Scholars of ancient history and science are praising this translation, which drew upon several previous editions and five medieval manuscripts.

Written in the second century of our era, *Cosmographica* is the only ancient work on map-making to survive. It was based on a previous work by Marinos of Tyre, about whom little is known, so that most of the prehistory of Ptolemy's book involves mere speculation. The work (first written as a scroll) was known throughout the Middle Ages. The earliest extant manuscripts date from the thirteenth century. There are about 50 manuscripts, and all seem to descend from one lost prototype.

Ptolemy divided the Geography into eight sections ("Books"). The work contained the first systematic listing of latitude and longitude, the now common terrestrial terms that were first applied to the celestial "globe" of the heavens. The resulting map of about 8,000 locations covered a large part of the surface of the Earth, from Western Europe to Southeast Asia (approximately 180 degrees of longitude) and from Scotland to sub-Sahara Africa (approximately 90 degrees of latitude). The Roman Empire, not surprisingly, was best known. Ptolemy used two projection techniques to create visual maps: for one, the longitudinal lines remained straight, and for the other, both longitude and latitude were curved. In the second, he tried to minimize some of the distortions from the first. In addition to these two "world" maps, there are 26 regional maps. Of course, judging by today's standards, we can see that the distortions of the maps are primarily due not to the methods of projection but to the errors in position of the specific locations, especially as they get further from the Mediterranean region.

In this important edition, the authors have translated only the "theoretical parts" (Books 1, 2, 7 and 8), thus eliminating the lengthy lists of places. They did this to shift attention away from topography to the theory and methodology of map-making. The book begins with a long introductory section of over 50 pages, giving the reader a grounding in fundamental geometrical information and projection techniques required for fully comprehending the maps. The book presents historical background material on the work and history of the manuscript versions as well as the translations. Following the four translated Books of the Geography (the core of this edition) are a series of plates and maps and eight appendices. Several plates are wonderful color reproductions of the "world" maps, while many of the maps portray sections of Ptolemy's version and juxtapose these with

present-day projections of the same sections - a most interesting comparison.

This is an important publication for historians of science (especially of cartography) and classicists. Although the novice reader will enjoy perusing the plates and maps and certainly gain from some of the early introductory material, the rest of this edition is directed primarily to the advanced scholar.

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< Consciousness, Color and Content > by Michael Tye. MIT Press, Cambridge, MA, 2000. 198 pp., illus. Trade. ISBN: 0-262-20129-1.

Reviewed by George Shortess, <george.shortess@lehigh.edu>

In *Consciousness, Color and Content,* philosopher Michael Tye principally sets out to defend and expand upon his theory of phenomenal consciousness, known as representationalism. Phenomenal consciousness is concerned with what it is like to feel or experience a particular sensation, rather than just to know about the state intellectually. In the book, Tye provides an excellent overview of the area, even while promoting his own theory. As a perceptual psychologist and visual artist, I was intrigued by his manner of argument and presentation, particular since phenomenal consciousness is a topic about which the cognitive and perceptual sciences say very little. I began to wonder if there are particular neural correlates associated with phenomenal consciousness, or if we can even ask such questions in this way. If so, Tye argues, then such correlates are rather primitive, since phenomenal consciousness exists even at the level of honeybees and similar organisms. The part of the title that initially intrigued me was color, which Tye discusses in some detail in Chapter 7. He argues against the notion, which he attributes to visual and cognitive scientists, that color exists only as a mental state, proposing instead that the common-sense view of color as a property of an object does not conflict with the view of color as a mental state.

In reading Tye's discussion, I was struck by the apparent need for a clearer distinction in the use of the term "color," particularly the distinction between the perception of color and color as a property of an object. I think perceptual psychologists would agree that there is a physical basis in external reality for the perception of color. As Tye points out (p. 159), the major determinant of color under ordinary viewing conditions is the reflectance of the surface, characterized as the percentage of light at various wavelengths reflected from the surface. For most ordinary surfaces, this is a stable physical property. However, the perception of reflectance is influenced by a number of factors, most notably the characteristics of the illuminating light, the adaptive state of the observer and the reflectances of surrounding surfaces. Tye summarizes the common-sense view of color as one of properties independent of mind and illumination, belonging primarily to surfaces but also to films (p. 148). It would thus seem that Tye identifies the term "color" with the reflectance properties of surfaces, while transmittance would be the comparable color property for film. However, in Tye's quotes of cognitive scientists, discussion of "color" includes the mental state as part of the perception of these reflectances and transmittances. Could we call the reflectances and transmittances, the color properties and the mental states "color perceptions?" Then the perception of color properties results in color perceptions, which are mental states

with a basis in the neurophysiology of the visual system. I
wonder if this kind of distinction would cause problems for Tye's
theory of phenomenal consciousness.

In summary, this book is difficult for the non-philosopher, but
provocative. With additional reflection and clarification, it
could lead to a further convergence of philosophy of mind and
cognitive science.

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< OLATS News >

1 - Karlheinz Stockhausen, by Bruno Bossis
<http://www.olats.org/setF4.html>

Karlheinz Stockhausen is, with no doubt, a major composer of the
twentieth century, a "sacred monster" of contemporary music.
Seemingly everyone has heard about him and thinks to know him and
his work. In this notice, Bruno Bossis shows the different,
complex creations of Stockhausen in all its dimensions, some of
which will certainly be new to many readers. Bossis analyzes and
comments on Stockhausen's works, approaches and evolution.
Moreover, this notice is an invaluable resource as it lists the
composer's works and refers to numerous writings by and about
him.

Leonardo/OLATS would like to thank Karlheinz Stockhausen for
having taken out time to proofread this notice and provide many
inputs and illustrations.

2 - Oskar Sala, by Pierre Couprie
<http://www.olats.org/setF4.html>

Oskar Sala passed away in 2002. Born in 1910, he was one of those
artists-engineers of the twentieth century who, like Theremin,
invented musical instruments that are still used today. He
developed the Trautonium, invented by Friedrich Trautwein in
1930. Then he created the Mixturtrautonium, a true concert
instrument, one of the few perfect electronic instruments before
the appearance of analog synthesizers. He composed music for more
than 300 films, including the sounds of the birds for Hitchcock's
1963 movie, *The Birds.*

3 - John Cage, by Bruno Bossis and Pierre Couprie
<http://www.olats.org/setF4.html>

Prolific artist John Cage, at the crossroads of all major
artistic currents of the second half of the twentieth century, is
famous for his prepared piano. This notice provides a guideline
to his life, career and achievements.

4 - Pioneers and Pathbreakers: New on the Abraham Palatnik
Monography <http://www.olats.org/setF4.html>

Now in French for the first time - "Abraham Palatnik," By art

historian Aracy Amaral. (Translation from Portuguese by Catherine Tresgot)
<http://www.olats.org/pionniers/pp/palatnik/amaral_fr.shtml>

- "Abraham Palatnik: A Pioneer Of Technological Art," By art historian Frederico Morais. (Translation from Portuguese by Catherine Tresgot)
<http://www.olats.org/pionniers/pp/palatnik/morais_fr.shtml>

5 - Repres et Ressources: New Bibliography - Art, Communication, Network <http://www.olats.org/reperes/reperes.shtml>

Leonardo and Leonardo/Olats have a strong tradition of providing general and specialized bibliographies related to the art, science and technology field. This new bibliography is dedicated to art practice and theory based on new means of communication.

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< LEONARDO REMINDER: OPPORTUNITY FOR ART OR SCIENCE PROJECTS IN VARIABLE GRAVITY (INCLUDING ZERO GRAVITY and OTHER ARTISTIC PROJECTS at the GAGARIN COSMONAUT TRAINING CENTRE >

Call for Proposals - deadline 21 October 2002

The MIR partnership invites proposals from European and Europe-based artists and scientists to undertake projects/research in variable gravity conditions on a parabolic flights or using other facilities, such as the centrifuge and the hydrolaboratory/neutral buoyancy facility used for EVA training, at the Gagarin Cosmonaut Training Centre (GCTC), Star City, Russia.

A parabolic flight provides up to 20 cycles of 30-second periods of weightlessness (zero gravity/microgravity) in freefall, interspersed with periods of double gravity (2g acceleration) and normal gravity.

This is the pilot project of the MIR (microgravity interdisciplinary research) initiative, which seeks to open up space and space industry related facilities by matching artistic processes and scientific research to give a new impulse to space art and space research.

The MIR partnership comprises 5 European art organisations focusing on art, science and technology:

The Arts Catalyst, science-art agency, London, UK

Leonardo/Olats, Leonardo journal of art, science & technology and Leonardo observatory for the arts and the techno-sciences, Paris, France

Multimedia Complex of Actual Arts, Moscow, Russia

Projekt Atol, arts-technology organisation, Ljubljana, Slovenia

V2_Organisation, institute for the unstable media, Rotterdam, Netherlands

The selection committee will be made up of representatives from these organisations.

The opportunity includes a cultural exchange and working trip to Moscow and Star City in early 2003, including the potential to participate in one or two parabolic Ozero gravity¶ flights with the GCTC.

The opportunity is open to artists and scientists in any discipline, where the lead proposer is based in any European country, whether or not EU members. We will select up to 6 artists¶ projects and up to 3 scientific experiments for participation.

For information and proposal form, go to: http://mir.v2.nl/

Please email your intent to make a proposal as soon as possible to : mir@v2.nl

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< In Memory of Yury Pravdiuk >
By S. Zorin

Yury Pravdiuk, one of the oldest Russian light-music artists passed away on 17 May 2002. Author of 150 light-musical compositions including ScriabinÕs ÇPrometheusÈ (1969), he designed his first device for performing light-music in 1961. I met Yury Pravdiuk in Kharkov in 1965 when I was a student of the Technical University and experimented with light-musical devices. I have admired his performance at the Student Palace and joined his artistic group.

Our aim was to launch a light-musical theatre and it opened in Kharkov Park in 1969. Yury Pravdiuk was my teacher in light-music art and now I remember the beautiful days when we worked together. He was a man of rare sincere beauty, goodwill and validity. All through his life, he has devoted his talent to giving back to the progress of light-music art. The death of Yury Pravdiuk was unexpected to his colleagues and friends. His life - a rise of talent, energy, completeness of creative forces. Deeply, we grieve over this loss.

S. Zorin,
Director Moscow Optic Theatre
<zorinserg@mtu-net.ru>

< New Leonardo Book Coming Soon: Virtual Art by Oliver Grau >

Although many people view virtual reality as a totally new phenomenon, it has its foundations in an unrecognized history of immersive images. Indeed, the search for illusionary visual space can be traced back to antiquity. In this book Oliver Grau shows how virtual art fits into the art history of illusion and immersion. He describes the metamorphosis of the concepts of art

and the image and relates those concepts to interactive art,
interface design, agents, telepresence, and image evolution. Grau
retells art history as media history, helping us to understand
the phenomenon of virtual reality beyond the hype.

Grau shows how each epoch used the technical means available to
produce maximum illusion. He discusses frescoes such as those in
the Villa dei Misteri in Pompeii and the gardens of the Villa
Livia near Primaporta, Renaissance and Baroque illusion spaces,
and panoramas, which were the most developed form of illusion
achieved through traditional methods of painting and the mass
image medium before film. Through a detailed analysis of perhaps
the most important German panorama, Anton von Werner's 1883 "The
Battle of Sedan," Grau shows how immersion produced emotional
responses. He traces immersive cinema through Cinerama,
Sensorama, Expanded Cinema, 3-D, Omnimax and IMAX, and the Head
Mounted Display with its military origins. He also examines those
characteristics of virtual reality that distinguish it from
earlier forms of illusionary art. His analysis draws on the work
of contemporary artists and groups ART+COM, Maurice Benayoun,
Charlotte Davies, Monika Fleischmann, Ken Goldberg, Agnes
Hegedues, Eduardo Kac, Knowbotic Research, Laurent Mignonneau,
Michael Naimark, Simon Penny, Daniela Plewe, Paul Sermon, Jeffrey
Shaw, Karl Sims, Christa Sommerer, and Wolfgang Strauss. Grau
offers not just a history of illusionary space but also a
theoretical framework for analyzing its phenomenologies,
functions, and strategies throughout history and into the future.

This book will be available in January 2003

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< Digital Vermeer House Project >

After Johannes Vermeer's death in 1675 a full inventory was made
of his household objects. This inventory listed not only
Vermeer's possessions, but also specified all the rooms in his
house by name. The original Vermeer house was torn down in the
nineteenth century to make room for a large church.

With the expert assistance of an architectural historian it has
now become possible to create a full architectural plan and
representation of the Vermeer House. A 'Digital Johannes Vermeer
House' is also being built from these plans.

The entire project will be available on the Internet; the 3D
architectural recreation of the building as well as over 150
illustrated household objects. The Rijksmuseum, Amsterdam have
provided research facilities and offered abundant image material
for the site.

The Grand Opening of this large free Internet in English and
Dutch, will take place on January 17, 2003 in the Delft church
which now occupies the original site of the Vermeer House. At the
opening presentation, digital images available via a video
beamer, with expert commentary by the authors. This Internet
happening will close to the sound of 17th century Delft music
performed by the chamber music group Camerata Vermeer.

Info:
Drs. Kees Kaldenbach,
http://www.johannesvermeer.org
kalden@xs4all.nl

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