LOCAL WARMING

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If much of the energy utilized in heating is lost, what if instead of heating the air within the spaces we focus on directing heat toward the people that move through them? Amid the debate over ‘global warming,’ Local Warming invites us to change the focus of the discussion by proposing an alternative based on targeting caloric energy.

THE WANDERING HEARTH:

FROM NEST TO LOCAL WARMING, A NEW RELATIONSHIP TO HEAT

«In the winter, family members gathered around the fireplace—which was the only source of heat and light. Here, the children studied, the parents exchanged news of the day, and Grandma worked at her embroidery. The hearth held the extended family together. Then pipes for delivering energy were put in—electrical wiring and central heating ducts. Family members could be warm and have light to read by everywhere. The fire was no longer kindled... The fireside circle could no longer serve as social glue. The old social fabric—tied together by enforced commonalities of location and schedule—no longer coheres. What shall replace it?» (Mitchell, 1999)

The grotto—a natural feature that man sought out for warmth, protection and sociability—was the earliest inhabitation technology; there, he built the primordial hearth. Until the 20th century, the hearth remained a focal point: it was not only functional, but, as Frank Lloyd Wright famously noted, it was «the psychological center of the home.» Yet as time progressed, the evolution of the hearth became a story of liberated heat; from grotto to fire pit, from Victorian pipes to central heating and suburban thermostats, man has exerted more and more control over his climate, until the «enforced commonalities of location and schedule» begin to fray.

A parallel trajectory towards spatial liberation occurred in fits and starts across many dimensions of habitation. The circle of candlelight fractured into a modern proliferation of fixtures in every room; gathering and gossip around a village well flowed out through networks of pipes into and out of each room; even entertainment crossed the threshold of the theatre and was scattered across cathode-ray tubes and screens in every living room. Elements of habitation are individually and instantaneously delivered. Life is unmoored.

Atomization, however, comes at the cost of efficiency, particularly in the case of climate control. The hearth is no longer a shared resource that attracts people, but a distributed system in which each user demands the right to comfort. With central heating—a binary on/off system—there has come to be a dramatic asymmetry between human occupancy and

energy use. Entire homes are heated during the day when residents are at work or school, and even when they are home, empty corners of the house are indiscriminately kept just as warm as those in active use. To ensure constant comfort, man heats every space he might possibly inhabit.

Emerging digital technologies and networks, however, can have a dramatic positive impact. A superposition of digital systems over physical space—the convergence of bits and atoms—allows an unprecedented degree of control. We are at a crossroads in the history of technology, when a ubiquitous blanket of sensors is telling us more and more about the environment, and systems can respond in real time. Every dimension of habitation is impacted: from the simplest example of occupancy-sensing lights within a single room, up to the scale of a city.

In the case of heat, a simple device can do exactly that. The thermostat was invented during the 1880s to keep a constant ambient temperature at the user's discretion, however it is only with the recent integration of smartphones and digitization that users can exert a degree of climate control approaching dynamism. A new technology, aptly named the «Nest,» is a digitally integrated thermostat system that learns from its users' daily habits, can be controlled via smartphone, and encourages playful family dynamics—all with the goal of saving energy.

The Nest allows dynamic control of temperature over time, but it may be possible to exert the

Visualización conceptual exterior MIT

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Axonométrica foco
s./ E.

- LEYENDA:**
- 1. Espejo frío
  - 2. Cubierta de retención de la bombilla
  - 3. Marco de sujeción lateral
  - 4. Rodamiento de soporte
  - 5. Soporte servo
  - 6. Cubierta superior y contrapeso
  - 7. Servo y ensamblaje polea

same degree of control over space –that is, synchronizing heat with people themselves. A dynamic system for «local warming» could enable fine-grained control over personal climates while simultaneously improving energy efficiency by orders of magnitude. An individual thermal cloud would follow each human throughout a building, ensuring ubiquitous comfort while minimizing overall heat requirements –that’s the vision for Local Warming, shown at the Elements of Architecture exhibition at the 2014 Venice Biennale.

Local Warming utilizes an array of dynamic heating elements to target a single person and create a precise personal climate around her. As a visitor enters a room, her location and trajectory are monitored in real time using location tracking technology. This information is then transmitted in real time to an array of dynamic heating elements positioned in a

grid near the ceiling, each creating a focused beam of ‘collimated’ infrared heat. Spotlights of warmth are centered on people themselves: man no longer seeks heat –heat seeks man.

Efficient, perhaps, but what becomes of the social aspect of heat? The hearth has become entirely atomized and mobile, and its decentralization brings a simultaneous fragmentation of social cohesion –the evolution of the grotto is complete. As humans become increasingly networked in digital space, there is a corresponding physical alienation, emphatically dramatized by individual climates. The hermetic environment of a personal heat cloud seems to be the final capitulation of human interaction. We are digitally connected and spatially isolated. Mitchell’s urgent question remains: as the hearth is fragmented, «what shall replace it?». **ARQ**

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