ACTIVATING THE MICROGRID

Architecture, Interactivity, Locality, Electricity

This project interprets the grand agenda of smart energy grids from the local perspective of design for living. For this it takes up a theme of response and repose in architecture. The more that new layers of sensing, networked operations, and adaptive variation make the built world responsive, the more that world must also afford repose: grounding, rest, and resilience. Design for living includes design for downtime, good or bad. Whereas grids of the past emphasized uniformity, today an awareness of context matters more again. Locality is where many of the most culturally interesting design opportunities now emerge, even for the Internet at large. So under a smart grids movement that has become very mainstream but as yet mainly top-down and technical, this project explores the possibility of a complementary approach that is bottom up and mainly cultural.

The word “microgrid” emphasizes intrinsically local instances of this larger smartgrid movement. Usually this begins with on-site energy generation, and so a readiness for more variable, often two-way outside connectivity, even downtime. That has a remarkable future in itself. Electricity can come from local micro-energy materials, for instance. Yet there is more to microgrids than electrical engineering. Technically, a microgrid can integrate energy with other physical infrastructures into a local systems ecology. Organizationally, a microgrid invites more participatory neighborhood design and governance. Experientially, it tends toward increased participation in surroundings, since the more variable condition of these systems requires active tuning and rewards more variable patterns of inhabitation. Culturally, this becomes an architecture of site. This project thus observes the fast-developing phenomenon of re-electrification, so to speak, for its design challenge in responsive local architecture. In doing so, it advances microgrid as a state of mind quite distinct from the always-on uniformity of other, more centralized grids. Coming from architecture, interaction design, and science-technology-
society studies, this project investigates how, as even the infrastructure builders such as Siemens put it, microgrids are mainly a revolution of use.

This emphasis takes up a perennial design question: where should infrastructure be made to appeal and where should it just disappear? After half a century in which most people gave little more thought to electricity than it takes to flip a light switch, and yet became ever less able to tolerate the prospect of any power outage, today increasing numbers of individuals, communities, and organizations do want to participate in their energy services, do tend to be aware of, even enjoy, a few more cycles, variations, and tangible operations of their built environment, and do need more resilience for more undesirable, increasingly inevitable outage events. Electricity has become too valuable and too variable to ignore. For meanwhile, today almost any aspect of living has somehow become not only powered but also interactively networked, not only with handheld devices but also by embedded sensing, data-streaming, and systems operations. When living amid so many networks, grid awareness is no long just for its planners and engineers, and contextual awareness becomes an ever more vital sensibility for almost anyone.

To understand this emergent reality of pervasive information infrastructure, it helps to recall the first wave of early electrification, before that became taken for granted. Much as with today’s ubiquitous networks and apps, and when electricity was new, people created a remarkably wide range of wonders, anxieties, follies, inventions, adaptations, occupations, indeed new ways of living. Like interaction design today, industrial design arose as a discipline in itself, with major cultural effects. In the process, notions of comfort and convenience somehow changed. Today as information networks, data feeds, sensor fields, and touchable interfaces similarly permeate ever more aspects of living, it may help to recognize that. Sometimes convenience depends on appealing interactivity, and sometimes it means keeping technology out of the way. Comfort remains a pursuit, and a cultural perception, not merely a measurable attribute of engineering performance, not reducible to uniformity, and not necessarily increased by still more technologies always being on. Despite how well architecture has absorbed electrification, among many successive layers of other technological infrastructure, design for surroundings still also works passively, through experiential grounding, fixed
configuration, and physical scale. It remains mostly off. Today amid ever more
electronic mediation of everyday life, it deserves to be valued for that.

“Downtime on the microgrid” could well be the title for this project, were
today's biases against disconnectivity not so overwhelming. Alas when always-
on technologies permeate ever more aspects of living, any disconnection
becomes an unwelcome exception, even an emergency. For many network
infrastructures, being down even a ten-thousandth of the time would be
disastrous. For many individuals, a day without connectivity would be very
much out of character, even suspect. For many cultural practices, ever more
tension arises between a culture of interactive convenience and the more
quietly grounding aspects of environment. Such realities receive plenty of
consideration elsewhere, the latter in my own previous book for one, and this
project concerns them only indirectly. This project acknowledges, but is not
primarily about, the utopia or dystopia of networked life itself, much less the
fundamental human, Promethean, condition of technological dependency.
Instead, with continuing focus on the built environment, it asks how
architecture’s next energy and new interactivity might suggest new outlooks
in design and inhabitation. Among those, downtime might not always be
something to fear, to mock, or never to get around to. Not only in crisis, but
also amid naturally intermittent cycles, on sometimes separate islands in the
net, or on occasionally happy days of unmediated repose, the built
environment is always there. In the long run of architecture, both
electrification and interactivity seem relatively recent. Today amid increasingly
sensate operations, notions of comfort and convenience may involve new
aspects of response but also repose. Amid ever more wondrous ways of
turning environments on, you have to imagine that off has its moments.
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Activation
*Turning things on creates interest, and the energy that drives this now deserves interest itself.*

Electricity
*Still the best analogy for pervasively embedded intelligence, early electrification was a wondrous transformation.*

Microgrid
*Clean, local, physically integrated, and highly adaptable, today’s re-electrification is mainly a revolution of use.*

Institution
*Enlightened players lead social and cultural change in what is considered viable, even normal.*

Architecture
*In a microgrid culture, smart green building cannot be mistaken for operational automation.*

Response
*As as increasingly inhabitable interactivity shapes ever more sensibilities, pursuits of comfort and convenience somehow evolve.*

Repose
*Downtime has its moments. Turning things off can be an optimistic act, and not a rejection of anything.*