Jim Campbell's motherboard and father time.

If, according to Maurice Halbwachs's groundbreaking Les cadres sociaux de la memoire (1925/50), collective memory is "a reconstruction of the past in the light of the present," then Jim Campbell's Home Movies series (2006-ongoing), recently exhibited at the University of California, Berkeley Art Museum and Pacific Film Archive (May 31 -August 3, 2008), might well be the perfect anodyne to the shared "lieux de memoire" of the digital age.

For over two decades, the San Francisco-based artist has been using light-emitting diodes, liquid crystal displays, custom electronics, personal imagery, and grid systems to investigate time, memory, and the thresholds of visual communication and human-centered computing. Early works such as Memory/Recollection (1990) trace the intersection between vernacular film and surveillance, as well as the looping nature of temporality and stored memory. A row of five small monitors broadcast live black-and-white images alongside those captured earlier, whether from ten minutes ago, a week, six months, or two years. Somewhat like Robert Morris's Box with the Sound of Its Own Making (1961), a nine-inch walnut cube containing a three-hour tape recording of its actual construction, Memory/Recollection both keeps track of and is defined by its own history.

In a similar vein, Campbell's Memory Works (1994-98) depict events and people important to the artist and link them in various ways to his own body. For Photo of My Mother (1996), he dramatizes the ablation of his mother's image over a one-hour period. As Steve Dietz explains in Quantizing Effects: The Liminal Art of Jim Campbell (2005), "The mathematical interpolation of this event is stored in a computer memory in a gray metal box below the photo. The memory is then used to control the 'fogging' of the LCD pane of glass in front of the photograph, as if Campbell were breathing on it directly." Correspondingly, the rate of Campbell's beating heart enlivens Portrait of My Father (1994-95), whose subject appears and disappears over an eight-hour period, equivalent to a good night's sleep. These two works, along with Hallucination (1998-90),3 which uses interactive-reflective technology to appear to set the viewer on fire in and as the reflection of a "virtual" woman (alluding to his brother's mental illness and suicide), lay bare the often intimate register of Campbell's highly coded apparitions. Elsewhere, Campbell tips the scale toward pure concept, or if you like, philosophical "duds": The End (1996), as Regina Cornwell writes in Jim Campbell: Transforming Time, Electronic Works, 1990-1999 (1999), is "a wry conceptual work and a rumination only conceivable through the computer, programmed to present us and millions of generations following with every image ever made and still to be made, beginning with a single pixel and its shades of gray." Conversely, the Color Works series (1998-99) begins with a whole picture and then proceeds to parse, extract, and magnify each pixel into its own projected abstraction. Together, these Borgesian auroras illustrate the endless diagrammatic possibilities of the digital syllable.

Campbell's more clinical Ambiguous Icons (1999-2000) and Motion and Rest (2001-02) series use LEDpanels to determine the lowest resolution at which the human eye can construct pictures. Just like Eadweard Muybridge's stop-motion photography, Campbell's banks of blinking and glowing diodes break down the indiscernible into the discrete, the real into the abstract. But where Muybridge sought to fix continuous motion into sequential snapshots, Campbell recycles

images through sequences of random noise. The particular algorithm for these analogue-to-digital conversions is the so-called Nyquist-Shannon interpolation formula, to which Campbell pays overt LED homage in Portrait of a Portrait of Harry Nyquist (2000) and Portrait of a Portrait of Claude Shannon (2000-01), the well-known engineers of sampling theorems. In Street Scene #1 (2006), Campbell ups the cognitive ante by obscuring the LEDs entirely behind a grid of small panels. Almost counterintuitively, a definable likeness still emerges from behind the individual auras, reminding us that while digital and analogue functions are quantized in very different ways, they also depend on an extant viewer and the persistence of vision for their realization.

In the Home Movies wall sculptures, Campbell puts the taxonomic technologies developed for his Motion and Rest and 2001 Street Scene series (cutaways of footage from New York's Fifth Avenue that become increasingly distinct the further you move away from them) to more mnemonic, even metaphysical uses. The series offers medium- and large-sized grids of smart-chip-driven diodes and their connecting wires. Each custom-programmed LED unit projects the light from a single pixel inward against the wall. They all work in concert, transforming vintage Super-8 home movies into blinking screen zombies: baby's first steps, road trips, children playing, and other sundry weekend activities, all uncannily showing through despite the intervening electronic matrix.

Campbell's sources--some anonymous, some from his family archive--are both representational and representative of the home movie genre, and by extension document the patrimony of white, middle-class America immediately following WWII. They also recall early cinema's brief, touristy "scenics," the nonfiction "actualities" and autobiographical experiments of the Lumiere Brothers and other film pioneers. No longer indexical or even matter-of-fact, these embalmed digital "grabs" end up as blurry social and technological symbols of extreme denotational marginalization, again reminding us of Nietzsche's axiom that "there are no facts, only interpretations."

Yet despite their scale, dimly lit installation, and facile resemblance to vertical window blinds, these Home Movies offer recollections totally removed from the world of cinema, not least for the absence of a single light source and what Laura Mulvey once called "the unglamorous celluloid strip." By conflating rear projection with all-over pixellation, Campbell instead moderates an ongoing dialogue between different eras, media, and information agendas. The resulting dreamlike resolution, familiarity, grainy texture, and hand-held jerkiness all prime our natural tendency to read the montage in terms of what Marita Sturken calls, in Acts of Memory: Cultural Recall in the Present (1999), "narratives of recovery." That permeable interface between the perceived and the mediated, between hard truth and soft technology reveals the "third meaning" of Home Movies, which is that all language--whether binary, mnemonic, or expressive--is endlessly modifiable and elastic.

At once serial, processual, and holistic, Campbell's work enables us to draw analogies between various types of human memory and computer imaging. His automated smart chips implicitly correspond to long-term or "hard-wired" memory traces, covering complex actions like driving a car or dancing. The suggestive diode imagery activates our putative short-term memory, testing the limits of all memorization. Furthermore, the Home Movies series actively degrades the

infinitesimal interface between observation and information retrieval associated with sensory memory, playing off close-range, dissociative (or white cube) abstractions against episodic, long-distance, mainly autobiographical quasi-narratives contingent on time, place, and individual mood.

Physiological analogies also abound, proving that smart chips could well be to neurons what electrical wires are to nerve fibers. Indeed, the digital on-off switches of binary language are an ideal metaphor for the neuronal processes of recording, inscribing, and playing back the very memories triggered by visual images. Likewise, when viewed at midrange, the light patterns swirling across the surfaces of Home Movies ingeniously recall MRI firestorms. Even barring the collective analogy of the series to a working brain configured as so many "band-limited" signals, it readily lends itself to being understood as a type of reverse engineering of memory along the lines of sympathetic magic. As with Plato's Allegory of the Cave, we easily see how one might mistake nostalgic shadows for the real deal.

Further expanding our analogy to include the social, if each autonomous chip and diode in any Home Movies grid can be thought to represent a single operator, then altogether they might function as what Halbswach calls the "instruments used by the collective memory to reconstruct an image of the past which is in accord, in each epoch, with the predominant thoughts for the society [in question]." This would be an idle fancy if it were not for the striking image conveyed by Home Movies of today's increasingly technological triage of mass behaviors and thoughts. To be sure, similar worries emerged back when the Cinematographe, Brownie, and Super-8 cameras were first introduced. But what is different now from previous centuries is the ease with which digital information can be manipulated, underwriting all perceptions, projections, memories, and histories with ghostly algorithms. By making the underlying digital regimen show through these cherished familial or personal images, Campbell highlights the current instability of the cultural process of recollection and, by extension, the plasticity of media identities.

Traditionally, rituals, monuments, architecture, images, and living bodies have laid the foundations for collective memories. But today we increasingly rely on the hard drives and software of PDAs, Google, Wikipedia, GPS, and Sandboxstyle computing to store, process, and retrieve information about the past, present, and future. In a recent NY Times op-ed titled "The Outsourced Brain" (October 26, 2007), David Brooks half-seriously quipped: "I had thought that the magic of the information age was that it allowed us to know more, but then I realized the magic of the information age is that it allows us to know less. It provides us with external cognitive servants--silicon memory systems, collaborative online filters, consumer preference algorithms and networked knowledge. We can burden these servants and liberate ourselves."

This magical contrecoup notwithstanding, the question still remains of how and what we remember in the long term and, in the short term, how we project our own image across the media divide. Moreover, the precisely engineered ways in which visual recollections are now presented (JPEG slideshows on our phones, blogs, virals, craigslist.com, etc.) ironically lead to an extreme self-consciousness and the promotion of bogus "reality" personae, further destabilizing the utopia of a worldwide network. The extreme example of this process of mass subduction is, of course, those "lifeloggers" who use webcams, microphones, and biometric gadgets to document every moment of their lives. Such a globally augmented self-surveillance

certainly changes the way media subjects perceive themselves as "real-valued" continuous beings. What will lifeloggers glean from this surfeit and depth of detail, should they ever have the time to review it entirely? How does the democracy of endless sampling allow the original signals to be transposed with "arbitrarily good fidelity"?

While the objects and ideas contained in Campbell's Home Movies parallel or project explicitly retrospective uses of long-term memory, their overt digital automatism also anticipates how the increasingly externalized nature of memory is beginning to shape the biology of memory itself, or how we even remember to remember. Again according to David Brooks, "A third of people under thirty can't remember their own phone number. Their smartphones are smart, so they don't need to be. Today's young people are forgoing memory before they even have a chance to lose it."

Since the early 1990s, Campbell has rendered this incestuous dance between recording and reality through the lens of Heisenberg's Uncertainty Principle, which postulates that observation always affects the object observed. As one approaches Shadow (for Heisenberg) 1993-94), its little Buddha in a glass cube slowly fades from view into its own shadow. Likewise, the couple making love projected in Untitled (for Heisenberg) 1994-95) progressively dissipate into an abstract close-up blur. As the artist explains, "[the Heisenberg works]address what I see as inherent conflict and loss that occurs when taking unquantifiable concepts [like love or spirituality] into digital representations." And so it is too with Home Movies. Campbell transforms found personal histories into collective fictions, but the zeroes and ones behind his veil of digital poetry suggest that in this broadband era our future memories of actual events will depend just as much on how we choose to record them.

LAURA RICHARD JANKU is the editor of Artweek.