Cognitive Gadgets: The Cultural Evolution of Thinking
Reviewed by Jan Baetens.
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Cognitive Gadgets is an impressive and convincing intervention in the debate on what makes us human. It does not raise essentialist questions, such as “What is human nature?” but attempts to understand why human animals have certain features that make them different from the rest of the animal kingdom. However, from the very beginning, the author makes clear that she does not assume “that humans are the only particular animals, or that our particularities make us morally superior” (p. 8). In general, the book foregrounds the human mind (the main disciplinary background of the author is cognitive psychology from an evolutionary point of view), not the three other foci that are the body, the brain and behavior—all of them complementary with the mind and vice versa. It defends and illustrates a third way between a purely genetic approach to evolution and intelligent design that Heyes calls “cultural evolutionary psychology” and that foregrounds the notion of “cognitive gadget.” In the debate on human evolution, one could consider cultural evolutionary psychology as a new step, after the debates on the distinction between genetics and epigenetics (which affects chromosome structure but not the ADN structure). It should be clear however that, no less than other forms of evolutionary thinking, cultural evolutionary psychology builds on the Darwinian and post-Darwinian idea of variation and selection.

For Heyes, cognitive gadgets are cognitive tools or mechanisms, such as mindreading or imitation, that are not genetically encoded (nor given by some intelligent design) but that are culturally inherited—that is, developed through social interaction. Cognitive gadgets do not refer to “what” we culturally inherit (what Heyes calls the “grist” of the mind), but to “how” we do it (the “mills” of the mind), and throughout the book the cognitive gadget theory is opposed to and compared with the cognitive instinct theory, which insists on the genetic transmission of these mechanisms. For Heyes, “mills” are more important than “grist” (a good recent example of a “grist theory” is meme theory, which claims a strong link between the form and content of a certain item and its capacity to spread and survive), and these “mills” are not theorized in terms of “Big Special” psychological attributes but as “small ordinary” ones that humans can use in order to build stronger cognitive mindsets via social interaction. In this regard literacy is a key element in human history and evolution, and it is still so recent (reading and writing appeared only 5,000–6,000 years ago) that it helps make a strong claim in favor of nongenetic inheritance of cognitive features. Literacy is simply too recent a phenomenon to have left genetic traces so its appearance can only be explained through cultural inheritance (the development of which can be seen as the result of a change in the human environment with, for instance, stronger interactions between various groups).

The defense of cultural evolutionary psychology is based on hard evidence, and Heyes builds her case by combining three methods: One, the theoretical discussion of the flaws and advantages of the different theories (an example of this is Heyes’s critique of mirror neurons, which she considers as a kind of black box with little or no explanatory power); two, laboratory tests involving the classic test groups (identical and fraternal twins, other individuals, human and nonhuman animals, always with different ages and in varying contexts); and three, field research to see in vivo how certain cognitive gadgets actually work—provided they can really be tested, which is according to the author not the case of the memetics theory.

SUCCESS THROUGH FAILURE: THE PARADOX OF DESIGN

Reviewed by John F. Barber, The Creative Media & Digital Culture Program, Washington State University Vancouver. Email: jfbarber@eaez.net. doi:10.1162/LEON_r_01756

Henry Petroski, author of Success through Failure: The Paradox of Design, states his thesis less than 50 pages into this update of his original 2006 book: “Success and failure are the two sides of the coin of design” (p. 48).

“Design,” he elaborates, pervades contemporary life, where everything has “been designed, in the sense that it has been acquired, adapted, altered, arranged, and assembled deliberately to accomplish a specific objective. Designed things are the means by which we achieve desired goals” (p. 48).

Given this grounding, readers can see that the book’s title, Success through Failure, speaks to the subtitle, The Paradox of Design. It seems paradoxical to think that everything we see, or use, is the result of some purposeful effort to overcome an earlier design failure. Petroski follows with a definition for failure provided by the Technical Council on Forensic Engineering of the American Society of Civil Engineers as “an unacceptable difference between expected and observed performance.” The solution for such failure is to anticipate how, where and when it might occur, and work to eliminate those opportunities. This might be considered conceptual design, user analysis and testing. Total success is the complete lack of failure, and unfortunately none of these efforts, alone or combined, can or will address all opportunities for failure.

But many failures can be eliminated ahead of production. Failure(s) beyond product launch can be addressed through versions, editions or product warranties. “In making things small and large, it is always the perception and reality of failure that drives their invention, design, crafting, and evolution,” Petroski says (p. 99).

Atop this foundation, Petroski discusses examples of made or built things small and large: aspirin bottles, tall buildings, bridges, the Apollo space program. Along the way, he slips in another consideration for failure: the inability of a thing to perform as desired. Why cannot we make taller buildings, longer bridge spans or more aggressive space travel? To his credit, Petroski notes that in cases such as these, design is not predicated or even driven by earlier failure but rather by human ego and hubris. So, again, we confront the design-success-failure paradox.

In his updated introduction, Petroski provides a solution when he writes, “The vast majority of users of a technology adapt to its limitations. In fact, to use any single thing is implicitly to accept its limitations. But it is in human nature to want to use things beyond their intended range” (p. 4).

Petroski built his book from a series of lectures, I assume in his role as a distinguished professor of civil engineering and history at Duke University. His other book titles include The Road Taken: The History and Future of America’s Infrastructure and The House with Sixteen Handmade Doors: A Tale of Architectural Choice and Craftsmanship. I have not read these previous books by Petroski. But I imagine in them, as in Success through Failure, he explores “the interplay between success and failure in design,” with special attention to the anticipation of failure in achieving success (p. 3).

In concluding, Petroski notes that “good design always takes failure into account and strives to minimize it” (p. 193). But designers are human, and subject to the failings of the species, including complacency, overconfidence and unwarranted optimism (pp. 193–194). And there are other factors that affect design—esthetic, cultural, economic, egotistical, ethical, historical, political
and psychological (p. 9). No single book can hope to address everything about everything, says Petroski. But from lectures to bridges, the lessons offered by Success through Failure are there for the learning: Success breeds hubris and catastrophe, failure prompts humility and insight. Now that's an interesting design paradox.

**TRAVERSALS: THE USE OF PRESERVATION FOR EARLY ELECTRONIC WRITING**


Reviewed by Jan Baetens.

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It is difficult not to think of these famous lines of Horace, written more than 21 centuries ago and still readable, even in their original language:

Exegi monumentum aere perennius
regalique situ pyramidum altius,
quod non imber edax, non Aquilo impotens
possit diruere aut innumerabilis annorum series et fuga temporum.

I have finished a monument more lasting than bronze and higher than the royal structure of the pyramids, which neither the destructive rain, nor wild Aquilo is able to destroy, nor the countless series of years and flight of ages.

(Odes 3: 30, lines 1–5, published 23 BCE)

The very classical, perhaps eternal, topic of the author speculating on, daydreaming about or boasting of the afterlife of her or his works, is something that the successive new media revolutions of the past decades are forcing us, as readers as well as writers, to reconsider in radical ways (the authors take as their starting point the early 1980s—that is the years of the emergence of the home computer—but they could have worked also on more recent or older case studies). True, the loss of literary and other works is far from a new phenomenon (most works are almost immediately forgotten; many works are destroyed, by accident or on purpose; still others simply get lost), but the issue of their technical accessibility is becoming one of the major problems of our contemporary electronic culture. More and more it becomes clear that most electronic works are extremely vulnerable to technological obsolescence and can no longer be read when the software and hardware that was used for their production is no longer in use or supported. The life span of these works no longer depends on their inherent qualities (“good” works having more chance to survive than “bad” works, at least in general) but merely on the life span of the technology that made them possible—and that they helped explore and develop at the same time (Eastgate Systems, Inc.’s Storyspace is a good example of the simultaneous and reciprocal development of a writing space software and the actual production of real works, in this case the perhaps bizarrely named “serious hyperfiction”).

If one decides that just moving ahead in order not to miss the next new thing and that just forgetting about the past is what matters, then technical obsolescence is not a problem. But if one believes instead that “we must struggle never to forget” (p. 237, last words of the text), then the situation becomes quite different (it should be reminded here that in cultural semiotics, as illustrated by the School of Tartu of Yuri Lotman, culture is defined as “nonhereditary memory”). The keyword of this book's subtitle is therefore twofold: it is about preservation but even more about the use of preservation, a way of saying that it should be read as a double warning: first, against the illusion of the very possibility of such an enterprise (nothing can be “really” preserved—what is being preserved is always only a certain form or version of it); second, against the confusion between material conservation (which is a necessary step in the larger process but nothing more) and preservation in the broader sense of the word (which refers to the need of making meaning of the object of preservation, here and now but also in the future).

**Traversals** is the answer two pioneering creators and scholars in the field of electronic literature, authors Stuart Moulthrop and Dene Grigar, offer to the most urgent practical and theoretical debates on how and why preserving works that can no longer be read (or that it was no longer possible to access before an “updated”—and thus inevitably different—version was launched, as in the case of Shelley Jackson's *Patchwork Girl*, recently reissued as a USB stick). The authors address the issue in two ways, since their book tackles a wide range of theoretical (and political) questions while at the same time elaborating and exemplifying a real method. To distinguish between both is not easy, since all theoretical stances are inextricably linked with methodological choices and vice versa, but for the didactic sake of this review, it may make sense to try to see what belongs to the method and what can be reframed in more general and theoretical terms.

Which are the major points stressed by Moulthrop and Grigar from a methodological point of view? I would like to highlight the following elements:

1. To **preserve** implies, first of all, to select, that is, to decide which kind of works can be considered worth preserving, given the fact that even in the limitless field of electronic writing there exists a certain consensus of what is really interesting. Scholars in the field do not seem to have metaphysical doubts on the usefulness of a “canon” and that is a very good thing when quality issues are concerned (no benchmark is even thinkable without a canon). But one easily imagines that this situation is something that can change very rapidly. In practice, Moulthrop and Grigar discuss four case studies (Judy Malloy's *Uncle Roger*,...
2. To preserve should not be confused with to archive and emulate. It is of course crucial that the work should be kept materially alive, that is accessible, or in certain cases to be reconstructed in order to reexperience it with other means. But time and again the authors stress the fact that it does not suffice to guarantee the material availability of the work, which is only one of the conditions that make possible what really counts, namely the reading of the work.

If to preserve means to preserve in order to be read, this reading can be organized in two steps, respectively called “Pathfinders” methodology and “Traversal” process in the authors’ project funded by the United States National Endowment for the Humanities’ Office of Digital Humanities. First, during the Pathfinder stage, the creator of the work (but it is perfectly possible to replace the author by a knowing and informed reader) is invited to “[work] through the possibilities of these multifarious works” (p.5). These “demonstrations performed on historically appropriate platforms” (p. 5), which contain the comments given by the creator who speaks aloud what she or he is doing, are videotaped and are one of the materials studied in the second step, called Traversal. This second step—the results of which can be read in this book—is defined as “a reflective encounter with a digital text in which the possibilities of that text are explored in a way that indicates its key features, capabilities, and themes” (p. 7).

More concretely, to read is a creative intervention that combines two different orientations. On the one hand, a traversal tries to analyze the internal structure of the work, both at surface level (what is the actual text that appears on screen) and at a “deep” level (that is at the level of the underlying code). On the other hand, it also aims at understanding the contextual (historical, cultural, social, political, etc.) aspects of the work, of its production as well as its reception.

Finally (but this enumeration is certainly not exhaustive), Moulthrop and Grigar underline the collaborative and interdisciplinary dimension of the preservation of electronic work, and this at all possible levels and steps of the process.

The result of this two-step methodology is impressive. First of all, it produces a reconstruction of lost works that is at the same time very modest (the authors acknowledge that the outcome of a Traversal is not the work “as such” but the thick description of an encounter with it) and highly informative, since it analyzes not only the surface of the work but also its relationships with the underlying and always determining code. The text under scrutiny is always a double, if not triple, text: The text as it can be seen and retold, often in its successive and sometimes quite different versions; the “hidden” codes of the text; the interplay between surface and deep structure. Second, the chosen method also discloses that the work as it appears thanks to the Traversal is a richer, more detailed, more complex and differently framed work than the one that readers and even specialists thought they knew. The Traversal of Malloy’s work demonstrates, for instance, the progressive downsizing of the graphic style of the initial version, which the attempt to reach a broader audience had to soften (at least in this regard). That of Bly’s We Descend clearly highlights the fact that this work, as said from the beginning, was not a quite weak illustration of the narrative possibilities of Storyspace but an example of a nonnarrative use of the program. Bly’s intent interest was less in storytelling than in building an archive, and this new perspective helps one understand what makes this work so challenging.

Method and concrete analyses however cannot be separated from the powerful theoretical reflection on preservation that is another key aspect of this book. The dramatic contribution of Moulthrop and Grigar’s work to the collective commitment to electronic preservation goes beyond the mere elaboration of a hands-on approach whose principles and guidelines are generously shared with the reader. It has also to do with a number of strong theoretical and political claims that this kind of research allows to put forward. The most striking features of this theoretical work can be found in the first and last chapters, which raise fundamental questions on, first, the definition of electronic literature and, second, the larger horizon of the preservation of this kind of writing.

For Moulthrop and Grigar, the definition of electronic is actually just the starting point of a broader reflection on a set of key elements such as digital-born and digitally borne, open and closed forms of writing, or reading and writing. In this book, the debate on the definition of electronic literature is also meant to make room for new debates on the definition of literature itself. More concretely, this debate is repositioned in the larger context on the relationship between work and medium, the authors of Traversals making a strong case for the medium-specific or medium-sensitive materialist textualism of scholars such as N. Katherine Hayles or Matthew Kirschenbaum, for whom code is anything but abstract and immaterial.

As far as the second question is concerned, that of the long-term use-value or impact of electronic preservation and the textual materialism that accompanies it, the authors
make a very convincing claim for the cultural and political value of memory. Their metaphor of the “Sappho syndrome,” that is “the disappearance of literary works to the extent that all that remains are fragments and references to them by others” (p. 230), liberates us from certain forms of technological naivete or hubris, which may make us believe that machines will allow us to preserve everything while discharging us from the obligation to truly commit ourselves to their (inescapably partial and eventually ephemeral) preservation. Moreover, the Sappho metaphor is also a great tool in correcting the systematic omission of female creators, certainly in a field that is almost automatically associated with masculinity.

*Traversals* is a crucial publication in the history of scholarly thinking on electronic literature. It is also a substantial demonstration of the necessity to always link theory and practice. Finally, it is also a brilliant example of the way scholars and creators can sketch new ways for socially and politically inspired and inspiring work that does not betray the heart of their own profession. For all these reasons, and for many others, this book should be on the shelves—no, on the desks—of all those seriously interested in electronic literature. It is also a richly illustrated in both color and black-and-white, the book includes photos of Weinberg’s finished sculptures (both in situ and in the gallery), archival images of the sculptor in his studio and scans of his masterful drawings from the thousands left for public perusal in his sketchbooks.

As I savored every page of this book, I kept asking myself, “Why isn’t this astonishing artist better known globally?” I do not know the answer! I do however know that his work is equal to (or better than) that of many of the more celebrated, well-known sculptors such as Brancusi, Calder or Moore!

The book has a Foreword by Brenda J. Miller; A short piece, “A Personal Reminiscence,” by Peter Bochenek; and three chapters followed by a good reference list.

**IN THE GRAND TRADITION: THE ENDURING ART OF ELBERT WEINBERG**


Reviewed by Robert Maddox-Harle (aka Rob Harle).

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This delightful book about both Weinberg the man and his work brings to light something we have almost completely lost in our manic 21st-century madness, a sense of the “mysterium tremendum et fascinans.” This sense of “awe” pervades Weinberg’s work and is poignantly conveyed throughout this book.

*In the Grand Tradition* is edited and compiled by Nancy Finlay of the Hartford History Center at the Hartford Public Library. Like Elbert, she was also born in Hartford, Connecticut—this connection to place and Hartford’s support of cultural concerns highlights just how important this kind of civic support is for our society. I feel privileged to be able to imbibe the greatness of Weinberg’s prolific creative output, both sculpture and drawing, through this beautifully produced book.

Richly illustrated in both color and black-and-white, the book includes photos of Weinberg’s finished sculptures (both in situ and in the gallery), archival images of the sculptor in his studio and scans of his masterful drawings from the thousands left for public perusal in his sketchbooks.

Chapter one: The Two Sides of The Moral Universe: Tradition and Meaning in the Work of Elbert Weinberg

Chapter two: No Graven Images: Weinberg’s Judaic Sculptures

Chapter three: Wrestling with the Angel: A Brief Biography of Elbert Weinberg

Chapter One starts with Weinberg’s own words:

“My themes have been of basic ingredients of our human condition, of myth and history. Sculpture is not the medium for frivolity. We’re talking guts and character” (p. 1).

Weinberg was not endeared to purely abstract sculpture, and he despaired of the abandonment of figurative sculpture in the latter half of the twentieth century. He died in 1991, tragically young at age 63. He left many unfinished sculptures in his studio at the time of his death. “One of his plaster models, an eight-foot-tall nude woman officially known as Demeter in Her Garden now welcomes visitors to the Hartford Public Library’s Center for Contemporary Culture” (p. 50).

“Today abstraction is no longer the dominant style that it was in the late twentieth century. Figurative and realistic art has emerged as a valid alternative, just as Weinberg hoped all along that it would” (p. 50). There will always of course be styles that become “flavor of the month”; the extreme proponents of such style pronounce everything that has gone before passé and dead! However, the world is now a very small place, with a huge population that seems magnanimous enough to accommodate all styles. I doubt if figurative and abstract figurative sculpture will ever disappear—thankfully.

The Hartford History Center houses cultural collections that reflect community life in Hartford from 1630 to the present. The Elbert Weinberg Trust donated (in 2013) a large collection of Weinberg’s creative output, including sculptures, drawings, manuscripts, prints and photographs that form the basis of this book (p. 57). In the Grand Tradition, apart from being an important historical record of Weinberg’s work, gives us a glimpse into the life and psyche of this brilliant artist. It is thoroughly recommended for all artists, art students, educators, historians and lovers of fine art generally.
INTRODUCTION TO GRAPHIC DESIGN: A GUIDE TO THINKING, PROCESS, AND STYLE

Reviewed by John F. Barber, the Creative Media & Digital Culture Program, Washington State University Vancouver. Email: jfbarber@eaze.net. doi:10.1162/LEON_r_01759

As an academic in the field(s) of (new) media theory, design and practice, I frequently find my students conflating conceptual design with visual design. This overlay no doubt follows from the porous boundaries demarcating formally siloed fields now digitized by a wide variety of computer hardware and software available for fostering creativity. That, and the high emphasis placed on the visual, creates the penchant to position every endeavor—advertising to blogs to books to games to interactive interfaces to marketing to packaging to virtual reality—under the umbrella of “graphic design,” and promote an emphasis on the way a designed object looks rather than the way it works.

So, if indeed one wishes to teach effective design with an emphasis on the way objects look, Introduction to Graphic Design: A Guide to Thinking, Process, and Style by Aaris Sherin is a valuable resource and foundation.

To provide context, Sherin defines graphic design as “the process or practice of combining visual material, usually text, imagery, and other elements, to communicate a message or to create an experience for an audience” (p. 9). Practitioners are called “designers.” They give form to content intended for viewing on computer, tablets, mobile telephones and other consoles. They also produce (often analog) packaging, signage, displays and installations. All endeavors have underlying principles of arrangement, structure and expression. “All designers,” says Sherin, “need to understand the formal principles of design, work well with typography, and have excellent visual and spatial skills” (p. 12).

Introduction to Graphic Design seeks to impart these and other skills. “Basically,” says Sherin, “this book aims to give first-year design students the confidence to balance the mixture of structure and experimentation needed to effectively give visual form to concepts and ideas” (p. 6). The nine chapters focus on concepts and ideas, form and space, working with color, typography, using and creating imagery, layout and arrangement, and context and production. Sherin begins each by defining key terms, followed by information and examples (visual and textual), exercises and reviews highlighting dos and don’ts.

At the book’s conclusion, design is once again presented as both a conceptual and practical process, “a repeatable series of actions used to develop design projects” (p. 232). Your definition and mileage may, of course, vary, but Sherin deserves credit for providing examples and learning opportunities regarding fundamental concepts and practices of graphic design, whether the end product is digital or analog.

Introduction to Graphic Design encourages readers (learners) to use critical thinking and visual exploration to understand the relationship between graphic designers and creative problem-solving. Sherin positions graphic design as a way of life. For those new to the life, the case studies, exercises, key terms and concepts, and dos and don’ts provided in Graphic Design: A Guide to Thinking, Process, and Style provide comfort and confidence to give visual form to concepts and ideas.

MOVEMENT, ACTION, IMAGE, MONTAGE: SERGEI EISENSTEIN AND THE CINEMA IN CRISIS

Reviewed by Will Luers, the Creative Media & Digital Culture Program. Washington State University Vancouver. Email: wluers@gmail.com. doi:10.1162/LEON_r_01760

In an extraordinary work of cinema scholarship, Movement, Action, Image, Montage: Sergei Eisenstein and the Cinema in Crisis, Luka Arsenjuk aims to recover Eisenstein’s method of “thinking cinema” from the obscurity of classical film studies. Arsenjuk’s thorough and well-illustrated treatment of Eisenstein’s ideas, drawn from recent archival material, brings out a complexity and plurality that challenges some commonly held assumptions that the famous teacher/theorist/director is too systematic, totalizing, teleological and formalist for the posteverything age. Eisenstein did conceive of cinema as a “synthesizing machine,” the realized telos of all arts, but he understood that cinema pursues this unity through the principle of montage, a principle described by Arsenjuk as “contradiction, conflict, splitting, doubling, recoil and negation.”

The collision of two shots, a splicing together of fragments ripped from their spatial and temporal contexts, produces new contexts. Cinema is a destructive force that makes for new unities, new possibilities for thinking, new connections between media, genres and forms. After cinema, the other arts begin to “divide, and depart from themselves.” Eisenstein’s voracious study of other art forms (Noh, comics, cartoons, slapstick, poetry, grotesque theater, renaissance and baroque painting, modernist art and literature) is not an attempt to...
This stimulating book, whose powerful three-page introduction by Timothy Morton is itself almost a reason to buy it, deals with the power of cinematic representation. He was more concerned with "strategies of material construction," the more practical, "operational" approach to creating pathos. He studied the "formula for pathos" in other art forms—their patterned compositions, tonality, measure and rhythm for emotional effect—not to entertain audiences better but to communicate revolutionary ideas.

Arsenjuk looks closely at this "dialectic of division" across Eisenstein's main concepts of cinema: movement, action, image and montage, and pursues his subject through this same dialectic. Each chapter treats the four concepts as a crisis or rupture of traditional notions. The author writes, "the idea of cinema emerges when we are able to grasp the determinate shape of the crises that traverse the set of its conceptual conditions." In cinema's illusion of movement, Eisenstein sees a crisis of the figure. The perception of a man running across the screen is disfigured and disturbed by the thought of his movement. Cinematic movement is experienced as a division between a nonfigurative force (movement made visible) and a figurative appearance (the distinct form of a body, interrupted by movement).

Cinematic action, the clear depiction of events, brings a crisis of form. Theater of the grotesque, in which action is broken down into antinaturalistic gestures and designed movements, is divided from epic form, in which naturalistic action builds and accumulates as a continuous, singular event. Eisenstein's massacre sequence in Strike! demonstrates this dialectical approach to dramatic action. A historical event, worthy of epic and heroic depiction, is built from a montage of minor gestures and movements. The "schematic reduction" only hints at the actual massacre and has the effect of magnifying the event in the mind of the viewer.

The image is also put into crisis in Eisenstein's thinking. "An image is a cut that discloses," writes Eisenstein. The multiplying of cuts through montage problematizes the idea of image as singular. The cinematic image undergoes a division into two distinct and incompatible forms: the "symbolic image" and the "symptom-image." A painting of a mother and child may signify the intended idea of maternal love. A film of a mother and child may signify the same idea, but there is always an excess, produced by time, that resists iconic representation. The symptom-image, the image in cinema that does not carry meaning or that has become incomprehensible, is the ground for unconscious fantasy.

In Arsenjuk's final chapter on montage, the concept that permeates all the other concepts, he asks rhetorically if there exists a unifying concept of Eisensteinian montage. The word montage, appropriated from engineering, implies division and calls into question any unifying principles of aesthetics. Montage is simply the juxtaposition of two heterogeneous elements that can potentially become "productive of a mental continuity." In the montage practiced by Eisenstein, it is the essential incommensurability of two shots, the leaving out, that causes a bifurcation in thought and sets cinema on the way to language-like possibilities. "Cognition is construction," is Eisenstein's revolutionary lesson from cinema. The world—it's poetry and its meaning—is actively built out of fragments and "ceaseless division." Given the proliferation of cinematic forms in the digital age, this is a vital lesson.
of fragile uncertainty, the in-between-ness of things, as exemplified in various artworks and in the speculative thought and art of Paul Thomas.

Spectacle comes from *spectate*, to view, watch or behold. It’s passive. While etymologically close, *speculation* is more active, to do with contemplation and of course thinking about what you’re observing. But what we are observing is not clear. We shiver between two horrible poles: absolute nothingness/nonexistence and mechanical, cold, perpetual motion, that is not alive in any useful sense, like a pointless pendulum about which we know Foucault. The attraction toward either of these poles, really, is a death-drive. Art, and here quantum art especially, quivers in the middle and postpones or suspends this momentum. The life that flickers twixt nonexistence and pointless agitation, and Thomas’s art that mirrors or embodies this flickering, is not definite life as opposed to death, but “uncanny,” uncertain, hard to discern. While the manic pursuit of certainty is destructive, of life and everything, the powerful fragility of the flickering, asserts Morton, challenges the “rigid, binary ways of thinking and acting.” Uncertainty is power. The horrible poles are in fact impossible; the in-betweenness is all there is.

Thomas’s book is an insight into art as reflection of, and stimulus to think about, our flickering lives in a flickering universe, via art. Immaterality precludes neither performativeness nor political action. If that’s hard to accept, given the urgent materiality of threats we face today, think about the opposite, the death-wish binaries of the Cold War era, revisited and repeated now as both farce and tragedy. This malign Zeitgeist would collapse all waveforms, reducing all uncertainty to a tweeted obscenity. We need the flickering. One way to confound the enemies of humanity, truth and oneness is to throw glitter into their eyes, to rattle them by being gloriously off their bases, swerving, scintillating, made of different stuff, shimmering life to their hard death, multidimensional to their one-dimensionality, infinite to their zero.

These don’t make very good slogans or plans of action, of course. We can, and do, drift off into clouds of semiprofessional unknowing, making, you know, art about that stuff, just one more useless pole, virtual now. We can get lost and self-destruct in a frenetic forest of norms and tangents to the death-death line yet make a good career out of that along the way, if you get the self-destruction just right. But art can anchor us, not trapped but located, at least for a bit.

Each large chapter of *Quantum Art and Uncertainty* deals with one “property, dimension or aspect of quantum phenomena” and the impact of uncertainty, illustrating it using physics and art. A comprehensive review of the contents and arguments would be as long as the book itself, but in outline: Chapter one, “The Swerve,” correlates the Surrealists of the 1930s, specially Roberto Matta, and artists such as Cézanne and Giacometti, with Heisenberg’s uncertainty principle. And this uncertainty-awareness has rarely been passive. It isn’t at all defeatist. The swerve, or cinamen, can be a powerful tool to thought and to action.

The second chapter, “The Diagram,” uses Richard Feynman’s blackboard markings to catalyze visualizing links between art and science via, wait for it, Deleuze and Francis Bacon. This might give an idea of the book’s scope. Gestural and logical expression are here intertwined. Chapter three, “Spin,” introduces some of Thomas’s own work, with Kevin Rayworth. Some of the work, in isolation, can seem rather illustrative, but actually goes beyond that toward a sort of confrontation, again between knowing and uncertainty. It is no more “merely illustrative” of, for example, the data from 60 microseconds of qubit precession than were Feynman’s diagrams merely illustrative of wave/particle duality. They became performative, explorative again. A photograph of Feynman lecturing at CERN shows him almost embracing a straight line, while equation fragments drift off across the board like Cy Twombly marks or Van Gogh’s crows.

The penultimate section, “The Graphene Moment,” sees the discovery in 2004 of the eponymous form of carbon as a swing from graphite to a new quantum materiality. Thomas writes, with reference to Object Oriented Ontology, of Quantum Oriented Ontology, of “hidden material agencies” being brought to light. Pencil is contrasted to a drawing, admittedly using graphite, of the sonification of a microwave affecting an electron’s spin. The pencil tip and gramophone needle are contrasted with the atomic force microscope. The (sort of) certainty of the sharpened pencil lead is thrown into question by the implications and metaphors surrounding graphene, and that’s the (sudden distribution of) the point. It’s a many-penciled universe, perhaps.

Inflection, curve, swerve, fold . . . and on, in the final chapter, to smearing: The Cloud and its erasure of digital and other boundaries. Thomas sees the cloud as a problem of “perspectivalism,” unable to be absorbed within the objectification of space. (The cloud, in computing terms, is often seen, including here, as coming from Compaq in 1996 and then Google 10 years later, but in fact it was used in similar contexts at least twenty years earlier, at least metaphorically, to which telecommunication diagrams attest.) Thomas quotes Manetti describing Brunelleschi’s use of burnished silver to reflect, rather than portray, clouds in all their irra-
Within the scope of recent publications on or about the Anthropocene, within the context of ecocriticism, *Ecology without Culture* certainly represents an original take on the subject. As its title already suggests, Marran formulates an answer to Timothy Morton’s book *Ecology without Nature* (2007). Whereas Morton tries to free ecological thinking from nature as it imposes too much on it due to its romantic tradition, Marran points her finger to human culture in general as the culprit as the material world, in her opinion, exceeds culture (p. 5). As the subtitle of her book suggests, Marran focuses on several toxic events and sees how these lead to a “transcorporeality,” a terminology borrowed from Stacy Alaimo, that connects humans and nonhumans with a strong “recognition of the agency of the nonhuman world” (p. 44).

As a remedy for the influence of cultural humanism, Marran introduces as a solution in four chapters “ecological imaginaries and ways of thinking ecocritically outside the protective enclosure of cultural and human exceptionalism,” while the introduction is completely dedicated to “the problems of culture for ecocriticism” (p. 6). To address these problems, Marran introduces the concept of the *biotrope*. She observes how various cultures have used “biological elements to prove their strength and longevity, to make themselves appear as inevitable as the earth itself.” This results in some unmoveable connotations, “fix[e]d . . . as if in amber,” between nature and culture. Marran names two explicit examples of these biotropes, one of which is “America’s amber waves of grain” as part of the hymn “America the Beautiful.” The other, about which Marran is very explicit and unforgetting, is Murakami Haruki’s use in July 2011 of “the biotrope of the cherry blossom to claim Japan as an ethnic national collective that would inevitably recover from the catastrophic experience of tsunami flooding and nuclear meltdown” (p. 7). Both instances indeed demonstrate how an aspect of nature is used to claim a nation’s identity without much attention for its wider implications. They make very clear how nature is trapped in a certain narrative for which there needs to be found an alternative.

Marran, a professor in the Department of Asian Languages and Literatures at the University of Minnesota, declares herself to be inspired by new materialist perspectives as proven by, among others, her reference to Alaimo and others. With the biotrope clearly being connected to both materialism and storytelling, it will be no surprise that the latter takes the lead in her discourse, in the first place as an obligation, where storytelling is connected to Deleuze’s and Guattari’s concept of “minor literature,” which allows to draw attention to willfully overlooked situations. Obligate storytelling is defined by Marran as coming out of a relation, investing in a particular kind of voice, describing what storytelling means for its subject. Her main example in this chapter is Ishimure Michiko, who has written extensively about the poisoning of the Shiranui Sea, including in her *Paradise in the Sea of Sorrow* (1969). Ishimure has attention for the stories of material objects, such as stones, just like Ursula K. Le Guin, whose quote from “The Morrow” about a crying stone opens the chapter.

The other chapters, on slow violence in film, the domestic turn in environmental literature and finally literature without us, are explicitly illustrated by many non-Anglophone, often Japanese examples. The chapter on slow violence is for instance almost solely dedicated to Tsuchimoto Noriaki and his films on mercury poisoning and seems therefore somewhat out of balance. The chapter “Res Nullius” on the domestic turn, its title referring to “property belonging to no one,” equally focuses mainly on one case study, namely Ariyoshi Sawako’s *Cumulative Pollution*, which takes the compounded toxic effect of Rachel Carson’s *Silent Spring* as a biotrope and discusses poisoning in urban domiciles (p. 98). The chapter “Literature without Us” functions as a conclusion in which Marran criticizes the concept of the Anthropocene.
as being “trapped by a tautology of human exceptionalism” (p. 118) and thus too narrow. She further discusses a possible “planetary” perspective from the point of view of, among others, comparative literature scholars Masao Miyoshi and Gayatri Spivak, but eventually opts for the necessity of reading on different scales, including that of the animal. Citing several poems, short stories and plays by Tawada and again Ishimure that are told from an animal perspective, Marran concludes that these representational worlds can “imagine a world without us in order to imagine a world anew with us” (p. 142).

Marran certainly brings an interesting, highly readable perspective, albeit somewhat unbalanced in its references. The major stumbling block in my view remains her elimination of culture. It is an interesting thought experiment, and listening to and including the nonhuman in ecocriticism is a noble and necessary endeavor that will however eventually lead to yet another culture. Today’s turn to a (renewed) interest in the nonhuman will no doubt be at its basis. It might be that Marran views this taking of human culture out of the equation as a way to create a “Body without Organs” in the sense of Deleuze’s use and its original by Antonin Artaud. Although it might seem superfluous, it is interesting to quote the latter’s use of it in his radio play To Have Done with the Judgment of God (1947):

When you will have made him a body without organs, then you will have delivered him from all his automatic reactions and restored him to his true freedom.

This seems to fully sum up Marran’s intent, but she fails to make this connotation herself, whereas Timothy Morton in his Ecology without Nature to which she refers is clearly conscious of it. Marran might of course consider the connotation implicit in her reference to Morton’s book, but it is a pity she does not unpack it.

THE INTERNET TRAP: HOW THE DIGITAL ECONOMY BUILDS MONOPOLIES AND UNDERMINES DEMOCRACY

Reviewed by Hannah Drayson.
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In The Internet Trap Hindman argues that we in fact live with two Internets: the imagined Internet and the real Internet. The “imagined internet,” where a flattened digital commons made possible by technology that—through digital copying—is not limited by physical restraints either of reproduction or distribution, offers a democratized space in which the marginalized can become the center and small tech companies run from garages can topple giant competitors. The other is the “real Internet,” which the book sets out to describe and explain. This is an Internet that is monopolized by two major companies, Facebook and Google. It is also an Internet where recent policy changes in the U.S. now mean that ISPs can charge more for greater bandwidth, meaning that no longer are all online publishers equal in terms of the accessibility of their content. It is an Internet where local news is in effect nonexistent, erased by the economic realities of economies of speed and scale—and where even the largest news sites, such as the Huffington Post, cannot justify the resources needed to maintain aspects of their web presence independently of the infrastructures provided by the Facebook platform. In the face of this distinction between the ambitions and rhetoric of the imagined Internet and the current situation, The Internet Trap sets out to offer some explanation of the current online monopolies, the forces that maintain them and finally the extreme difficulty, perhaps impossibility, of dislodging them.

As with the recent acceptance by media and public of the dangers to both privacy and democracy posed by contemporary web technologies, any informed reader might recognize the manner in which digital technologies are often represented—inmaterial, ubiquitous and egalitarian—as inaccurate. However, Hindman takes this critique further by furnishing us with an analysis that shows the extent to which digital technologies have far more in common with the large-scale, physical smokestack industries that they purported to replace. It makes more sense to consider the services offered by businesses like Google or Facebook—energy and resource hungry, running on monolithic data centers—as a continuation of the industries of the past and just as subject to familiar economic principles such as economies of scale. Applying principles of economic theory that might usually be considered more suited to “real life” markets and industries, Hindman argues for understanding the Internet’s story as one of continuity rather than revolution and situates our current predicament in the wider context of media history. The text favors topics such as local news sites over more futuristic and fashionable current developments such as cryptocurrency and the Dark Web but also offers a useful and up-to-date grounding in many developments in web technology, including accessible explanations of how things...
The central theme of the book is understanding how the Web's form gives rise to concentrations of power. One of Hindman's examples, personalization, is a key tool for ensuring that a site maintains its web traffic. In Chapter 3, he tells the story of the emergence of personalization algorithms through a close examination of their development. Hindman uses the documentation of an open competition conducted by Netflix to push the state of the art in the recommendation algorithms used on its film and television streaming website. Over three years the company orchestrated a fierce competition between a number of international teams, involving many leaders in the field. The result was the discovery that the accretion of multiple small improvements in making meaningful predictions of what different people would prefer led to the most effective, if extremely complex, algorithms. However, as Hindman points out, what also emerged for the competitors and company was the realization that despite the complexity and mathematical sophistication of any algorithm, it was the quantity of available data about content and users that always in resulted in an advantage.

The conclusion? Effective personalization requires massive data sets and resources, both in terms of computing power and the workforce able to implement the hardware and software resources that can carry it out. The result is simply that larger sites that monopolize a market and combine the most visitors with breadth of content are placed to always dominate because they can accumulate the required mass of user data to make personalization valuable to their users in a way that smaller sites will never be able to do. Hindman's thesis: The Internet consistently favors those who have scale on their side.

*The Internet Trap* makes use of economic theory that the digital revolution was supposed to turn on its head. It makes these ideas accessible to a wide readership but also includes an appendix with the formulas and approaches used. The result is a reading of the contemporary Web and its politics that feels refreshingly grounded and cleanly argued. The book offers a useful manual for understanding the Web in its current form and offers a lucid sense of the accretion of power that has taken place online and the efforts that will be needed to resist it. In the end the titular "trap" seems far less hyperbolic than we might want to think. However, the book also does a good job of connecting back to the bodies of literature and theory that have examined the characteristics of emerging media from earlier times—print, broadcast and electronic—all of which made the same, apparently irresistible move from open and undefined emerging media to reified monopolies.

**BLACK OUT: SILHOUETTES THEN AND NOW**


Reviewed by Amy Ione, Director, The Diatrope Institute, Berkeley, CA 94704 USA. Email: ione@diatrope.com. doi:10.1162/LEON_r_01759

Two reasons account for silhouettes' success. First, the cutouts were convincing portraits because the edges of the cutouts matched the outline of a person, animal, object or scene. In addition, devices like a physiognomtracé allowed for their rapid and inexpensive production. Indeed, even the term *silhouette* speaks to the form's economical quality. Adopted from the name of Etienne de Silhouette (1709–1767), who had served as a cost-cutting finance minister to King Louis XV (although for only eight months), the term alludes to this minister's attempts to stem the spiraling deficits of the court expenditures, which led to the labeling of cheap products (like the inexpensive paper cutouts) as silhouettes. While the medium became popular in the eighteenth or nineteenth century, the earliest known paper cutout was probably a double portrait of the English monarchs William and Mary done by Elizabeth Rhijberg in the late seventeenth century. Auguste Amant Constant Fidele Edouart (1789–1861), who called himself a "black shade man," is largely credited with popularizing the form.

*Black Out: Silhouettes Then and Now* offers some insight into this history and serves as a thoughtful addition to the silhouette story as well. A beautifully produced original study, this book is primarily focused on the United States. Curator Asma Naeem sets the stage in her introductory essay, writing:

Historical silhouettes were in certain ways the perfect aesthetic vehicle for a country roiling between moral and philosophical polarities regarding such issues as slavery and colonial independence. Silhouettes were a reconciling paradoxes, not only aesthetic but also political and social, in terms of their merging of high and popular culture, their instability as fine art and handicraft, and their slippages between whiteness and blackness. . . . contemporary artists continue to manipulate these paradoxes (p. ix).

Despite the nod to contemporary art, the volume's strength is its historical commentary. The title *Black Out* was chosen to underscore that the cutouts were predominately black in color and that this underinvestigated medium is largely blacked out of American history. Among the polarities are black versus white, how what we see is put together with the unseen and how positive and negative spaces are related in a cutout. As Naeem notes, *blackout* also evokes something broader in a social context because the word is frequently used to speak about a loss of consciousness, what is kept in the dark and, by extension, what is erased from the art historical narrative.

This volume, a catalog for an exhibition at the National Portrait Gal-
Leonardo Reviews

them, seeing them as portraiture. copies, the handwork trades elevated disparaged such works as derivative art. Yet even as those in fine art circles an artisan-crafted imitation than fine art. "art" because it was said they lacked an expression of artistic imagination. Yet, paradoxically, while the "scientific" portraits offer some indication of skull structure, like the cutout profiles, they represent who an individual is on the outside. Neither gives substantial visual insight into their inner qualities. Art/entertainment forms like shadow theater entertainment, a popular form throughout Europe in the seventeenth to nineteenth centuries, had a similar look. Here flat articulated cut-out figures are held between a source of light and a translucent screen or scrim. Several catalog entries show that full-figure cutouts superimposed on lithographic scenes create a similar visual look.

After Naeem's opening essay, Alexander Nemerov's piece features Martha Ann Honeywell (1786-1856). Born in New Hampshire without arms and with only three toes on one foot, Honeywell signed her work "Cut by Martha Ann Honeywell, born without arms," indicative of her pride in her work and her unusual process. Honeywell worked with her toes and used a combination of her mouth, toes and one of her stump arms to cut paper. Largely an itinerant artist—as was common for silhouette makers to market their wares at that time—she was also a feature attraction at the Peale Museum in Philadelphia.
from 1828 to 1839. Moses Williams, a male mulatto who was eventually manumitted by the Peale family, was another unconventional nineteenth-century silhouette maker. Gwendolyn DuBois Shaw presents his story. Like Honeywell, he was connected to the Peale Museum, the first natural history museum in the United States, founded by Charles William Peale (1741–1827), an American painter, soldier, scientist, inventor, politician and naturalist now remembered for this museum and his portrait paintings of leading figures of the American Revolution. Peale added a silhouette-drawing machine, a physiognomtrace machine, to his museum in 1803 and Williams operated it. Moses Williams’s relationship with Peale was complicated and quite representative of the time. For example, due to his heritage and position, the Williams portraits for the Peale Museum were sometimes attributed to Charles or his son Rembrandt Peale (1778–1860).

The third essay, by Penley Knipe, carefully examines silhouettes in terms of their material composition, telling us about the paper, the scissors and so forth. In addition, Anne Verplanck, a preeminent scholar on silhouettes in the United States, wrote the 49 catalog entries.

The limited space devoted to the four contemporary artists is my primary criticism of the book. Naem asserts that each of them reinterprets the silhouette as a mode of expression and appropriates components of the art form, be it the shadow, cutting of paper, flatness or blackness. She also argues that they deconstruct its historical value and specificity. I do not doubt that their stunning and complex works were an exciting part of the exhibition that this book catalogs. For this reader, however, the book cried out for a full essay and one that compared and contrasted the then and now positions, particularly since Naem mentioned that one impetus for the exhibition was the abundant evidence of the silhouette form in popular culture. This omission was even more striking given that historical silhouettes were represented in terms of their popularity and as a democratizing force within early America. Since Naem mentions that one incentive for the project was the evidence of the form in advertising and popular culture, not having an essay devoted to the high-low tension was inexplicable and seemed to devalue the reach of contemporary silhouettes.

A contemporary culture article might have delved into how the low-cost, popular exemplars surrounding us compare with historical examples in the space where high and popular culture meet. Such an essay might have looked at our avatars and mobile phones and the success of Apple’s iPod and iTunes silhouette campaign, said to be one of the most successful advertising packages of the twenty-first century. Avatars, which Naem mentions in passing, are particularly interesting because they resonate with the personal/impersonal element of the medium historically. Some are customized to create a unique sense of whom they represent and, in this respect, emulate the individualized quality of the nineteenth-century silhouette. Other contemporary examples, like the unidentifiable Apple silhouette dancers, are more like an everyman (or “every person”) image. The iPod ads are also intriguing because the iPod device was barely visible and despite this the faceless unidentifiable dancer drew consumers in, effectively allowing many of us to imagine our own person in the dancing form [2].

Instead, the “Now” section—essentially about seven pages of text and a few images—offers a sparse contemporary component. This material acquaints us with four female contemporary artists: two American MacArthur Fellows, Kara Walker and Camille Utterback; the Canadian artist Kristi Malakoff; and Kumi Yamashita, a Japanese-American artist. Of the four, Kara Walker was the best fit in terms of the visual, sociological and contextual narrative. Her panoramic silhouettes of plantation life and African American history intersected with sections of the book that explored issues related to race, slavery and memory.

The exceptional projects of Kristi Malakoff and Kumi Yamashita matched the form’s block, cutout appearance but are quite limited in terms of their reach into the culture at large. Yamashita, a sculptor of light and shadow, manipulates inanimate objects like light and paper, wood or metal to create illusions of shadowed three-dimensional form, including profiles. Her works are optical illusion and to some degree function like a perspectival painting, given that the illusion is perceived when standing in front of the work and looking at it from its central axis. Perceptually ambiguous, these stunning mixed-media pieces are strikingly unlike the nineteenth-century silhouettes in several respects. First, her works are time intensive to put together. In addition, because there is no tangible object, there is nothing to hold or cherish. Also, unlike the physicality of an instantaneous profile, these works are intended to evoke impermanence: “For [Yamashita], shadows came to symbolize another dimension of life, perhaps something even more real than its holder” (p. 150).

Maibaum (2009), Kristi Malakoff’s contribution, uses cut paper and foam core to make life-size sculptures depicting a scene of twenty children dancing with ribbons around a maypole as birds fly overhead. Like Yamashita’s objects, it requires a fixed viewer position to see the entire work properly. Naem says that Malakoff explores the tensions between craft and art in this installation. To be sure, the materials are associated with crafts, but the size and complexity of this unique installation seems to belie the simplicity of the nineteenth-century cutouts.

Camille Utterback’s commissioned interactive contribution, on the other hand, seemed completely out of place in this book. An interactive digital piece, it reacts to viewers’ shadows and movements. No doubt it offered a fun, playful and appealing component within the gallery, but it is a stretch to call this shadow-play...
work portraiture or a cutout. It is ethereal and bears no resemblance to a silhouette-type portrait. It is the viewer, not the artist, who creates the image by moving through colorful shapes, lines and abstractions. Since Naeem was not limiting herself to American artists, someone like William Kentridge might have been a better fit for the fourth slot, since his silhouette progressions are a visual match and his art also critiques cultural narratives.

In summary, I am enthusiastic about this book but wish it had done more. Black Out’s insights deepen our understanding of early America through documentation of overlooked populations who are traditionally “blacked out” of history. It conveys the power and importance of silhouettes historically, capturing how this modality repositioned the portraiture realm. Informative essays capture how these incredibly popular forms made it easier for everyone to have a portrait before the advent of photography in 1839. Curator Asma Naeem, who recently became chief curator at Baltimore Museum of Art, also conveys that these forms were a fascinating, complicated and significant element within early America. Overall, the book’s strength is that it speaks to the lives of those without power. For this reason, I highly recommend it. It will be of particular interest to those interested in American history, for it is a reminder that traditional narratives tend to mitigate the breadth of social polarities and pluralism through their crafting of a dominant story, one that blurs our ability to perceive the underlying mosaic.

References and Notes
