Environmental & Architectural Phenomenology Newsletter

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We are particularly pleased with this issue of *EAP* because its feature essays speak to the lived relationship between technology and the designed environment. Philosopher Michael Kazanjian begins with a short commentary sketching possibilities for a phenomenology of elevators and escalators.

In turn, physicist Joel Fajans and planner Melanie Currie examine the experience of stop signs for bicyclists. On one hand, stop signs increase street safety by slowing automobile speed and by making a street route less attractive to drivers, thus reducing the street's automobile traffic. On the other hand, stop signs require cyclists to expend much more physical effort to maintain a reasonable speed. For commuters choosing between a bicycle and car, the extra exertion may readily become a deterrent.

We are especially excited to present the important work of philosopher and rancher-farmer Gordon Brittan, Jr., who is working on a place-based wind turbine that can easily be operated by individuals and community-based cooperatives. In addition, the sailboat-like design will allow for wind turbines that much more readily fit the landscape both aesthetically and ecologically.

Brittan's work is remarkable for a number of reasons, including his use of phenomenological principles to provide insight relating to wind-turbine design. What is perhaps most hopeful is Brittan's demonstration of the fruitful way in which a phenomenological perspective can provide an integrative pathway between broader conceptual issues like environmental aesthetics and practical concerns like a machine design that will engage human involvement and sustain the unique character of particular places, landscapes, and regions.

WE NEED SUBMISSIONS!

Again we are short on materials for future issues. Please consider contributing. Items of interest, membership news, citations, commentaries, essays, drawings—whatever you think might be of value to readers. As always, we're particularly interested in student work. Send things along, please!

PROGRAM IN GOETHEAN SCIENCE

Please take note of the one-week course on Goethean science, to be held this summer at the Nature Institute in upstate New York (see p. 2). Though he did not have available in his time the conceptual language to express the fact, Goethe was attempting to establish a kind of experiential phenomenology of the natural world. He described his method as *delicate empiricism* (*zarte Empirie*)—the effort to understand a thing's meaning through prolonged empathetic looking and seeing grounded in direct experience.

The course will be coordinated by biologist Craig Holdrege, one of the finest Goethean practitioners today, and we recommend it highly.

Left: The Windjammer 5, one of Gordon Brittan's wind turbines designed for the upstate New York region. See his essay on p. 10.

MORE DONORS, 2002

Since our winter issue, we've received additional reader contributions. *EAP* couldn't continue without your generous support. Thank you all very much.

Alfred Bay
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PHENOMENOLOGY WORKSHOP AT EDRA MEETINGS

The 33rd annual meeting of the Environmental Design Research Association (EDRA) will be held in Philadelphia, 22-28 May 2002. Philosopher Ingrid Stefanovic has organized a phenomenological workshop on "The Place of Time: Phenomenological Reflections."

Participants include Stefanovic (University of Toronto), *EAP* editor David Seamon (Kansas State University), landscape architect Madeleine Rothe (STV Inc., Baltimore), and philosopher Robert Mugerauer (Dean, School of Architecture, University of Washington, Seattle). The prospectus reads:

Phenomenologists have had much to say about the phenomenon of time, but there has been comparatively little done on how paradigms of temporality infuse our spatial perceptions and designs.

This workshop investigates the question of how taken-for-granted attitudes about time and place interweave in our perceptions of built and natural environments. Questions to be considered include the following:

- How do epochal paradigms of time manifest themselves in the spatial designs, for example, of ancient settlements or mediaeval towns, as opposed to contemporary cities?
- How are distinct cultural perceptions of time revealed in spatial designs?
- Do differing temporal paradigms arise between our perceptions of natural and built environments?
- What do "fast-paced" environments vs. "slow-paced" environments indicate about the underlying attitudes to time and space and, perhaps, the implicitly understood primordiality of one over the other?
- How can experiences like learning and designing be described as temporal processes?
- Can there be a phenomenology of relationship as it develops temporally?

Contact: Prof. Ingrid Stefanovic, Philosophy Dept., Univ. of Toronto, St. Michael's College, 81 St. Mary St., AH 309, Toronto, Ontario M5S1J4 (416-926-1300 ext 3260; ingrid.stefanovic@toronto.ca).

PROGRAM IN GOETHEAN SCIENCE

The **Nature Institute** in upstate New York is offering a one-week course in the practice of Goethean science, 30 June—July 6, 2002. Goethean science is a practice of developing relationships with natural phenomena by becoming aware of their wholeness as well as their particularities. The method entails rigorous observation of one's own perceptions, paying close attention to inner process as well as outwardly directed learning.

Coursework will include plant studies and observations in the field, painting and drawing, exercises to enliven thinking, and discussions of the relevance of a Goethean phenomenological approach in the context of modern science and everyday perception. No prior experience with Goethean Science is necessary. Contact: The Nature Institute, 169 Route 21C, Ghent, New York 12075 (518-672-0116; info@natureinstitute.org www.natureinstitute.org).

ITEMS OF INTEREST

The **International Association for Environmental Philosophy** will present its 5th annual program, 12-14 October 2002 at Loyola University in Chicago, immediately after the annual meetings of the Society for Phenomenology and Existential Philosophy (SPEP) and the Society for Phenomenology and the Human Sciences (SPHS) [see the last issue of *EAP*]. There will be a special session on "Dwelling(s): The City and Beyond." Contact: Ken Maley, Philosophy Dept., UW-LaCrosse, La Crosse, WI 54601 (maly.kenn@uwlax.edu).

Sacred Cosmologies and Ancient Greek Mysteries is a 12-day study tour to Greece, led by Brian Swimme, Charlene Spretnak, Mara Keller, and David Ulansey. Taking place 11-22 June 2002, the tour will visit Athens, Eleusis, and the western Greek islands of Madouri and Lefkas. The tour is sponsored by the California Institute of Integral Studies, 1453 Mission St., San Francisco, CA 94103; www.clis.edu.

The **Simon Silverman Phenomenology Center** at Duquesne University recently convened its 12th annual symposium, the theme of which was "The Phenomenology of the Body." Major speakers were philosopher Drew Leder ("Incarcerated Bodies: The Phenomenology of Imprisonment and Resistence"); philosopher Rosalyn Diprose ("The Body and Community through the Shaking of Hands: Levinas, Merleau-Ponty, and Nancy"); and theologian William M. Thompson ("The Revelatory Body: Notes Toward a Theology of the Body").

Founded in 1980, the Simon Silverman Phenomenology Center provides "in one place all the literature on phenomenology that could possibly be of use to scholars in the field and to promote original phenomenological research, and thereby add to the corpus of phenomenological work."

The Center includes some 19,400 books and an indexed collection of some 2,700 articles dealing with phenomenological topics. The Center is also an official branch of the Husserl Archives of the Catholic University of Leuven, Belgium and houses the Moser transcripts of Heidegger's lectures from the Marburg period.
www.Library.duq.edu/collection/silver2.htm

The **Institute for Classical Architecture** announces its architectural travel programs for 2002, including "Classical Nashville, Old and New Nashville, Tennessee" (25-28 April), "Georgian Houses of Ireland" (2-11 June), and the 4th annual "Architectural Drawing Tour, Rome, Italy" (4-13 October). 225 Lafayette St., Suite 1009, New York, NY 10012 (917-237-1208; www.classicst.org; institute@classicist.org).

The 13th annual **Environmental Writing Institute** will be held 16-21 May 2002, at Montana's Teller Wildlife Refuge, 45 miles south of Missoula. The program will be led by nature writer Robert Michael Pyle and 14 other environmental writers from around the country. Typically, participants represent a wide range of ability, from beginners to published writers. The Institute is sponsored by the University of Montana Environmental Studies Program. ESP, Rankin Hall (MES907), University of Montana, Missoula, MT 59812 (406-243-2904; cphil@selway.umt.edu; www.umt.edu/ewi).

The 27th annual meeting of the **International Merleau-Ponty Circle** will be held at St. Louis University, 19-21 September 2002. The theme is "Merleau-Ponty and Ecology." Prof. W. Hamrick, Philosophy Dept., S. Illinois Univ., Edwardville, IL 62026-1433; www.siue.edu/MPC.

A chapel designed by the remarkable Barcelonan architect **Antoni Gaudi** is slated for construction in his hometown of Reus in northeastern Spain. The Chapel of the Assumption, originally designed for a Franciscan mission in Mexico, will be a 28-meter-high octagonal building to be paid for by public subscription [from *Northern Earth*, winter 2001].

MEMBERSHIP NEWS

Using a phenomenological approach, **Roxanne Bok** is working on her dissertation in English literature. It is entitled "Life, Fiction and the Imagination of Place: Nathaniel Hawthorne, Herman Melville and Edith Wharton in Berkshire County, Massachusetts." The abstract reads:

[This dissertation] is an analysis of the ways in which place, through the conduit of authorship, interacts with literature in specific instances. The first chapter explores some of the thornier issues of place in a general sense and in the specific context of American experience. I focus on concepts of wilderness and on what artists and writers have contributed to the American sense of the land.

The thesis then assesses the Berkshire region historically and culturally, mainly as it pertains to the area's 'artistic' associations. Its emergence as an artists', particularly writers', retreat and a recreated Arcadia is complex, involving not only geographical considerations but economic necessity, demographics, historical process, religious practice, self-consciousness and myth-making, social interactions of the community within and without, and world-wide trends in art and philosophy.

I then turn to Hawthorne, Melville, and Wharton separately in order to distill their own personal experiences in and responses to this environment and explore what these have meant in terms of their work. In a concluding chapter, I make some comparisons and distinctions among various place writers and reassess issues of inner landscapes, local color fiction, accuracy of place, universality of place experience, and how these writers wrote, for the most part, against the pastoral ideal while at the same time taking part in it.

350 E. 79th St., New York, NY 10021.

Máire Eithne O'Neill, an Associate Professor of Architecture at Montana State University, has forwarded a copy of her dissertation, "Learning Rural Perceptions of Place: Farms and Ranches in Southwest Montana," completed in the Department of Education at Montana State University, Bozeman, in 1997. We reproduce a portion of the abstract:

This study sought to define what influences people's sense of rural places and how those influences were related. The purpose was to identify how people acquired and interpreted aspects of their experience that contributed to their perceptions about rural places. These perceptions amounted to their cognitive and affective learning—what they thought and felt about the places they inhabited. The influences of environmental, socio-cultural, and personal factors in the perception of the rural setting were the focus of the work.

Through a naturalistic, inductive inquiry involving case studies, a combination of site documentation and interviews were used to gather data, followed by content analysis. Additionally, the historical geography of the area was investigated for clues to past perceptions of the landscape. Interviews with men and women who lived and worked in agricultural settings were analyzed for perceptual priorities and learning traits.

The farming and ranching families interviewed in this study demonstrated that, through the demands of their physical work and a localized folklore, they understood the natural and built landscape. Visual perception played mainly a supporting role in perceptions that were based on tactile and kinesthetic knowledge. Understanding of spatial relationships was formulated by the pressing needs of physical labor and movement on the land. Through their constant work on the terrain, they were acutely aware of the details of topography and the exact condition of the ground. Stories passed on within the family were highly influential in shaping perceptions of the place. Through their shared narrative, ranchers understood family, community, and place.

School of Architecture, 160 Cheever Hall, Montana State University, PO Box 173760, Bozeman, MT 59717; maireo@montana.edu.

Nelida Quintero is a registered architect in private practice in New York and currently a PhD Student in Environmental Psychology at the Graduate Center of the City University of New York. She holds a Masters of Architecture from Princeton University and a Masters in Fine Arts from Parsons School of Design in New York. She specializes in residential and office design.

She is interested in the relationship between people and the indoor environment, and in the cultural and social impact of architectural design. Currently, she is doing research on work-at-home environments and the meanings of home and work. Environmental Psychology Program, Graduate Center, CUNY, 33 W. 42nd St., NY, NY 10036.

CITATIONS RECEIVED

C. Bell & J. Lyall, 2001. *The Accelerated Sublime: Landscape, Tourism, and Identity*. Westport, CN: Praeger.

"… locations and landscapes once considered sublime are becoming increasingly mediated and commodified into both 'products' and elements of national identity constructs…. [T]he nature of tourism in the 21st century is transforming both national identity and international consumption, making the one nearly indistinguishable from the other."

T. J. Campanella, 2001. *Cities from the Sky: An Aerial Portrait of America*. NY: Princeton University Press.

An overview of the urban photographs of the Fairchild Aerial Surveys, which, from the 1920s to the 1960s, documented every U.S. city and produced one of the world's most extensive libraries of aerial views: "Their cameras documented urban American in its most convulsive period of transformation, and left behind a remarkable portrait of our urban past."

A Carlson, 2000. *Aesthetics and the Environment: The Appreciation of Nature, Art and Architecture*. NY: Routledge.

This philosopher assumes that "every environment, natural, rural, or urban, large or small, ordinary or extraordinary, offers much to see, to hear, to feel, much to aesthetically appreciate…. Nonetheless, there are… special issues in aesthetic appreciation posed by the very nature of environments…."

G. Dodds & R. Tavernor, 2001. *Body and Building: Essays on the Changing Relation of Body and Architecture*. Cambridge: MIT Press.

Essays that examine buildings, texts, paintings, ornaments, and landscapes from the perspective of the body's physical, psychological, and spiritual needs and pleasures. Contributors include Paul Emmons, Kenneth Frampton, Karsten Harries, Alberto Pérez-Gómez, Richard Sennett, and Dalibor Vesely.

H. Dreiseitl, D. Grau, & K. Ludwig, eds., 2001. *Waterscapes: Planning, Building and Designing with Water*. Basel, Switzerland: Birkhäuser.

This team of designers and water managers present over 30 innovative designs, mostly in Europe, that experientially incorporate water into the urban environment. Many of the designs are grounded in the Goethean phenomenology of hydrologist Theodor Schwenk (*Sensitve Chaos*) and the related "flowform" work of sculptor John Wilkes (though, puzzlingly, none of this background research is described directly).

T. Field, 2001. *Touch*. Cambridge: MIT Press.

An essay on the importance of touch to children's growth and development and to the physical and mental well-being of people of all ages.

L. Groat & D. Wang, 2002. *Architectural Research Methods*. NY: Wiley.

This book reviews research methods "specifically geared to meet architects' needs." Seven types of research are covered—historical, qualitative, correlational, experimental, simulation and modeling, case study and mixed methods, and logical argumentation.

W. S. Hamrick, 2002. *Kindness and the Good Society: Connections of the Heart*. Albany, NY: SUNY Press.

This philosopher uses "phenomenology and a wide variety of traditional and non-traditional sources to provide the first comprehensive account of kindness…. [He] details a critical kindness that avoids both naiveté as well as popular cynicism, and guides us toward a new notion of aesthetic humanism."

D. Helbing, P. Molná, I. Farkas, & K. Bolay, 2001. "Self-organizing Pedestrian Movement," *Environment and Planning B: Planning and Design*, *28*: 361-83.

"…[T]he dynamics of pedestrian crowds are surprising predictable. Pedestrians can move freely only at small pedestrian densities. Otherwise, their motion is affected by repulsive interactions with other pedestrians, giving rise to self-organization phenomena. Examples…are separate lanes of uniform walking direction in crowds of oppositely moving pedestrians or oscillations of the passing direction at bottlenecks." Also, a useful discussion of how pedestrian trails arise over time—for example, through an empty lot. Entirely positivist but readily complemented by a phenomenological perspective.

G. L. Hersey, 2000. *Architecture and Geometry in the Age of the Baroque*. Chicago: University of Chicago Press.

This architect examines the "ways in which [Baroque] designs were laid out on paper and at building sites, and at the geometric figures that stand behind or within those designs. Exemplary themes include "the idea that architecture is musical, or that it

involves principles derived from optical instruments." One key theme is that some geometric shapes and numbers were considered better than others for human well being.

T. A. Horan, 2000. *Digital Places: Building Our City of Bits*. Wash., DC: Urban Land Institute.

This book considers "how digital places can be created at the setting, community, and regional levels." At the community level, the author "examines new library, school, and community center developments, highlighting the key role they play in driving new forms of public spaces and networks."

S. M. Low, 2000. *On the Plaza: The Politics of Public Space and Culture*. Austin: University of Texas Press.

This anthropologist "examines the interplay of space and culture in the plaza, showing how culture acts to shape public spaces and how the physical form of the plaza encodes the social and economic relations within its city."

P. Madsen & R. Plunz, eds., 2001. *The Urban Lifeworld*. NY: Taylor & Francis.

This collection of 13 articles "contributes to the understanding of the cultural role of cities" by exploring New York and Copenhagen in terms of "sociological, anthropological, and aesthetic issues." One article is entitled "The Machine in the City: Phenomenology and Everyday Life in New York."

J. Malpas, 2000. Uncovering the Space of Disclosedness: Heidegger, Technology, and the Problem of Spatiality in *Being and Time*. In M. Wrathall & J. Malpas, eds., *Heidegger, Authenticity, and Modernity: Essays in Honor of Humber L. Dreyfus*, vol. 1. Cambridge: MIT Press.

A consideration of how "spatiality plays an important role both in the Heideggerian critique of technology and in Heidegger's account of that being-in-the-world which we can also refer to as dwelling."

A. Marshall, 2001. *How Cities Work: Suburbs, Sprawl, and the Roads Not Taken*. Austin: University of Texas Press.

An examination of urban dynamics through a study of four contrasting urban environments—the decentralized sprawl of California's Silicon Valley, the crowded streets of New York City's Jackson Heights neighborhood, the controlled growth of Portland, Oregon, and Disney's new-urbanist community of Celebration, Florida.

L. Marx, 2001 [originally 1964]. *The Machine in the Garden*. NY: Oxford Univ. Press.

This 35th-anniversary edition celebrates this literary scholar's concern with the pastoral image versus the industrial explosion that began in 19th-century America. Includes a new afterward by the author. One of the seminal works for understanding environmental attitudes and meaning.

A. Orbaşli, 2000. *Tourists in Historic Towns: Urban Conservation and Heritage Management*. NY: E & FN Spoon.

This book "examines the relationship of culture, heritage, conservation, and tourism development in historic towns and urban centres."

A. Sharr & S. Unwin, 2001. "Heidegger's Hut," *Architectural Research Quarterly*, *5* (1):53-61.

This article examines "how Heidegger's Hut came to be built and how it was configured and occupied." The authors argue that the building "records physically many of the priorities that Heidegger wrote about."

J. Sweetman, 2000. *The Artist and the Bridge, 1700-1920*. Burlington, VT: Ashgate.

This book traces the history of the bridge in painting and printmaking. "…[T]he bridge was a popular feature in painting throughout the period 1700-1920. Why did so many artists choose to portray bridges?"

A. Tate, 2001. *Great City Parks*. NY: Spon Press.

A comparative study of 20 urban parks and plazas in Western Europe and the United States. The parks are arranged in size from smallest to largest and include Paley, Bryant, and Central Parks in New York City; Grant Park in Chicago; Village of Yorkville Park in Toronto; and Stanley Park in Victoria, B.C. Useful background essays, plans, and photographs.

M. Wertheim, 1999. *The Pearly Gates of Cyberspace: A History of Space from Dante to the Internet*. NY: Norton.

This popular history traces how the Western world went "from seeing ourselves at the center of an angel-filled space suffused with divine presence and purpose to the modern scientific picture of a pointless physical void." Wertheim also considers how cyberspace contributes to a potentially new cosmological model by envisioning "a place where we will be freed from the limitations and embarrassments of physical embodiment."

W. H. Whyte, 2002. *The Essential William H. Whyte* (A. LaFarge, ed.). NY: Fordham University Press.

This collection of writings by the late William Whyte, "a great observer of the postwar American scene," includes selections from his *Organizational Man*, *Securing Space for Urban America*, *The Last Landscape*, *City*, and *Social Life of Small Urban Spaces,* his perceptive and hugely influential study of lively urban plazas and parks.

A. Zelinka & D. Brennan, 2001. *Safescape*. Chicago: American Planning Association.

These planners "examine specific aspects of the urban environment that influences crime and fear of crime and recommend strategies for building—or rebuilding—inviting neighborhoods and downtowns." The emphasis is design solutions that "embrace diversity and enhance a sense of community."

Phenomenology of Elevators and Escalators

Michael M. Kazanjian

Kazanjian *works with the Publications Group at DePaul University. He has written* Phenomenology and Education *(Rodopi, 1998) and* Learning Values Lifelong *(Rodopi, 2001);* mkazanji@depaul.edu.

Years ago I entered a tenth-floor elevator of a twenty-story building. I wanted to go down and pushed the first floor button. I did not realize the elevator had stopped for someone from a lower floor to take them one or two stories further up, just a few floors below where I was waiting.

As I got on, I saw the "up" light just as I pushed the first floor button. The indicator changed from "up" to "down," and the elevator proceeded to the first floor. I mentioned this to a co-worker, who was surprised that I did not know the functions of an elevator. Elevators, he said, do not just go up and down mechanically. If an "up" elevator has no one on a floor above you to pick up for either direction, and you enter and push "down," it will change directions and go down.

Elevators go where people ask them to go and do not just travel space and time for the sake of traveling. Space for them is phenomenological and human, not just mechanical or fragmented. If an "up" elevator is told to go down and no one above that person calls, the elevator follows that person's demand and reverses direction. Also, elevators rest at "home" floors, usually the first floor, and do not just go up and down for the sake of doing so. They travel only when told.

Let me now consider the escalator. Go into any building and look at the escalator. It is usually going up or down mechanically even when no one is using it. If we could change that, it would be more humane, phenomenological, and moneysaving. A person gets on the escalator, and some indicator tells it to move up or down. It moves. If someone follows immediately, the escalator continues. If no one follows, the escalator stands still, using less energy.

This view comes from the notion of the elevator but also from the idea of lights in washrooms that turn themselves off to save energy and money when no one is using the facility. When you walk in, the lights go on.

Phenomenology is working in terms of the elevators and lights. Perhaps it can also work with escalators.

Why Bicyclists Hate Stop Signs

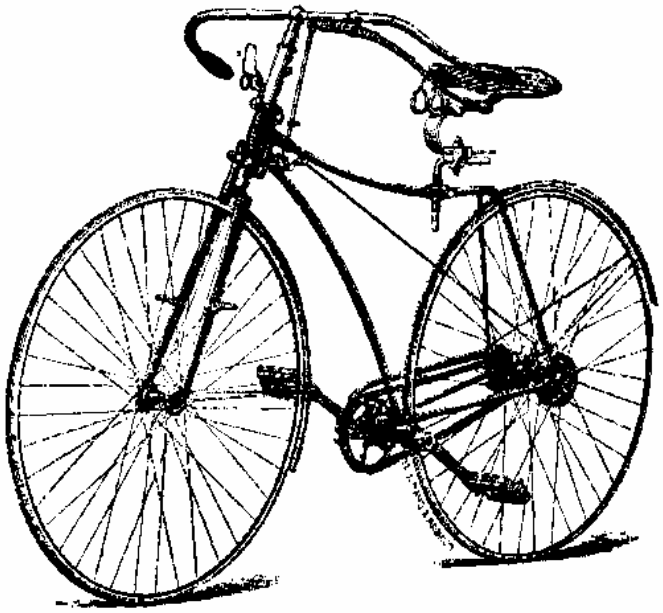
Joel Fajans & Melanie Curry

Curry *is the managing editor of* ACCESS, *a transportation journal published quarterly by the University of California Transportation Center at Berkeley (UCTC, Berkeley, CA 94720-1782; curryme@uclink4.berkeley.edu).* ***Fajans*** *is a physicist and a professor of physics at the University of California at Berkeley. He writes: "It is curious and a bit depressing that this essay, along with another on bicycling physics, has attracted far more attention than any of my real research!" (Physics Dept. MS7300, UC Berkeley, Berkeley CA 94720-7300; joel@physics.berkeley.edu).* *All we* EAP *editors can say is we're glad you and Curry wrote the piece—a fine example of a kind of "hands-on" phenomenological research. The essay originally appeared in the spring 2001 issue of* ACCESS *(no. 18, pp. 28-31), and we thank Curry for permission to reprint.*

A commuter has much to consider before leaving for work. What route to take, considering hills and traffic? What clothes to wear, considering ease of movement, comfort, perspiration, distance, and weather?

But these questions fade when compared to the safety, speed, and energy issues bicyclists deal with en route. Transportation planners know that incorporating bicycles into the transportation system can help ease traffic congestion by substituting bikes for cars; they also know that mixing cars and bikes can be tricky.

Seldom, however, do these same planners account for the bicyclist's concerns–matters that don't occur to the typical car-driving planner. Unless planners take bicyclists' concerns seriously, their efforts will do little to increase the numbers of bicycles or help bicyclists and drivers coexist safely.



Take a simple stop sign. For a car driver, a stop sign is a minor inconvenience, merely requiring the driver to shift his foot from gas pedal to brake, perhaps change gears, and of course, slow down. These annoyances may induce drivers to choose faster routes without stop signs, leaving the stop-signed roads emptier for cyclists.

Consequently streets with many stop signs are safer for bicycle riders because they have less traffic. Indeed, formal bike routes typically include traffic-calming devices like barriers, speed bumps, and stop signs to discourage car traffic and slow down those cars that remain.

A route lined with stop signs, however, is not necessarily desirable for cyclists. While car drivers simply sigh at the delay, bicyclists have a whole lot more at stake when they reach a stop sign.

ENERGY EFFICIENCY

Bicyclists can work only so hard. The average commuting rider is unlikely to produce more that 100 watts of propulsion power, or about what it takes to power a reading lamp. At 100 watts, the average cyclist can travel about 12.5 miles per hour on the level. When necessary, a serious cyclist can generate far more power that that (up to perhaps 500 watts for a racing cyclist, equivalent to the amount used by a stove burner on low).

But even if a commuter cyclist could produce more that 100 watts, she is unlikely to do so because this would force her to sweat heavily, which is a problem for any cyclist without a place to shower at work.

With only 100 watts' worth (compared to 100,000 watts generated by a 150-horse-power car engine), bicyclists must husband their power. Ac-

celerating from stops is strenuous, particularly since most cyclists feel a compulsion to regain their former speed quickly. They also have to pedal hard to get the bike moving forward fast enough to avoid falling down while rapidly upshifting to get back up to speed.

For example, on a street with a stop sign every 300 feet, calculations predict that the average speed of a 150-pound rider putting out 100 watts of power will diminish by about forty percent. If the bicyclist wants to maintain her average speed of 12.5 mph while still coming to a complete stop at each sign, she has to increase her output power to almost 500 watts. This is well beyond the ability of all but the most fit cyclists.

We decided to test these calculations on an officially designated bike route in Berkeley—California Street, which is about 2.2.5 miles long and nearly flat (average grade 0.5 percent). Traffic is very light, which is nice for cyclists. But California Street has 21 stop signs and a traffic light. More that two-thirds of the route's 31 intersections require a stop – that's one every 530 feet.

A parallel route, Sacramento Street, runs one block west of California Street. Sacramento has four lanes of traffic and can be very busy, especially during rush hours. With cars parked along both sides of the street, Sacramento has little room for cyclists. But it has only eight traffic lights along the section parallel to California's bike route, and no stop signs. Since, on average, only half the lights will be red, there's only one stop every 2,800 feet.

One of us (Joel Fajans) found that keeping exertion constant, he could ride on Sacramento at an average speed of 14.2 miles per hour without straining.[1] At the same level of exertion, his speed fell to 10.9 mph on California if he stopped completely at every sign. Thus Sacramento was about 30 percent faster that California. By increasing his exertion to a fairly high level, his average speeds increased to 19 mph on Sacramento and 13.7 mph on California, so Sacramento was then 39 percent faster.

While a drop of a few miles per hour may not seem like much to a car driver, think of it this way: the equivalent in a car would be a drop from 60 to 45 mph. Because the extra effort required on California is so frustrating, both physically and psychologically, many cyclists prefer Sacramento to California, despite safety concerns. They ride California, the official bike route, only when traffic on Sacramento gets too scary.

These problems are compounded at uphill intersections. Even grades too small to be noticed by car drivers and pedestrians slow cyclists substantially. For example, a rise of just three feet in a hundred will cut the speed of a 150-pound, 100-watt cyclist in half. The extra force required to attain a stable speed quickly on a grade after stopping at a stop sign is particularly grating.

CONSERVING ENERGY

One way cyclists conserve their energy at stop signs is to slow down but not stop. A cyclist who rolls through a stop at 5 mph needs 25 percent less energy to get back to 10 mph that does a cyclist who comes to a complete stop. Blasting through a stop sign is a bit dangerous (though less dangerous than it seems because visibility at most intersections is good from a bicycle, and if the cyclist has slowed to some reasonable speed, there's typically plenty of time to stop.) [2]

Of course a sensible cyclist will always slow substantially at a stop sign if there's a car anywhere nearby. But the car-bike protocol at stop signs is not clear. Drivers (and bicyclist) are unpredictable. Will drivers take turns with bikes in an orderly way as they do with other cars? Will they start to go, notice the bicyclist, and suddenly stop again to wait, whether the cyclist is stopped or not? Will they roll through the stop without seeing the bicyclist? Will they roll through the stop even thought they see the bike?

An experienced cyclist knows anything is possible. For example, if she guessed correctly that the car will wait for her, she'll want to start pedaling again as soon as possible, preferable without having slowed much, thereby conserving energy and inertia. Indeed, traffic flow is improved where cyclists do not come to a complete stop, for drivers need not wait as long for the bikes to clear the intersection.

Clearly, stop signs are tricky for bicyclists. On one hand, they increase safety by decreasing the number of cars on a road and slowing the remaining ones. On the other hand, they make cyclists work much harder to maintain a reasonable speed. For a commuter choosing between a car and a bicycle, the extra exertion can be a serious deterrent.

GETTING ALONG

Car drivers say they are confused by the presence of bicycles on the road, and some wish the two-wheelers would just go away. Bicyclists know that cars cause most of their safety concerns. Traffic planners need to find ways to help bikes and cars coexist safely.

A good place to begin is by taking the special concerns of bicyclist seriously, and not assuming that they will be served by a system designed for cars. Reducing the number of stop signs on designated bike routes would make bicycle commuting considerably more attractive to potential and current riders. Allowing bicyclists to treat stop signs as yield signs, as some states do, could solve the problems in a different way.

Perhaps cities should buy bikes for their traffic engineers and require that they ride them to work periodically. There's probably no better way for them to learn what it's like to ride a bike in traffic than actually to experience its joys and hazards.[3]

Notes

1. One can keep one's exertion approximately constant by fixing one's heart rate. For instance, the slower speeds (14.2 and 10.9 mph) were obtained by maintaining a heart rate of 125 beats per minute (bpm). This is an easy rate for many cyclists. The faster speeds (19 and 13.7 mph) required a heart rate of 165 bpm. This high a rate is difficult enough to discourage commuting at this pace.

2. Because bicyclists can see over the roofs of cars, they can anticipate the flow of traffic many cars upstream. They cannot see over the roofs of SUVs, pickups, and vans, however, and the growing number of these vehicles dramatically decreases riders' safety. The problem is compounded by the increased use of tinted glass, which prevents cyclists from seeing through the windows to the traffic ahead.

3. For further information, see J. Forester, *Effective Cycling* (Cambridge: MIT Press, 1984); F. R. Whitt & D. G. Wilson, *Bicycling Science* (Cambridge: MIT Press,1982); and http://socrates.berkeley.edu/~fajans/Teaching/bicycles.html.

Fitting Wind Power to Landscape: A Place-Based Wind Turbine

Gordon G. Brittan, Jr.

Brittan *is a farmer-rancher and professor of philosophy at Montana State University. The remarkable windmill design described in this essay has, over the last 20 years, been refined by Brittan and his associate* ***Henry Kyburg****, another philosopher and farmer-rancher (and also a sailor). Brittan and Kyburg did not invent the windmill design described here but have worked to improve it and to set up companies to build prototypes based on it. Brittan writes: "Perhaps this is one of only a very few instances where philosophers, inspired by engineering, aesthetics, and social ideals, have tried to move from theory to practice. It should be added, for those who might want to follow us in this regard, that ours is a very cautionary tale."*

An extended discussion of the issues raised here, including aesthetic concerns, is provided in Brittan's "Wind, Energy, Landscape: Reconciling Nature and Technology," in Philosophy & Geography, *vol. 4, no. 2 (2001, pp. 171-83). Address: Philosophy Dept., Montana State University, Bozeman, MT 59717; uhigb@montana.edu.*

The price of oil has more than doubled since 2000, yet there has been little public enthusiasm for the development of alternate forms of energy. In this respect, the situation is very different from that in the 1970s, when dramatic oil price increases were followed by government action to promote wind and solar power.

Evidently, opposition to alternate forms of energy has, whatever the occasional poll to the contrary might show, grown. Much of this opposition is aesthetic in character. It is grounded in a rather sharp separation between nature and technology, and expressed in the thought that wind turbines and solar panels in the landscape are ugly.

Wind turbines somehow do not "fit" in the landscape. From one point of view (classical), landscapes are beautiful to the extent that they are "scenic," well-balanced compositions. But wind turbines introduce a discordant note; they are out of "scale."

From another point of view (ecological), landscapes are beautiful if their various elements form a stable and integrated organic whole. But wind turbines are difficult to integrate into the biotic community. At least in certain respects, they are like "weeds."

Moreover, there is a reason why the 100-meter, three-bladed wind turbines now favored by the in-

dustry cannot very well be accommodated to any landscape view. They are, as philosopher Albert Borgmann would argue, distanced "devices" for the production of a commodity rather than "things" with which one can engage.

I argue here that the only way in which the aesthetic resistance to wind turbines can be overcome is to make them more "thing-like.

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In attempting to understand public antagonism to conventional wind turbines, we need to understand the character of contemporary technology. No one has done more to clarify it, in my view, than Borgmann (1984), who begins with a distinction between "devices" (those characteristic inventions of our age, among which the pocket calculator, the CD sound system, and the jet plane might be taken as exemplary) and what philosopher Martin Heidegger calls "things" (not only natural objects, but human artifacts such as the traditional windmills of Holland). The pattern of contemporary technology is the device paradigm, which is to say that technology has to do with "devices" as against "things."

Things "engage" us, an engagement which is at once bodily, social, and demands skill. A device, in contrast, disengages and disburdens us. It makes no demands on skill and, in this sense, is disburdening. Further, a device is defined in functional terms—it is anything that serves a certain human-determined function.

In other words, a device is a means to procure some human end. Since the end may be obtained in a variety of ways (in other words, devices can be functionally equivalent), a device has no intrinsic features.

But a device also "conceals" and, in the process, disengages. The way in which the device obtains its ends is literally hidden from view. The more advanced the device, the more hidden from view it is, sheathed in plastic, stainless steel, or titanium.

Moreover, concealment and disburdening go hand in hand. The concealment of the machinery—the fact that it is distanced from us—insures that it makes no demands on our faculties. The device is socially disburdening as well in its isolation and impersonality.

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To make the analysis of "devices" more precise, an objection should be considered. "Is not…the concealment of the machinery and the lack of engagement with our world," Borgmann asks, "due to widespread scientific, economic, and technical illiteracy?" That is, why in principle can we not "go into" contemporary devices; "break through" their apparent concealments? Why should we not promote electrical engineering, for example, as a general course of study, and in the process come to know if not also to love contemporary technology?

Borgmann initially answers this objection in terms of three points.

- First, many devices, e.g., the pocket calculator, are in principle irreparable; they are designed to be thrown away when they fail. In this case, there is no point in "going into" the device.
- Second, many devices, e.g., the CD sound system, are in principle carefree; they are designed not to need repair. It is not *necessary* to go into such devices.
- Third, many devices, e.g., the jet plane, are in fact so complex that it is not really possible for anyone but a team of experts to go in to them. Increasingly, this is true of older technologies as well—e.g., automobiles, where "fixing" has become tantamount to "replacing" their various computerized components.

Borgmann contends that, even if technical education made much of the machinery of devices perspicuous, two differences between devices and "things" would remain. Our engagement with devices would remain "entirely cerebral," since they resist "appropriation through care, repair, the exercise of skill, and bodily engagement."

Moreover, the machinery of a device is *anonymous*. It does not express its creator—"It does not reveal a region and its particular orientation within nature and culture." On both counts, devices remain unfamiliar, distanced and distancing. Typing these words, looking at the monitor on which they appear, I have no real relation to the process or to the machinery involved, no context in which to place them, no knowledge of their origins or of their development. The only thing that really matters is the product.

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Borgmann's interpretation of technology and the character of contemporary life can be criticized in a number of ways. Still, the distinction between "things" and "devices" reveals, I think, the essence of our inability to develop a landscape aesthetic on which contemporary wind turbines are or might be beautiful and thereby explains the widespread resistance to placing them where they might be seen.

The fact of the matter is that contemporary wind turbines are for most of us merely *devices*. There is therefore no way to go beyond or beneath their conventionally uncomfortable appearance to the discovery of a latent mechanical or organic or what-have-you beauty. The attempt to do so is blocked from the outset by the character of the machine.

Think about it for a moment: Except for the blades, virtually everything is shielded, including the towers of many turbines, hidden from view behind the same sort of stainless steel that sheathes many electronic devices. Moreover, the machinery is located a great distance away from anyone, save the mechanic who must first don climbing gear to access it and often, for liability reasons, behind chain-link fences and locked gates.

The lack of disclosure goes together with the fact that the turbines are merely producers of a commodity, electrical energy, and interchangeable in this respect with any other technology that produces the same commodity at least as cheaply and reliably.

The only important differences between wind turbines and other energy generating technologies are not intrinsic to what might be called their "design philosophies." That is, while they differ with respect to their inputs, their "fuels," and with respect to their environmental impacts, the same sort of description can be given of each. There is, as a result, but a single standard on the basis of which wind turbines are to be evaluated—efficiency. It is not to be wondered that they are, with only small modifications among them, so uniform.

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In terms of this uniformity, wind turbines are very much unlike other architectural arrivals—for example, houses and traditional windmills. Different styles of architecture developed in different parts of the world in response to local geological and climatic conditions, to the availability of local materials, to the spiritual and philosophical patterns of the local culture. As a result, these buildings create a context.

In Heidegger's wonderful, dark expression, these buildings "gather." But there is nothing "local" or "gathering" about contemporary wind turbines. They are everywhere and anonymously the same, whether produced in Denmark or Japan, placed in India or Spain—alien objects impressed on a region and in no deeper way connected to it. They have nothing to say to us, nothing to express, no "inside." They "conceal" rather than "reveal." The sense of place that they might eventually engender cannot, therefore, be unique.

In addition, wind turbines are quintessential "devices" in that they preclude engagement. Or rather, the only way in which the vast majority of people can engage with them is visually (and occasionally by ear). People cannot climb over and around them, they cannot get inside them, they cannot tinker with them. They cannot even get close to them. There is no larger and non-trivial physical or biological way in which they can be appropriated or their beauty grasped.

The irony, of course, is that, precluded from any other sort of engagement with wind turbines, most people find them visually objectionable, though they might be willing to countenance their existence as the lesser of evils.

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In short, there is not an immediately available aesthetic norm on which wind turbines are "landscape-beautiful"—i.e., there is not an immediately available and adequate conception of "landscape" on which they "fit in." Furthermore, the "device-like" character of wind turbines forecloses the possibility that on a deeper analysis some new and more generous aesthetic norm might be developed. In a straightforward sense, these turbines are all "surface."

At least so far as the American experience is concerned, the sheer complexity of contemporary wind turbines entails that they must be grouped in rather large arrays so that installation, maintenance, and repair costs can be minimized. This requirement entails, in turn, that they be owned and operated by large companies. Like other energy-generating technologies, their immediate contact is "indus-

trial." But this fact is problematic for a variety of reasons.

To begin with, the immense size of the arrays standard in the United State is visually objectionable. Typically, they so completely dominate the horizon that it is difficult to integrate them in any sort of way with their landscape, even in a rather distant perspective.

Furthermore, the fact that these arrays are owned and operated by large companies, whose bankers and boards of directors live and work far away from the site, diminishes any sense of local connection and, more importantly, of local responsibility and control. Those who make the decisions regarding wind farms are not the same people who must live with them on a daily basis. It is a lesson we in this country have been slow to learn, but those "on the ground," who have a sense of the bounds of both tradition and environment, in general, make the best land-use decisions.

On one hand, therefore, wind energy can grow out of local communities, in which case the turbines are for the most part sited, owned, and operated by local residents. On the other hand, these machines can be imposed "from outside." In the first case, the wind turbine has potentially a more "organic" connection to the whole and may help to express the life of the people who live there as something they have freely chosen.

The question of local control, as of individual comprehension, is thus tied closely to aesthetic appreciation. What we cannot understand or control might be sublime, but it can never, for the same reason, be beautiful. There is always and necessarily the question of scale.

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The other point to be emphasized is that local communities tend to have some sort of biological basis. They are defined at least in part by the plant and animal life of the region, the kind and quality of the soil, the available rainfall and adjacent watersheds. In short, communities are characterized not simply in abstract terms—in terms of mutual trust and a willingness to sacrifice for the common good—but also in terms of "place" and "history."

To the extent that standardized machines are plunked down in a standardized way, then no matter who owns them, the *local* character of the community is weakened if not also destroyed, and with it the possibility of feeling "at home" in it. To feel oneself at home in the world, we first have to orient ourselves with respect to it, and this involves being able to recognize and distinguish between *things*.

As just indicated, these "places" are often identified with an individual terrain and a particular watershed. But they could just as well be identified with a windshed. In my part of the country, the characteristic winds come in the middle of winter when we most need them, raising temperatures and blowing snow off the ground and (at least potentially) providing the power to heat homes. We call them "chinooks." They are part of our lives, in the same way that the "mistral" is part of the life of the Midi, the "bise" of the Lavaux, or the "foehn" of the Schwarzwald.

To treat these place-bound winds as just another energy source is to disconnect them from the ways in which they have helped determine the character of local plant, animal, and human communities, and in the process to rob them of their individuality and their beauty. By the same token, these unique winds need to be connected in specific, and not simply "functional," ways to wind turbines if the latter in turn are to share in this beauty.

I do not want to over-emphasize these communitarian and bioregional perspectives, although they should always be important elements in our thinking. The point is that these perspectives allow us to find an aesthetic that is not simply conventional or visual and on which both winds and machines that capture their energy are beautiful.

In my view, winds and machines are two sides of the same coin. On one side, machines small and simple and inexpensive enough to be locally owned and operated, without the intervention of highly specialized engineers, the creation of dense and extensive turbine arrays, and corporate financing. On the other side, machines that have a history, that supply a context, that are sensitive to their sites and, as a result, integrate with at least some landscapes and hence with the communities that have grown up on those landscapes.

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What, then, do I propose? A very different sort of wind turbine that my associates and I call the "Windjammer." A group of us has been working on its development for the past twenty years, although in fact the idea can be traced back to Crete, where

thousands of windmills have been spinning for generations on the Lesithi Plain.

In a very schematic way, let me draw your attention to its main features. The design parameters are traditional—high solidity, low rpm, and high torque. The rotor consists of sails, furled when the wind blows hard, unfurled when it does not.

The machinery is exposed and thoroughly accessible, clear, and comprehensible. It can be repaired by someone with a rudimentary knowledge of electronics and mechanics, with the sort of tools used to fix farm machinery. The generators, gearboxes, and brakes are situated at ground level, and the turbine does not require a tower or a crane for either its installation or repair. The Windjammer is a downwind machine and tracks easily and freely. In a word, it is a "thing" and not a "device." All of Borgmann's criteria are satisfied.

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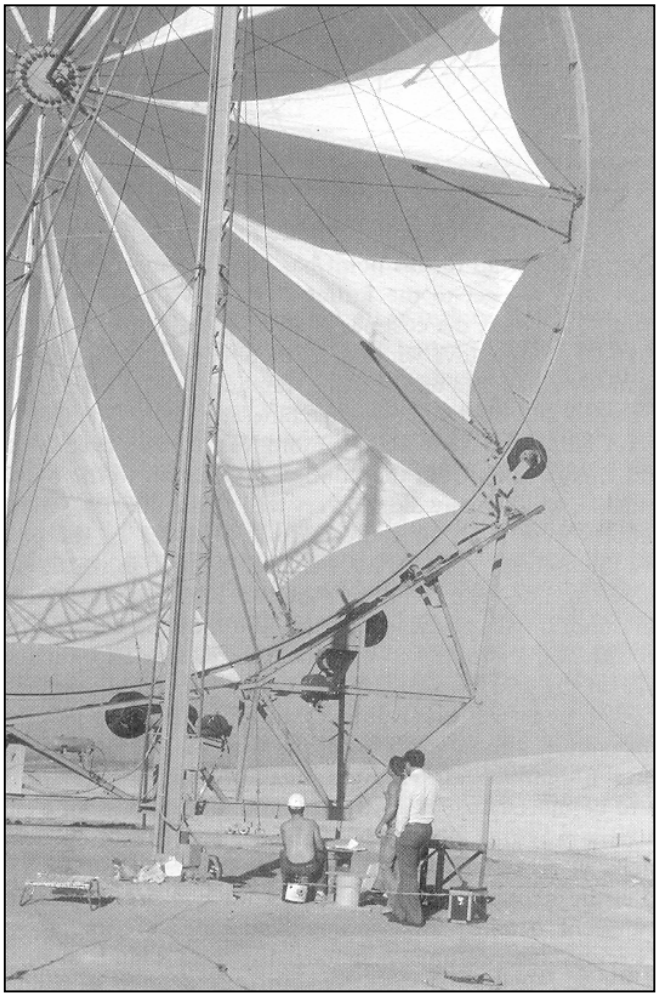
Sails, of course, have a very long history. They were the first way in which human beings captured the energy of the wind. The context they supply has to do with long voyages and attendant hopes and fears, with naval battles fought, and races won. Long central in human life, sails are well integrated and for this reason among others beautiful.



Sails also allow for engagement and skill. Anyone who has ever sailed knows what it is like to feel the power of the wind in his hands and to take full advantage of it by shaping the sails in the right sort of way and choosing the best angle of attack.

But you do not have to have sailed to use this windmill. All that is necessary is that you have experienced putting up a sheet to dry in the wind or have tried to fold an umbrella.

A sail turbine is sensitive to the wind, turning at lower speeds, moved by it alone and not by gears and motors, furling and unfurling as needs be. Even a top speed, it turns more slowly than conventional wind turbines (at less than a third their rate) and is never merely a distracting blur. Even in large arrays, the water-pumping sail machines on the Lesithi Plain have a very pleasing appearance.

All very well but what about the efficiency and economy of the sail turbine? Whatever intrinsic characteristics it might have, however beautiful it might be, it still has to perform. We have always been able to generate power curves comparable to conventional turbines, with this exception—that we begin to generate electricity at lower wind speeds.

Our problem up to this point has been the mechanical reliability of the turbine, principally with respect to the furling device. We think we have at long last solved this problem. Otherwise, the cost per kilowatt/hour is projected to be somewhere in the vicinity of $0.03, competitive with other, more conventional forms of generation.

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The comparatively small size and relative simplicity of the sail turbine means that it can be locally owned and operated, one machine at a time. Changes taking place in the American power industry have made this more feasible than ever. Much of the early resistance to wind energy came from the utilities; in addition to the unreliability of the turbines then available, wind energy did not very well fit the utilities' "industrial model," however many efforts were made to conform to that model on the part of the wind energy companies themselves.

But we have entered a phase in which electrical energy is being deregulated and decentralized. It will, I believe, be more and more possible for owners of small numbers of wind turbines, and of the co-operatives into which I see themselves forming, to put their power on the grid, particularly since wind-generated electricity on even the most optimistic projections will never amount to more than ten percent of the total.

There are, of course, a number of problems with the analogy, but I think that, in important respects, a number of relatively small machines working together will ultimately prove to be more efficient as well as more beautiful than a single large machine, in the same way that a number of smaller processors, operating in parallel, surpass the capacity of large main frame computers.

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Finally, I want to urge a pluralistic approach. If we pay the kind of detailed attention to landscapes to first uncover and then appreciate their beauty, then we must conclude that certain kinds of turbines will "fit" some of these landscapes better than others.

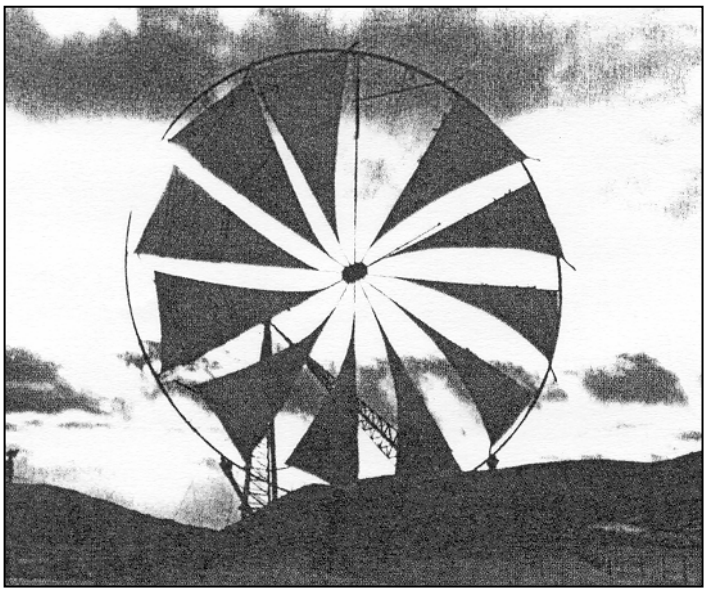
Just as not all sails and sailboats are of the same shape and size, varying as a function of the winds and the seas in which they are found and the purposes to which they are put, it seems to me that our Windjammer can be adapted in a variety of ways. But there are other turbine designs, some of them not yet imagined, that will "fit" their own landscapes better.

To this point, governments, utilities, and the engineers they fund have presupposed almost from the outset the viability of a particular design and devoted almost all their resources to "improving" it. In the process, they have discounted alternative plans and ideas that might be more acceptable aesthetically. One central result is a large-scale and determined resistance to wind energy.

Along the same lines, too much effort has been devoted to making the conventional large, bladed turbine palatable to the general public. This effort has been predicated on the essential subjectivity of aesthetic considerations and the assumption that taste can be manipulated.

I have argued that the aesthetic ideals taken as normative in our own cultural tradition have at the very least an important objective component. It follows from the nature of these ideals—however they are further to be construed—that only "things" in their depth and complexity can be beautiful.

Rather than relapse into subjectivity or manipulate taste, we need to reopen the basic design and aesthetic questions—questions that cannot be separated from the character of contemporary technology or the ways in which we take up with the world.



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Photograph, preceding page: A Windjammer prototype being tested in California.

Photograph, above: One of Brittan's wind turbines silhouetted against a dark sky near Livingston, Montana (photographs courtesy of G. G. Brittan, Jr.).

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