Susan Goethel Campbell's exhibition Field Guide explores the nature of art and the conceptual process through a multimedia installation that also reflects upon temporality, art history, ecology and science. Introduced with a time-lapse video of weather patterns captured by web cam over the course of an entire year, atmospheric effects assume the quality of translucent washes that blur distinctions between opacity and transparency, painting and technology. Aerial views of built environments set against expansive cityscapes present essential imagery for large-format digital woodblock prints realized in monochromatic tonals and saturated grids of yellow and blazing orange. Some combine undulating wood grain patterns with pinhole perforations to admit light; others consist of diaphanous walnut stains applied to hand-crafted paper, a self-referential allusion to art's planar-ity and permeable membrane.

The evanescence of these views is echoed in pristine impressions of filtered dust and shimmering milkweed assemblages contained in Plexiglas light boxes. Known as Asclepias, milkweed is an herbaceous flower named by Carl Linnaeus after Asclepius, the Greek god of healing, due to its efficacious medicinal powers. Like the weather, the milkweed's reflective silver filaments respond to shifting currents of air paired with gently wafted treetops projected in the viewing room. Here pears of light corresponding to the spheres and pin-pricks of the prints on the walls float randomly over the fictitious frame of a cubical vitrine. Orbs appear and disappear amid nocturnal shadows as figments of the imagination, their languid dispersion eliciting not-of-this-world sensations of suspension, ascent and transcendence.

This joined to the mesmerizing stillness of a gallery pierced occasionally by the sound of supersonic aircraft, a reminder of the machine in the garden. Beyond, the history of landscape photography and the Romantic sublime are encoded in works titled "Old Stand" that render minuscule figures of stationary box aircraft, a reminder of the machine in the garden. Beyond, the history of landscape photography and the Romantic sublime are encoded in works titled "Old Stand" that render minuscule figures of stationary box photographers against the grandeur of ice-capped Rockies. In some of the works the human figure is effaced as a historical memory through exquisitely modulated rubbings whose unbounded spatiality contrasts with the reflexive interiority of the viewing room. Campbell's incandescent vision of nature asserts the phenomenal power of art to elevate the human spirit in the presence of heart-stirring beauty. It dares to reaffirm the time-less union between the material and immaterial substance of the universe, between human life and the ephemera of the natural world.
of the Great Depression. Footage is accompanied by interviews with a number of left-leaning filmmakers and people who study the field today. The composite deftly allows us to see how cinematographers in the United States and Britain used interviews and film to raise social consciousness in the last century. Then, as now, those who created the films were not trying to provide an objective report. Rather, much like Michael Moore’s documentary productions today, those involved wanted to present their point of view. These pioneers saw film as a means to educate people about the pervasive human suffering neglected by the entertainment films and newsreels of their time. While we can argue about the impetus to use the camera to try to change the world and whether a documentary should include a bias, Working for Change proved that films could help others. In this case, the message broadcast the plight of many in the 20th century who were suffering unheard. Today, as labor is losing its leverage in the United States, seeing the historical struggles reminds us of the importance of preserving worker rights. Change is not a one-and-done type of undertaking. Rather, as people lose their pensions and other benefits today, a documentary like Working for Change reminds us that gaining worker rights was not a passive activity but a hard-won battle against the dominant paradigm.

The first three sections of the film deal with American projects. The Workers Film and Photo League (WFPL), which operated 1931–1934, is presented in the first sequence through interviews with founders Leo Hurwitz, Leo Seltzer and commentators. They explain that the social documentaries were seen as a means to show poverty, picket lines, unemployment, evictions, bread lines and the overall Depression malaise to the larger community. Their methodology consisted of recording events and improvising a “script” as the nature of the event unfolded. Letting the people at the event provide the material allowed the filmmakers to capture the moods and feelings of a mass demonstration against unemployment in New York City in 1930 (where the police beat and dragged demonstrators); the many Hoovers halls that housed the unemployed; and the hunger marches in cities across the United States.

This section of the film stayed with me longest, possibly because it set the stage for the later developments. In any case, the interviews here truly convey the commitment of the filmmakers involved in this genre and their struggles in getting the message out. The WFPL had few resources. Because their work received little play in theaters, here, too, they improvised. The films were shown in union halls, fraternal organizations and anywhere else they could find a room. In one case, when they wanted to show their films to farmers in the Midwest, they strung a sheet on the trees. Similarly impressive were their efforts to build channels for communication with different populations across the United States. Early in the Depression, many people failed to conceptualize how broadly the downturn would impact the population. Those in the cities assumed the farmers had all the food they needed. The rural population, by contrast, concluded that those in the urban areas had all the money. In actuality, neither rural nor urban populations were able to take care of their basic needs and the documentaries were able to showcase the broad fabric of suffering.

Bonus March, filmed in 1932 before the New Deal found ways to extend some relief, came about when World War I veterans, their families and affiliated groups went to Washington, D.C. to seek help. Although the US government had awarded them cash payment for their service in the form of certificates, they had structured the payment so that awardees were unable to redeem the certificates until 1945, more than a decade away! Disheartened and out of work due to the Great Depression, they demanded the right to redeem their service certificates earlier; they critically needed money to live on as they weathered their prolonged unemployment. As the film shows, rather than finding a compassionate response from the Hoover administration, the marchers were gassed and greeted with gunfire. Those elected to govern didn’t see them as struggling constituents but rather as dangerous radicals. They completely failed to conceptualize the veterans’ distress, with some even remarking that people shouldn’t expect to simply get things from Washington. While I would like to say that it is extraordinary to think that those elected to government positions responded so callously, as I write, I know that a similar sort of arrogance is alive and well even today.

With Franklin Delano Roosevelt’s New Deal, the compassion terrain changed. This period is covered in the second section of the film; here we meet Pare Lorentz, a progressive New Deal filmmaker who persuaded the Resettlement Administration to finance films about the work of FDR initiatives. Members of Congress who were opposed to “New Deal social welfare programs” were also against spending taxpayer money for the documentaries that showed what the government programs were doing to help people. For his first film, Lorentz turned to Paul Strand, Ralph Steiner and Leo Hurwitz. Despite the differing agendas of the filmmakers, The Plow That Broke the Plains was a hit at the box office. Praising American ingenuity, the film reassured people that the Roosevelt administration would solve the Dust Bowl situation.
A second Lorentz film, *The River*, covered the causes of the floods in the Mississippi Valley.

British public agencies, by contrast, agreed to finance documentary films in order to educate the public about social issues during the Great Depression. Persuaded to do so initially by John Grierson, the man who coined the term “documentary,” these films captured the lives and dilemmas of working people. Grierson felt that creating sympathy for the plight of those suffering could avert a revolution. Indeed, many suffering workers found Communist interest in workers attractive, and thus this fear was real. Although Grierson’s only film was *Drifters* (1929), his impact was immense. He had a knack for funding film projects using public money and picking filmmakers (e.g. Pat Jackson and Harry Watt) who could craft compelling cinema such as *Coal Face* and *Night Mail*. The first introduced workers in the coal mining industry, a backbone industry in Britain at that time. *Night Mail*, directed by Harry Watt, documented the importance of Royal Mail and the railways in uniting the nation.

Other British projects included *Housing Problems*, a film about living conditions co-directed by John’s sister, Ruby Grierson, who often was the one who got the people to talk. We also meet Paul Rotha, who didn’t find Grierson’s films radical enough. Rotha’s *Shipyard*, which was commercially commissioned by a shipbuilder, nonetheless turns out to be rather muted politically. Despite Rotha’s left-wing stance, the film does not make an assertive statement. Rather he beautifully introduces the lives of the workers contemplatively, as they wonder if those who board the vessel to visit distant places will ever reflect on the lives of the people who made the ships. The cinematography reminded me of the work of Lewis Hine (1874–1940), an American sociologist and photographer, who used his camera as a tool for social reform. Hine’s photographs were instrumental in changing child labor laws in the United States.

Also discussed is Frontier Films, created in 1936 by Leo Hurwitz and his colleagues. This was the first independent, not-for-profit film company in the United States. Its mission was to deal with the truth of the American experience in film. While Grierson and his group in England had a great deal of government money, as noted, the documentarians of the New York School always operated on a shoestring. Their effort to make a radical, bold step forward at the end of the thirties led to films like *Native Land*, which focused on the way the labor struggle in the United States was attacked. It took them five years to finish because they had no money. Unlike their earlier improvisations, they worked with actors to dramatize real events. To raise funds, they showed the footage already produced to prospective investors to complete the project; perhaps an early version of the kind of crowdfunding we now find on sites like Kickstarter and GoFundMe. Just as they were set to finally release the film, Pearl Harbor was bombed. Thus, although it was well received by those who saw it as it developed, distribution became difficult. Once the war became a priority, interest in labor’s struggles lagged.

Documentaries are among the hardest projects to review. On the one hand, they have a somewhat narrative story line and seem to convey a true story. Yet, simultaneously, despite presenting nonfictional material projects, there is also a clearly evident point of view. Deciphering the facts and examining what impelled the filmmaker(s) to present the powerful message is why films like these are perfect for classrooms and community events. In this case, the material of the film also offers a platform for thinking about the historical and contemporary social climate. Perhaps the most obvious classroom discussion topic would be a look at the labor trajectory from the first wave of films presented here through today. After struggling so hard to gain footing, the labor movement is once again losing leverage. For example, a number of states in the United States have passed laws weakening unions, reducing pensions and/or putting two-tiered wage systems in place for workers. With a two-tiered system, new workers are hired in at a lower wage while the old union workers receive a higher wage (due to their contracts).

Another topic might be whether or not governments should fund social documentaries. As noted above, the British government readily made funds available to filmmakers, whereas the United States Congress became upset about government funding of documentaries, and the practice died out for a time. This production on social documentaries—a social documentary in its own right—was funded by government agencies as well as private funds: the National Endowment for the Arts and the Nathan Cummings Foundation. It was also a PBS program. Personally, I found the message powerful and worthwhile, so I was glad the project was funded. (Had the film advocated something like a “Corporations Are People” perspective, I would probably have felt less enthusiastic that some of my tax dollars funded it!)

All in all, I highly recommend *Working for Change*. It not only belongs in academic and public library collections but could also provide an excellent resource in the classroom, particularly in relation to film history, social movements, government and mass communication. Anyone who is interested in this kind of film may also want to start with some of the film clips from this period that are available on YouTube and the expanded history of these films online [1]. While these supplemental resources offer a flavor for the material discussed in *Working for Change*, the value of the award-winning Icarus film is that it combines the history and footage into a story.

**Reference**

1. One excellent resource is the website Nicole Huffman put together for the American Studies Program at the University of Virginia. See: [http://xroads.virginia.edu/~maoi/huffman/frontier/films.html](http://xroads.virginia.edu/~maoi/huffman/frontier/films.html).
Leonardo's anatomical drawings in the Royal Collection compose this book. As the book explains, it is entirely plausible that Leonardo worked with Marcantonio della Torre at the University of Pavia and had hoped to publish his work with him. Della Torre died young, from plague, and although Leonardo continued his work on his own, the work remained unpublished. It is not known precisely how this group of drawings entered the collection, but it is believed they were either a gift of or acquired by Charles II (reigned 1660–1685). They languished there for over a century until William Hunter (a surgeon and the first Professor of Anatomy at the Royal Academy of Art) found the surviving sketches in George III’s library around 1773. Hunter praised them, planned to publish them, and then unfortunately passed away before doing so. This extraordinary wealth of drawings thus continued to remain largely unavailable until facsimile editions were prepared between 1898 and 1916. We are lucky that Hunter found them and that we have the opportunity to see, enjoy and study this superb body of work.

The text of Leonardo da Vinci: Anatomist is minimal, but it provides excellent foundational material. Prepared for a 2012 exhibition in The Queen’s Gallery, Buckingham Palace, the book is both beautiful and informative. Each of the 87 anatomical studies has a descriptive summary, and these are accompanied by a general historical discussion that places the work in terms of science and art history. Given the ongoing discussions of whether recognition by one's peers is a component in evaluating whether or not works are creative, Leonardo’s work makes the case that this is not an appropriate rubric.

Although Vasari mentioned his attentiveness to human anatomy, his peers’ knowledge of these studies largely missed the depth of the work and thus how extraordinary his observations were.

The drawings themselves are a testament to Leonardo’s view that visual information can convey more than words. The book tells us that he dissected more than 30 human corpses as he explored every aspect of anatomy and physiology. The work produced is unparalleled in beauty, and its lucidity captures the workings of the body, even suggesting motion and dynamics. Some of this was aided by studies he did outside of the dissection room. Although I could not read the artist's copious notes, mirror-written in Italian, I was struck by the difficulty of the task on all levels. It is hard to conceptualize how he recorded so much detail, for he was both doing the dissection and noting what he saw as well. Yet he took great care with each image.

Although the text is not lengthy, the authors do a good job in explaining that these studies—and all of his scientific studies—evolved out of Leonardo’s initial impulse to write a treatise on painting. As it turned out, his desire to examine every aspect of the human body took on a life of its own. He found that he was not only enthralled by structural anatomy and physiology; he also wanted to understand conception, growth, the expression of emotions, the nature of the senses and so forth. The authors further expand on his enthusiasm by offering a summary of how the anatomical studies coincided with his work in other areas such as architecture and engineering. Since the

His reputation as the archetypal “Renaissance Man” has been as a painter who also happened to practice in the sciences. Leonardo himself would not have recognized this image. From the 1480s onwards his scientific studies were at least as important to him as his artistic activity. During the last decade of his life he seems not to have begun a single new painting, and in the years from 1508 to 1513, in particular, he worked essentially as a scientist who occasionally put his hand to paintings that he had begun in earlier years. And of all his scientific endeavors—optics, geology, botany, hydrodynamics—the field that engaged him most fully, and that in which he made the most far-reaching discoveries, was that of human anatomy (p. 7).
The book's focus is on Leonardo's work, it includes very few comparative images, but the authors still offer a sense of how Leonardo's work fit within his historical time. This is not really a criticism, but if I were to change anything, I would have added more images that placed Leonardo historically.

Two of the most remarkable images are on the front and back covers. The front cover is his 1489 drawing of a sectioned skull. Leonardo sawed the skull in half and then juxtaposed the two halves so that a viewer can see the cavities of the skull in relation to the surface features. The striking contrasts the image presents never fail to amaze me. The back cover depicts an opened uterus to show a baby in the breech position and is one of the few drawings to include color. Surrounded by small sketches and accompanying notes, it offers a good metaphor for Leonardo's drawings overall, since reproduction was one of Leonardo's anatomical concerns. This drawing, like all his work, looks alive. What I find most striking when looking at all the drawings is their ability to capture so much, even when his words feel strange. Notes that accompany the fetus, for example, explain: “In this child the heart does not beat and it does not breathe because it rests continually in water, and if it breathed it would drown” (p. 206).

His drawings of the brain, probably a cow's brain, are also included. This was an extraordinary accomplishment, because he made a wax mold to study the forms before they began to decompose, and they were largely unaware of Leonardo's anatomical work.

Without a doubt, Leonardo, rather than Vesalius and his De Humani Corporis Fabrica, would now receive credit for the anatomical revolution in the 16th century, had Leonardo's work been studied. Comparing his works with those that were published, it is hard to miss how much Leonardo's drawings differ from the publications so instrumental to the anatomical revolution of the 16th century. Leonardo's notebooks are raw and fresh, with small sketches mixed with words and his mirror-written notes. Vesalius and others who presented anatomical studies around this time generally placed their figures in a scene, with narrative components in the background. Vesalius's muscle men, for example, are often placed in front of a landscape or shown with narrative components. For example, an evocative plate in De Humani Corporis Fabrica contains a skeletal image contemplating a skull on a lectern that reads: “Genius Lives on, all Else is Mortal.” Similarly, Charles Estienne's prints include background imagery that makes them appear as much like an artistic narrative as an anatomical presentation. I admire the purity of Leonardo's sketches. I wonder if he would have preserved this had they been published under his supervision.

When I finished Leonardo da Vinci: Anatomist, my first thought was that this is an essential work of reference for artists, medical professionals and Leonardo enthusiasts. My second thought was to wonder whether contemporary artists appreciate anatomy in the way Leonardo did. Contemporary work often conveys more of a superficial sense of figures, with more stress on an emotional rendering than naturalism and the way all the parts of the body function and work together. Looking at this beautiful compilation of Leonardo's studies, it is visually clear how different things are today than when he worked! Particularly noteworthy is that this kind of naturalism was emerging while he lived, and Leonardo was among those who embraced it with a passion. We see this passion enshrined due to his ability to combine artistry with the bodily form as he knew it from dissection. The works grasp a kind of visual depth and emotional substance we can still admire, even if many choose not to emulate it.
tions each in turn discuss the adaptive function of narrative with regard to moral sense and consciousness in light of philosophy, science and literature. Rather than presenting disjointed discussions, Tague writes in such a way so that each section links with the previous one and flows into the next, resulting in a contextually rich book bringing together otherwise unfamiliar discussions of morality.

In the introduction, Tague defines moral sense as “what is good and bad;” arguing that it “pervades stories” (p. 18). He takes the perspective that this moral sense—and even more broadly, human behavior—is based in emotions. However, he balances this perspective with his later comment that rationality and sentimentality go hand in hand, because “moral sensations and consciousness work together in tension” (p. 70).

In the philosophy section, Tague takes us on a journey from early philosophical arguments framing reason as the source of morality to the later emphasis on moral sense in helping us to regulate behavior. While this seems like a generic place for any moral text to begin, Tague enriches this context with references to evolutionary, biological and neuroscientific theories (e.g. the importance of mirror neurons in regulating emotions). Tague also discusses a shared moral sense while emphasizing the individual—“that originating mark that distinguishes each individual in salience of sensation and degree of perception” (p. 73)—something unfamiliar in the sciences, where population averages are of interest. This segues into a discussion about “character” in relation to the evolution of consciousness and the nature-nurture debate: “character . . . comes first . . . the emphasis should not be placed on environment” (p. 78).

In the science section, Tague expands the role of the individual in an evolutionary framework discussing the cooperative and selfish nature of the gene. Using social neuroscience and evolutionary theory, Tague argues that the origins of narrative arose from new and complex social environments that demanded that we learn to manipulate thoughts in relation to behaviors for conflict resolution, among other things. Despite his focus on evolutionary theory, Tague emphasizes the role of the individual; with no two brains being alike, consciousness is not found in one brain area. These differences drive our desires to learn about the self and to test our moral sense. In psychology, the individual is not often considered in this sense, but Tague’s message that “while there are brain parts, each complete brain has its own particular neural glue that holds together a mind” (p. 150) sits well with his discussion and explains the birth of narrative in light of our sense of self yearning to access the mind of another.

In his final section, Tague introduces the concept of literary character. He explores literary art as part of evolution through which we can understand our “complex social world” (p. 198). He goes on to discuss narrative as a way to educate the self and, in addition, how it allows the exploration and development of our moral sense. Inserting the individual back into society, he says that we are all involved in “each other’s moral lives, but . . . respect individual separateness” (p. 222). He discusses the novel as a model that we, the reader, can use to control our own behavior; it is able to capture the conflicting nature of the real world—the struggle between the individual and the universal moral sense—and from this, we see the literary character emerge. Tague produces contextually rich literary examples of these conflicts in Milton’s Paradise Lost and Richardson’s Clarissa whilst bringing in multidisciplinary explanations from biology and neuroscience. Tague writes that moral sense emerged as a theme in narrative to allow regulation of the self in relation to the complex moral landscape. Overall, Tague meets his aims of engaging the reader in a rich and multidisciplinary discussion of individual consciousness and the moral sense, and their relation to narrative. The book successfully demonstrates how social, cultural and individual moral concerns span philosophy, science and literature in the context of narrative genesis. As Tague puts it, “the moral ground has been scrutinized by the philosophers, examined by the scientists, but only put into real-life context by the authors of long narratives” (p. 281). The book, aimed at a broad readership, provides a rich moral discussion and illustrates how literary criticism can contribute to the advancement of evolutionary and psychological moral theories.

RESISTING ABSTRACTION: ROBERT DELAUNAY AND VISION IN THE FACE OF MODERNISM


Reviewed by Michael Punt, Transтехнология Research. Email: <mpunt@easynet.co.uk>.

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In the fifth of Edgar Wind’s famous series of Reith lectures, published in 1963 as “Art and Anarchy,” he addresses the consequences of the mechanization of art. In the course of this discussion, he suggests that “our vision of art is transformed by reproductions. . . . Our eyes have been sharpened to those aspects of painting and sculpture that are brought out effectively by the camera” (p. 69). It seems to him obvious that the artist’s own vision is attuned to this effect in parallel to a realization that art can be mobilized more effectively in books than museums and galleries and this situation shapes the understanding of what art is. He suggests Picasso, van Gogh and the douanier Rousseau fare better than, say, Titian, because schematic plain colors are more suited to the color process. Later, and perhaps more contentiously, he argues that the restricted palette of the color printing process superimposed itself on the artist—or at least those artists for whom public recognition is in some way important—and affected style and taste. What Wind falls short of is
the assumption that mechanical color printing changed human perception and, in this regard, he is in accord with cognitive science.

Wind does not include Robert Delaunay in his examples of artists who responded to the influence of color print processes but could well have done so if one buys into the argument of Gordon Hughes’s recent monograph *Resisting Abstraction*. The publisher claims this to be the first English language study of Delaunay in more than 30 years, and some explanation for this is offered early on with Alfred H. Barr’s famous diagram from 1936, which shows, as Hughes points out, that Orphism was the only movement in the 20th century that, according to Barr, seems to come to a dead end. The project behind *Resisting Abstraction* is to challenge this idea by showing Delaunay as an important intellectual behind modernism whose contribution may be only just beginning to become clear as we begin to look at science and art through the same lens.

Hughes’s approach is to spend little time on biographical detail and to concentrate on looking at the paintings. He does this slowly in order to see them better. In this mode he regards them in three perspectives: (1) against the backdrop of some influential ideas in cognitive science concerning visual perception, as well as in view of (2) the sudden proliferation of colored posters in Paris and (3) the obsession with movement in philosophy, art and science at the turn of the century. Through this triangulation he offers a particular reading of Delaunay’s 1913 painting *Premier Disque*, a painting that Hughes argues was important but misunderstood at the time and has continued to be something of an enigma for historians. That is, until now. The book is divided into three substantive sections; the first, “Break (Windows),” outlines cognitive aspects of visual perception as a temporal process, for which the experience of the aerial view and the view through a glazed window act as vivid reminders of (a) the work involved in seeing and (b) the repression of the memory of that work necessary for perception. This forms the bedrock for his analysis of Delaunay’s paintings as interventions in the various strands of cubism in which the viewer and the painting are implicated in the same cognitive enterprise.

The second section, “Punch (Painting),” hinges on the perceptual impact of highly colored advertising posters affixed to public walls in Paris during the first decades of the 20th century and the ways in which these allowed color to transform the perception of architectural structure. Hughes argues that this is crucial to the understanding of Delaunay’s approach to color as a confrontation with the very problem of modernism. The third section, “Movement (Into Abstraction),” makes that problem more explicit in a discussion of movement, and the dichotomy between instant and flow as the mirror image of modernism’s struggle between *tableau* and *morceaux*: A struggle he sees as constitutive of modernist painting from its inception.

*Resisting Abstraction* is a richly illustrated book with a short text that weaves its story through unexpected paths, all of which are fascinating even if some feel rather forced. This approach may be necessary for Hughes to make his point, given that the vision of art today has been transformed by the proliferation of inchoate images that acquire meaning through economically driven discourses of nostalgia and narcissism. In this book he has deployed a rhetorical style that will capture new audiences for an important discussion of what art and painting can mean if they are given the time. There are, of course, dangers with such broad sweeps, and it is possible that a longer and more nuanced monograph is called for.

There are many strands of the argument that are passed over hastily and leave the reader a little suspicious that some rather important assumptions are smuggled into the book that, if made more explicit, may prove inconvenient. Most especially, considering the title *Resisting Abstraction*, there is something unresolved about why Delaunay rejected the abstractions of Neo-plasticism or Suprematism (for example) but seems perfectly comfortable embracing the abstractions (and spiritual motivations and idealism) of cognitive science. A fuller recognition of this paradox would have helped.

There are other missed opportunities, too, in the glossing over of Munsterberg’s laboratory at Harvard, where he laid the foundations for much contemporary thinking about the cognitive effects of the temporal image and where, among others, Gertrude Stein studied. Most of all, there could be a fuller articulation of the debates concerning the relationship between technology and perception that seems crucial to much of what is presented. Here I think Wind might have been helpful, since he is very clear that technology does not change perception so much as impact the way we understand art, taste and style in ways that may introduce aesthetic changes. Such a nuanced approach would enrich and strengthen Hughes’s fascinating argument. An interwoven biographical account of Delaunay that dealt with this would have made for a more difficult and demanding project, but without it, the changing circumstances of his life and times are a competitive narrative that, for those who know it, threatens
This is a well-produced book with good-quality illustration of Delau-
nay's work that allows Hughes to make meaningful formal analysis of the paintings. He has constructed a parallel visual essay that encourages the reader to take the necessary time to look at the images and offers a great opportunity to a new generation to revisit a period of astonishing crea-
tivity (and destruction) that is a little too demanding to be fashionable.

**THIS CHANGES EVERYTHING: CAPITALISM VS. THE CLIMATE**


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Climate change entered mainstream consciousness in 1988, when James Hansen, then director of NASA's Goddard Institute for Space Studies, testified before the U.S. Congress. He warned that human activities were heating Earth's atmosphere and that this phenomenon could have extremely serious consequences.

Hansen believed that if policy makers were presented with solid evidence of anthropogenic climate change, they would rein in emissions. However, this has not happened even though the evidence has become overwhelming—and visceral. In the quarter-century since 1988, there have been devastating droughts, changes in the oceans, and terrible storms, floods and forest fires. These are previews of what is to come; yet only a few countries, notably Denmark and Germany, have responded in ways even remotely commensurate with the threat. As for international action, the record since Kyoto is almost entirely of failure.

What accounts for so much failure? Are there alternatives? Naomi Klein grapples with these questions in *This Changes Everything*. According to her, failure to deal with climate change is due largely to the global economic system. Its fundamental imperative is economic growth, which requires an expanding supply of energy. Only fossil fuels are cheap and abundant enough to meet the system's needs. Long-term consequences of fossil fuel use, including the most ruinous, are secondary to growth and immediate profits. As a result, we live in the midst of a massive slow-motion collision between corporate capitalism and the biosphere.

The consensus among policy makers is that we must cap global temperature rise at 2° Celsius above preindustrial conditions. Some scientists think that the two-degree figure is too high; however, beyond two degrees, feedback effects are likely to take things out of human hands and put hundreds of millions, or even billions, of lives at risk—in what James Lovelock calls "the cull." As of 2014, the rise was 0.74 degrees, with further rise certain even if we add no more greenhouse gases to the atmosphere. To stop at two degrees, fossil fuels must be quickly phased out. Since the market system will not allow this, we move toward collapse. An alternative is to deliberately change the economic system. Some combination of collapse and economic change may also occur.

Klein punctures certain common illusions. Benevolent billionaires will not save us, nor should we expect technological solutions. We already have the basic technologies we need to bring climate change to a halt. What we lack, especially in North America, is the political will to use them. She considers geo-engineering an especially dangerous illusion. Its implementation could heighten disaster, yet it is a fix neoliberals may favor because it might allow the current economic system to persist a little longer.

Klein finds hope in diverse groups and actions, especially those that actively resist fossil fuel extraction and transportation. Blockadia, as she calls this movement, is global, decen-
tralized and linked by social media. Many of the groups she writes about have core values influenced by indig-
Klein considers people, but especially Americans, too attached to the comforts of consumer culture to make the “really significant—and politically unpopular—changes . . . that meaningful climate action requires.” In other words, corporate capitalism is broadly popular because it delivers prosperity. To seriously rein in greenhouse gas emissions, the vast majority of Americans, and people in all of the world’s wealthier countries, must consume considerably less than they do today. Long-term scarcity could become a central fact of economic life. Klein acknowledges such prospects, yet insists that poverty can be conquered in the process of dealing with climate.

Klein’s sympathies are with the left, which is shakily positioned to address climate change. The left, which emerged in the 19th century, considers the fundamental ethical issue facing humanity to be the just distribution of wealth and power. Again and again Klein refers to this widely held belief. Its limitation is that it does not take nonhuman nature fully into account. Much of the left shares with corporate capitalism and the right the ancient faith that humankind is separate from nature or its rightful ruler. Whatever else nonhuman nature may be—savage, female, restorative, cruel, material, sublime—it is fundamentally a repository of resources to serve our needs.

By way of contrast, the indigenous cultures to which Klein often refers see humans as inseparable from the much larger natural forces that make our lives possible. This implies reciprocity between humans and nonhumans, and certainty that in the end nonhuman nature will always win. Klein considers such values corrective to the traditional left. However, she does not examine in detail how this would work, or say what it might mean with respect to our lives, material or otherwise. We do not have a Karl Marx or Martin Luther King of climate change, so we are left knowing only that we need a new culture based on “reciprocity” and “sustainability,” whatever forms they may take. We do not know how to create this culture beyond focusing on small, local projects. Yet Klein remains hopeful.

Her hope is not always convincing, but she speaks to common experience. My sense is that in the United States today a mix of denial, despair and absurd hope about climate is so widespread as to constitute the norm. We cannot know the future, so Klein is ethically and strategically right to offer whatever hope she honestly can. However, I think that her book, strong as it is, would have been stronger still had she given fuller expression to despair. To voice it is not to embrace it or be defeated by it. Her vision implies that we live in a historical moment when genuine hope is alienating because it calls into question everything we do. Despair is much more comfortable. It does not ask us to change, and we won’t be punished for our failure. Ruin is somewhere else and in the future. We need to give climate despair its due because it will not go away. The only thing worse than despair is despair unexpressed.


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There are many reasons to read Modernism and Its Merchandise, and I think all of them are excellent. First of all, the book is a very welcome and timely complement to the countless studies on the Spanish Civil War (1936–1939). It fills, thus, a gap that had become quite disturbing, as if it were only possible to examine Spain’s roaring twenties through foreigners’ eyes or via the life and works of Spanish artists living abroad. The material itself studied by Juli Highfill is extremely refreshing. True, most scholars and students interested in this period of Spain’s no longer recent history must know Francisco Ayala, Ramón Gómez de la Serna, Guillermo de Torre or Azorín, to name just a few names that absolutely mattered in these years, but what do these names still refer to in the memory of today’s non-specialized readers? Highfill’s study, which offers a good mix of general discussions and close readings, helps make room for a renewed and, let us hope, lasting interest for these authors and their work that deserves much better than the oblivion or contempt that have become their burden. The lesser-known material foregrounded in the book is systematically combined with a rereading of some major figures, such as Ortega y Gasset, the influential spokesman of international Modernism that he theorized in his own way as “dehumanization,” or Dalí and Buñuel, whose two cinematographic masterpieces, Le Chien Andalou and L’âge d’or, are considered here against the backdrop of their formative Spanish years.

Secondly, Modernism and Its Merchandise is a study that is both extremely well-focused and smartly inclusive. It has a sharp and original
starting point, namely the hypothesis that Spanish Modernism (the difference between Modernism and avant-garde does not seem to have the same importance in Spain as in other linguistic and cultural areas) is no less fascinating by the new, streamlined, seducing, commoditized, mass-produced objects than all other Western countries of that period. To this it adds the hypothesis that is possible to study the shifting and often blurred relationship between object and subject as a key to a better understanding of what modernity actually represented. Finally, the book provides us with a selective but highly representative corpus of objects: glass (in modern still life paintings), the display of goods in shop windows, electronic devices and technologies, fashion, objects of decay (ranging from antique ruins to rotting corpses). This “object-centered” approach, made even more concrete by the exemplary iconography of the book (a pleasure for the eye as well as the mind), is then broadened by a strategy that is comparative on the one hand and theoretical on the other hand.

Spanish Modernism is systematically compared to models, examples, tendencies and evolutions in other European traditions, not only in order to show the participation of Spain in Modernism in general but also its specific and often highly inventive contribution. The close reading of Ortega y Gasset’s discussion of glass that emphasizes the embodied as well as social experience of a motif that French Cubism had managed to bring close to pure abstraction is a good example of such a creative interaction with foreign models. The same applies to, for instance, the relationship between the theme of drinking, singing and bullfighting in Ramón Gómez de la Serna and the transformations of Amédée Ozenfant’s work, or that between the post-Dadaist Guillermo de Torre (the often-mocked brother-in-law of Jorge Luis Borges) and Italian Futurism.

On top of that, Highfill’s study of Spanish Modernism is also enriched by a keen sense of theory. The book does not suffer from an overload of theoretical references, but the author has a perfect knowledge of all important “object theories,” such as the object-thing debates around Bill Brown and the articulation theory of “system” thinkers like Bruno Latour. Each time that the interpretation of a given object or object-practice can benefit from the reference to a theoretical concept or insight, one can be sure that Highfill will always find the best way to introduce it with great elegance and clarity. In that sense, the novelty of the book depends not only on that of its objects (and once again, please allow me to stress the many discoveries that any reader will be able to make in it), but also on that of their readings (which always add new perspectives to the already known, the best example being here the rereading of the decay theme in relationship with both the rejection of the past and the critical attitude toward modernism’s “creative destruction” in the two films by Dalí and Buñuel). Finally, this book is also a marvelou thing to hold and to have: great design, great iconography, great writing.

**IDOLATRY AND INFINITY: OF ART, MATH, AND GOD**


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The first thing to say about this book is that it is not an easy read; it is really an extended essay rather than a book. It is very scholarly and full of interesting facts. The layout of the book is almost chronological, but not quite. The first few chapters concentrate on religious notions of infinity—not a great surprise as the Bible and the Qu’ran are rich sources in a field where there are few rivals. The author discusses the Greeks’ intolerance of Zeno’s paradox and the infinite decimal representation of the square root of two. There follows an account that includes the geometry of tessellations and the attempts to represent God and link this representation to the infinite. His thesis also spills into architecture, with discussions on the Alhambra Palace with its geometrical designs, gothic fan vaulting in Wells Cathedral and the art of M.C. Escher. It is at this point one begins to ponder where the book is going. Is it actually going to talk about the meaning of infinity or just tell tales? We then land on firmer ground, with the Renaissance covering perspective in art as well as the Scientific Revolution. Copernicus, Galileo and Newton are mentioned. The calculus is explained, rather naively, and Newton’s ideas on gravitation are contrasted with Einstein’s 20th-century space-time notions of gravity. This leads to a discussion of modern astronomy and theories of how the universe began. The idea of an infinite but bounded universe and the Steady State and Big Bang theories all get more than a mention. There’s no deep philosophical discussion, no complex mathematics. We are informed about many things, but rather like a tourist, the reader is shown around and then led on. Finally, after 100 pages, transfinite numbers are covered. I had been waiting for this, as it is a central idea in the meaning of infinity, and the treatment is accurate but limited. It is this part of the book that best demonstrates the difficulty presenting a coffee table book on a subject that does get rather technical. To go through Georg Cantor’s rigorous definitions of transfinite numbers is out-
side the scope of the book (as Topper confesses on page 106) but not to do so makes the explanation incomplete and frustrates the reader—maybe I should say, frustrates this reader. The book finishes with a short history of Cantor and his attempts to relate transfinite numbers to the theories of the “size” of the universe, to theology and to God. Finally the lack of transfinite numbers when describing the physical world, despite their use in the descriptions of computability, is covered. Altogether it is a very worthy, serious book, and a book that has my admiration.

SCIENCE AND ART: THE PAINTED SURFACE


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I know next to nothing about art conservation, beyond the fact that every so often the Mona Lisa is removed from its frame in the Louvre to be cleaned and checked, and that a colleague of mine persuaded a certain curator to move the painting, during this operation, a fraction of a millimeter to the left, in a celebrated pataphysical act. But I am not reviewing this book of case studies, written by scientists, art historians, conservators and archeologists, in light of its contribution to conservation, but rather as a source of art ideas, which I guessed it might provide. For art is often, surely, about absence, filling a space and inventing what “should” be there. It is often about layers, visible and invisible, about codes, conundrum, secrets and questions of the authentic and the meretricious. And of course art restoration is, inter alia, also about precisely these matters.

In Science and Art: The Painted Surface, we see art quite literally on the edge. Some of the almost-archaeological investigation is targeted at transversal slices through the layers of paint. At other times we are shown underpainting or other hidden details revealed by synchrotron X-ray analysis, infrared reflectance, spectroscopy or fluorescence. Paintings are examined using the whole spectrum of visible and invisible electromagnetic waves. Sometimes, as in the examination of Mondrian’s Victory Boogie Woogie in the Netherlands, the work is done in full public view, albeit behind glass, almost as a performance. It feels as if those working on the paintings are somehow contributing to the art-making process.

There are questions about works of art that can be asked and answered by specialists without recourse to examination of the actual object. But there are others that necessitate physical examination of the work and the answers to which feed back into our knowledge of the artist and his or her work: What was the genesis of the work, and how was that done? What materials and techniques were used, how was it conserved, what was done to it? When paintings are not finished, they yield clues—for example marks, lines, bits of extraneous material—about the process of making such works.

The specification of an artwork by reference to the above, to its chemical and physical properties, and to its reaction to invasive and noninvasive probing, to how the pigment was bound, how the support was constructed, etc., opens up a wide range of possibilities for reverse-engineering, as it were, and perhaps making art considering only these characteristics, or at least including them deliberately. We quickly come to conceptual painting, naturally, but perhaps there are other thoughts that emerge, in non-painting fields, from such considerations. From early Christian paintings to contemporary drawings, via Far Eastern murals, van Gogh’s and John Hoyland’s acrylics, though it may well not have been the first intention of its publishers, the Royal Society of Chemistry, this rich series of papers offers a visual, academic and conceptual way in to a markedly different way of thinking about art and its palimpsests. As I write this there is discussion in the press about the apparently inevitable loss of digital data as it becomes unreadable. This too, and all the digital art, videos, still images, interactive pieces or installations using it, will have to be restored in some sense, if it is not to disappear; that is to say, someone, somewhere, will actually have to care about it.

THE CONSCIOUS MIND


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As late as 1998, many neurobiologists still considered consciousness a hopeless subject of study in terms of producing testable hypotheses. Things have quite changed. With brain imaging of waking human subjects in real time and other new techniques, biologists, in collaboration with experimental psychologists, are now able to document cellular and molecular events during a conscious act—the study of human
consciousness is no longer exclusive to philosophy. The Conscious Mind is an ambitious attempt to construct a model of the mind and its evolution and origin via the author’s wide readings in linguistics, neuroscience and evolutionary biology. In this book, Zoltan Torey (1929–2014) claims that a consciousness of the self (distinct from animal awareness) is the result of language acquisition unique to humans after a new neural subsystem—the motor wiring of our speech areas in the neocortex—occurred in Homo sapiens.

In 13 chapters, with titles such as “A Device to Move Mountains: Dual Output,” “Single Focus,” and “Language: The Trojan Horse of Negative Entropy,” Torey, in a rather evocative style, seeks to demonstrate that consciousness has a physical substrate in the brain, a unique neural subsystem that was the “breakthrough to Homo sapiens, [without which] the evolution of language, and the acquisition of our functional autonomy (our sense of free will) cannot be accounted for” and that it “is the product of a mechanism that does not exist in the animal brain.”

Torey agrees with the linguist and philosopher Noam Chomsky that language had no analog in animal communication and that they are “not on the same developmental continuum but are different in kind.” Human language, he asserts, became possible because of neoteny. “Neotenuous regression, the tendency to start out postnatal life in a less mature state than did our ancestors, shifts the emphasis from instincts to learning process as the dominant factor in the acquisition of the organism’s survival and coping skills.” Thus the infant’s first year of life is the critical age for language, with the motor wiring of the speech areas and “giving the brain access to itself” leading to language. The author goes on to explain attention, as a type of consciousness. It happens with oscillation between the word and its percept; and it is under voluntary muscle control (Torey does not specify which muscle[s]). This oscillation allows us to hold on to our thoughts, effectively taking it “off-line” from the “online” animal awareness. Thus these thoughts can only be communicated with uttered words because they are composed of word and percept, not with “the modality percept of vision or somatosensation that we experience.” He suggests that such oscillation is between the neocortex and the brainstem that controls automatic functions via, I presume, that new neural subsystem.

The fact that bonobos (a close relative of chimpanzees) have been trained to communicate thought and understand language does not detract from Torey’s model. It only means that our close relatives also possess this neural subsystem—reasonable in view of the continuity of evolution. Neither should the fact that syntax may not be (as Torey claims) universal but rather its meaning depends on the speaker-listener relationship at the moment of exchange. This latter point does, however, raise the possibility that it is culture, not language per se, that enables human communication and the sense of self—and a route to consciousness. Some psychologists have argued that what bonobos do is not language.

None of these arguments diminish Torey’s remarkable achievement in constructing a functional model of self-consciousness, incorporating the concept of neoteny and the to-and-fro between the neocortex and the brainstem. As Torey himself indicates, quoting Gerald Edelman, the Nobel biologist and neuroscientist: “There can be no science of human beings until consciousness is explained in biological terms.” The goal may be at hand.

Robert Desimone at MIT, whose research focuses on the neural basis of attention and executive control, has demonstrated that the same group of neurons in the brain responding to the picture of a house, for example, will fire in synchrony if the subject is holding his attention on it and fire out of sync if not. He posited: “As we learn more about the detailed mechanisms in the brain, the question of ‘What is consciousness?’ will fade away into irrelevancy and abstraction,” because “consciousness is just a vague word for the mental experience of attending, which we are slowly dissecting in terms of the electrical and chemical activity of individual neurons.” I cannot imagine, however, that this will keep us humans from contemplating our own mind, which is so close and so dear to us that it can never be seen as just some laboratory specimen.

THE PRACTICE OF LIGHT:
A GENEALOGY OF VISUAL TECHNOLOGIES FROM PRINTS TO PIXELS


Reviewed by Rob Harle. Email: <harle@robharle.com>.

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The Practice of Light is a tour de force. Exceptionally well-researched and brilliantly written, this book is the result of the dream of a very talented individual. Cubitt dreamed he held a book such as this in his hand and dearly wanted to read it. No such book existed in reality, so he set about the monumental task of writing it himself. I say monumental because, as you will appreciate as you read the book, the level of detailed research and scholarship is vast; from the genesis of “Let there be light” through to the images we see on giant LED screens in our contemporary cities.

I am not sure Cubitt realized what a can of worms he was opening when he first started on the task of fulfilling his dream. It appears there are almost no areas of human endeavor that are immune to the influence and analysis of light—politics, consumerism, dance, oil painting, contemporary 3D movies, physics and ecology are just a few examples. Cubitt explores all these topics and many more in detail. The book shifts easily from the pragmatic (the composition of oil painting media) to the philosophical (politics of power, à la Foucault), for example. My opening remarks are no exaggera-
Cubitt introduces, explains and then explores highly complex theories in a way that is easy to understand and will not cause a stress headache. It is highly readable.

Trying to define the purpose of this book for the prospective reader in a few short sentences is no easy task. “Enquiring into the materiality of media, the minutiae of their operation, exposes the contingency of their existence and the role of probability in bringing this rather than that into dominant position” (p. 9). From this inquiry it follows that “The major task of The Practice of Light is to explain why we have the media we do” (p. 9).

The book, a part of the MIT Press’s Leonardo Book Series, which comprises a numbers of scholarly works on art and science, is nicely produced. Unfortunately, the cover/jacket design is very ordinary and the colors are appalling. After the introduction there are six chapters, followed by extensive notes, references and an index. There is a smattering of black-and-white photos and illustrations, and a small center section of color plates. Chapter titles are:

1. Black
2. Line
3. Surface
4. Space
5. Time
6. Reflection.

The chapters in turn “address the key themes of the book: invisibility and the nonidentical, geometry and the vector, enumeration and averaging, apparent versus virtual, and the struggle to control light’s chaotic flow” (p. 16). The first chapter is black, in every way you can imagine and more. After reading this chapter, I realized I could never again use the phrase, “It’s as simple as black and white.” Nothing could be further from the truth. Rembrandt’s work and methods are the main focus of this chapter, which argues that the “pursuit of black as an effect as well as a material reveals a fundamental instability in the process of making visible” (p. 16). This instability is of considerable ontological and phenomenological importance.

Chapter 2 is slightly less revelatory but just as important as the first chapter. It discusses the “rise of geometry as a governing principle in visual technology.” Cubitt argues that there has been an “increasingly rationalist account of light as linear and instantaneous rather than pervasive and flowing.” Durer, Rembrandt, Descartes, Hogarth and Disney are discussed.

Chapter 3 explores the phenomenon of surface, from the preparation of plates for printmaking through to television screens including optoelectronic chips. “The flux of light does not immediately lend itself to this arithmetic handling. It requires an intermediate step, traced in the way optoelectronic chips average the light they receive” (p. 17). Walter Benjamin, van Eyck, John Gage (not Cage), Newton and other luminaries (pun intended) are discussed in detail throughout this extensive chapter.

Chapter 4 shows how in digital imaging, volume and space can “exist independently of the surfaces we recognize on screens” (p. 18). From the casting of shadows, through to Mercator’s projection, to the cubists’ experiments, representation of space and light is a very complex business. “A genealogy of vector space since experiments of the cubists and with the artifacts produced by the transformation of continuous and mutable space into raster displays” concludes this chapter.

Chapter 5 concerns time and looks at real-time television broadcasting; the “illusion” of time in cinema and digital video are also discussed in considerable detail. Things start getting complicated towards the end of the chapter when Cubitt discusses new artists who work close to the code level of technical imaging. “We can sense emerging an alternative aesthetic, here named the vector, with very different orientation to time, one that draws on discarded elements of tradition traced throughout this book” (p. 19). Finally, in Chapter 6, reflection and the color (phenomenon) white are explored. Cubitt suggests the opposite of black may not be white but light. The way we perceive visual wavelength, prisms, color and so on are discussed carefully and reflection in the natural world explored in detail. Here Cubitt asks the rhetorical question: “Why has the opposition of black and white been used so often and for so long to tell light’s story?” (p. 266).

This chapter concludes with a fairly complex philosophical discussion deriving from Aristotlé’s Nicomachaean Ethics. As I mentioned earlier, light will never appear the same again after digesting Cubitt’s smorgasbord of tantalizing morsels from history, science, art, philosophy and technology. The Philosophy of Light will appeal to a huge spectrum (pun intended) of scholars and also to the educated general reader interested in the nature of light and visual media as it has shaped our culture and existence.

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Foucault contre lui-même (Foucault against Himself), directed by François Caillat. Reviewed by Richard Kade.


May 2015
How Reading Is Written: A Brief Index to Gertrude Stein by Astrid Lorange. Reviewed by Edith Doove.


After Phrenology: Neural Reuse and the Interactive Brain by Michael L. Anderson. Reviewed by Amy Ione.

April 2015


Techné/Technology: Researching Cinema and Media Technologies, their Development, Use and Impact, Key Debates: Mutations and Appropriations in European Film Studies, edited by Annie van den Oever. Reviewed by Jan Baetens.


March 2015


The Unleashed Scandal: The End of Control in the Digital Age by Bernhard Poerksen and Hanne Detel. Reviewed by Ana Peraica.