from: S. Turkle, ed., Evocative Objects

There was a little girl who was so delicate and charming, but in the summer she always had to go barefoot because she was so poor. . . . The little girl's name was Karen. . . .

Karen was . . . to have new shoes. The rich shoemaker in town measured her little foot. . . . In the midst of all the shoes stood a pair of red ones just like the ones the princess had worn. How beautiful they were! . . . [Karen] . . . put them on. . . . And Karen couldn't help herself, she had to take a few dance steps. As soon as she started, her feet kept on dancing. It was as if the shoes had taken control. She danced around the corner of the church, she couldn't stop herself. . . . At home the shoes were put in a cupboard, but Karen couldn't help looking at them. . . . She put on the red shoes. Why shouldn't she? And then she went to the ball and began to dance.

But when she wanted to turn right, the shoes danced to the left, and when she wanted to move up the floor, the shoes danced down the floor, down the stairs, along the street, and out the town gate. Dance she did, and dance she must, right out into the dark forest.

—Hans Christian Andersen, "The Red Shoes"

BALLET SLIPPERS

Eden Medina

As a child, I lived to dance. My early ballet lessons still stay with me, a long series of carpools from one musty studio to another. I began my training at age four after my parents presented me with my first pair of ballet slippers and drove me to the local studio. Dressed in baggy leotards and pink cotton tights, my fellow four-year-olds and I learned to rotate our hips unnaturally outward into "first position," stand rigidly with our shoulders back and our stomachs sucked in, and eventually associate meaning with French words such as *tendu* and *plié*.

There are many objects associated with ballet, most of which contribute to a culture of continuous self-appraisal (the barre, the elastic band around the waist, the mirrored room). Among these, the shoe is by far the most significant. It acts as an object of identification, drawing a line between the various styles of dance. To a surprising degree, its constraints and affordances define the movement of the ballerina.

History illustrates how the evolution of ballet paralleled the development of the dancer's shoes. Prior to the eighteenth century, this fledgling art celebrated male athleticism and relegated female dancers, clad in heavy skirts, wigs, and heeled slippers, to peripheral roles. French dancer Marie Ann Cupis de Camargo was one of the first women to cross the gender barrier when she removed the heels from her slippers and began performing the same flashy steps as her male counterparts. In 1832, dancer Marie Taglioni forever altered ballet technique by dancing *en pointe* the full-length ballet *La Sylphide*. The resulting performance—ethereal and light—embodied the spirit of the Romantic Age. Women who seemed to possess supernatural beauty and purity captured the hearts of ordinary, earthbound men. Taglioni's portrayal of a weightless, idealized femininity made her an international favorite. It was reported that some overly zealous fans ate her discarded slippers with sauce. In the nineteenth century, choreographers continued to showcase the technique of the female ballerina, who had since displaced the male dancer as the central figure in ballet. The invention of harder, more durable slippers increased the ballerina's potential for athleticism and broadened the range of movement she was expected to perform.

Beyond these technical and aesthetic expectations, ballet shoes carry symbolic power. In the early twentieth century, Isadora Duncan rejected the rigidity of nineteenth-century ballet by donning loose Grecian robes instead of corsets and embracing the naturalness of the bare foot instead of the artificiality of the ballet slipper. Modern dance pioneer Doris Humphrey later based her style of fall and recovery on the movement of the unsoled human footfall.

By the age of eleven, before I had even reached the age of going *en pointe*, I had already disfigured my feet. The restrictive nature of the shoe, combined with the demanding movement required of my feet within them, resulted in numerous trips to the doctor for ingrown toenails as well as the initial signs of bunions. My legs developed the hyper-musculature characteristic of dancers forced to raise their bodies up on their toes. I still bear the marks of my early years in ballet.

Yet such inconvenience seemed minor in comparison to my dream that my body might recreate the movements of controlled beauty characteristic of the dance. My ballet slippers enabled me to move in ways I never dreamed possible. I could mimic the ethereal weightlessness of *Giselle* or throw myself into a series of athletic

jumps and turns that left me happily gasping for air. For a time, I felt my body would respond to any demand I could impose on it.

In ballet, shoes shape physical artistry and also mark the dancer's progression within the ranks of the discipline. When I was four, my parents purchased my ballet slippers in a mall. They were inexpensive, cut from coarse leather, and were sold with the elastic strap fully attached to the sides of the shoe. My next pair came from a store specializing in dance apparel. Apart from their origins, the most noticeable difference was the piece of unattached elastic my mom had to sew on the slipper, specially positioned to accommodate the dimensions of my foot within this particular shoe. As I improved, I became more demanding of my increasingly sophisticated equipment. I remember my pride when I could finally attach a pair of ribbons to my slippers in addition to the requisite elastic.

A dancer receives her first pair of *pointe* shoes, toe shoes, at age twelve, roughly corresponding to the age she enters puberty. Progress continues to be marked though a progression of shoes, now all shoes for dancing *en pointe*. The new hierarchy is even more complex, marked by technical terms such as "shank stiffness" and "box size." These new shoes also come with an array of accessories, such as first-aide tape and lamb's wool to ease the inevitable pain of blisters, bunions, and bleeding.

My own journey through the hierarchy of shoes signified an increase in my skill and helped me identify with the image of the professional ballerina that I upheld as my physical ideal. For a time, both my movements and appearance progressed along what I imagined to be a natural trajectory toward this goal. However, as I continued my studies, there was an increasing gap between the reality of my body and the perfected body imagined in my mind. My shoes endowed my body with the theoretical capability to balance and extend my limbs, but my legs were not as long, my torso not as limber, and my neck not as graceful as the one owned by my imagined self, my rival.

Eventually each movement I executed before the mirror forced me to stare at my own limitations. Just as the ballet slippers of my youth helped me become a member of a community driven to transform the body into art, the toe shoes of my young adulthood highlighted both my technical progression and the elusive nature of my ideal physique. As I became closer to my ideal in the realm of technical movement, I was left with a profound sense of my physical shortcomings. My body would never be beautiful in the exact way I longed for it to be.

I quit ballet shortly after this realization. I felt that my body had failed me. I put my toe shoes in a box and there they collected dust for the next ten years. As I entered adulthood, the library replaced the ballet studio as my favorite haunt; the computer became my preferred tool of self-expression; and the academic community offered a new mirror for self-appraisal.

Despite my prolonged absence from the dance studio, the movements of my youth remained engraved in my body. Several years ago, I felt an urge to revisit them. My father was able to locate my old pair of ballet slippers, which he promptly shipped to me via FedEx. As I sat in the studio on my first day of class and began to put on my warm-up clothes, I doubted my decision to return: How would the mirror evaluate my older, less flexible body? Yet, as I looked around the studio, I noticed that none of my classmates resembled the ideal that had driven me from the discipline I once loved. Slowly I slipped my feet into my shoes and began to stretch, feeling my hips rotate almost imperceptibly outward as they recalled a stance once second nature. I sensed that whatever the shortcomings of the body, I

was now in a position to see the beauty of the dance. As a child, I lived to dance. As an adult, I could accept the fact that I loved to dance. When I felt warm, I walked across the studio and joined my classmates at the barre.

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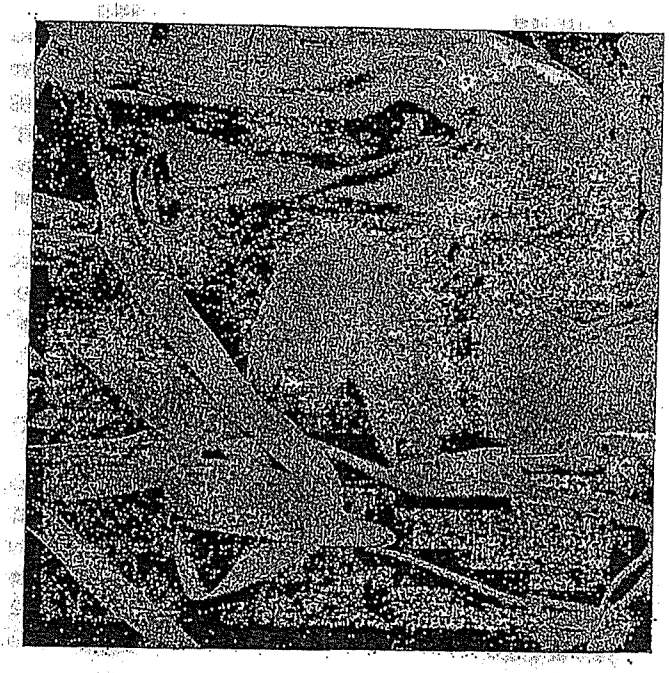
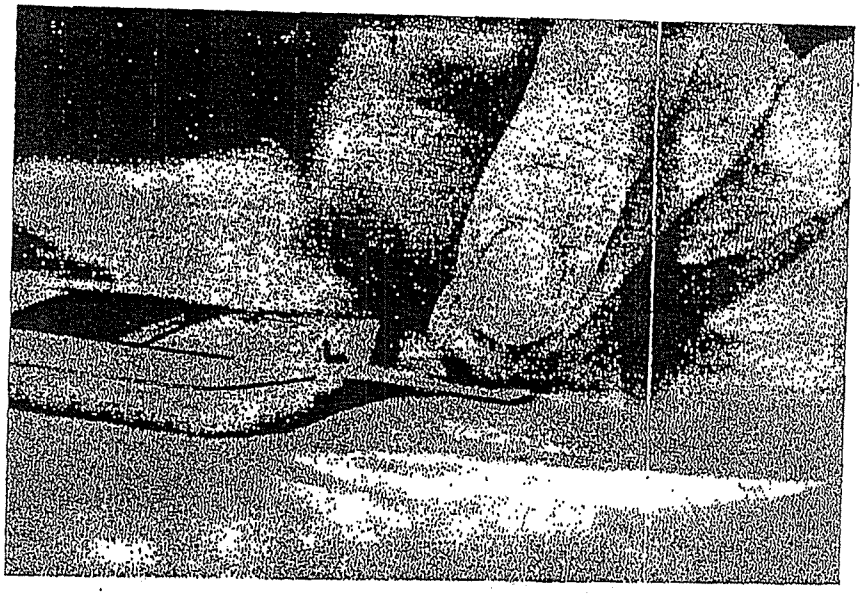


[Today] any objects or persons can be reasonably thought of in terms of disassembly and reassembly; no "natural" architectures constrain system design. . . . "Integrity" or "sincerity" of the Western self gives way to decision procedures and expert systems. . . . Human beings, like any other component or subsystem, must be localized in a system architecture whose basic modes of operation are probabilistic, statistical. No objects, spaces, or bodies are sacred in themselves; any component can be interfaced with any other if the proper standard, the proper code, can be constructed for processing signals in a common language. . . . The privileged pathology affecting all kinds of components in this universe is stress—communications breakdown. . . . The cyborg is a kind of disassembled and reassembled, postmodern collective and personal self.

—Donna J. Haraway, "The Cyborg Manifesto"

THE ELITE GLUCOMETER

Joseph Cevetello



Every morning the first thing I do is search my apartment for my blue case. In it is my Elite Glucometer, lancet, syringes, and other blood glucose testing paraphernalia. Carefully I open a test strip packet, insert it into my glucometer, load my lancet device with a sharp, new needle, search the tips of my fingers for a choice spot, and prick myself. I squeeze my finger until a tiny droplet of blood forms and hold the glucometer close until the vacuum pulls in the correct amount of blood.

The counter on my glucometer begins to count down time. It becomes my body's meter. I live by its metric. I might use the next sixty seconds to walk to the refrigerator to retrieve my insulin, or begin to make some coffee, or put my head down and think about going back to sleep. After sixty seconds, the meter displays my blood glucose level in milligrams per tenth of a liter of blood.

It is only recently that I have thought about how my meter, the first object I see every morning, has become me. Our interactions define my sense of who I am. My glucometer is credit card size—three inches times two inches, and is about one half-inch thick. It weighs about three ounces. The meter has no buttons or switches; it turns on only at the insertion of a test strip, which is about one inch long and one-quarter inch wide. At one end of the strip, an opening pulls blood into the testing plate. On its front is a small LCD display.

I have always been happy knowing that my meter is one of the most accurate on the market. I have been uninterested in how the meter determines my glucose level. The output is the event. I accept what my meter tells me.

Diabetes is all about control: control of blood sugars, control of what one eats and when one eats it, scheduled exercise, and regulation of insulin intake to

food. However, there is no guarantee that even if you keep your disease "under control" its many side effects will not materialize. Despite a regimented life, you could still lose a limb or a kidney, become blind or impotent.

I was diagnosed with Insulin Dependent Diabetes in 1995. IDD is caused when the body attacks and kills off the insulin-producing beta cells in the pancreas. Insulin injections are required for all who have IDD. IDD increases the probability of heart disease fourfold, is the leading cause of kidney disease, limb amputations, blindness, and can lead to impotency. Left untreated, IDD would lead to death in about two years. When I was diagnosed I was fortunate to be living in Boston, the home of the Joslin Diabetes Center. It was at Joslin that I learned to care for myself and to be humble about my illness. While at the Joslin Clinic, I saw patients in wheel chairs who had lost a foot, others walking with IVs, and others with eye patches over one, sometimes two, eyes. I understood that diabetes was not something to be fooled with.

At the Joslin Clinic, I was introduced to the idea of "tight control." Tight control is the attempt to keep diabetic glucose levels as close to those of nondiabetics as possible. To stay on tight control I test my blood at least four times a day: in the morning, before lunch, before dinner, and before bedtime. On days when I exercise, I may test two times before vigorous activity to ensure my blood sugar is high enough and one time after I exercise to ensure that I have not gone too low. If I feel strange sometime during the day, I will test again.

What do I do with all this data? I write the data in my log book, in which I keep a tally of my glucose levels. The meter also stores my last thirty readings and can supply me with an average of these last thirty scores. As

I record the number in my log book, I project where I want to be throughout the remainder of the day, whether I can eat, how much I can eat, how much insulin I should inject, and whether I can exercise or must wait to get my sugars higher.

Usually, I come in at around 100 mg/dl (milligrams per deciliter)—the goal I have set for myself. If I meet this goal, give or take ten points, I feel a sense of accomplishment, a willingness to meet the day. If the read-out is much above 115 mg/dl, however, my mood changes abruptly. "A poor beginning," I say to myself, "What did I do? What on earth did I eat yesterday?" The next few minutes are spent reconstructing my last night's meals and insulin injections, adjusting my dose for the day, and thinking about what I can eat for breakfast.

I do not expect to be perfect, and I know there are times when things get out of control either because I ate too much or injected too little. Usually such readings do not bother me. But, "usually" is a big word in the world of "tight control."

There have been many times when I have thought I was low—when I even felt low—and my meter has told me the opposite and vice versa. Discrepancies of more than thirty points upset me. Sometimes I will remember a snack or lack of a snack, and that will explain it. Many times I can think of no good reason for the discrepancy. When my mental image of my physical self conflicts with my meter, I have a problem. Do I doubt myself, or do I doubt my meter? Seeking to maintain my sense of control, I test again.

My first reaction is to doubt the meter rather than myself even though I know that first and second meter readings usually differ by no more than five points. One would think that after all these years I would simply accept the first reading. I do not. I am unwilling to place absolute trust in my meter. I want to find fault in it, although I know it will always come up with two similar readings. The discrepancy between the reading and my

expectation makes me redouble my efforts to remember what I could have forgotten, what I might have done wrong. Only when I remember do I feel in control once again.

My meter maintains my image of myself as a man able to take care of himself. It also defines me as a diseased person, one who needs the aid of objects to sustain my life. The meter concretizes my commitment to remaining healthy and communicates to others that I am different, somehow incomplete.

My interactions and dependency on my meter have made me realize that relationships between people and medical machinery are evolving. Perhaps, these new relationships will become so vital to our survival that, like my glucometer, they will seem intrinsic.

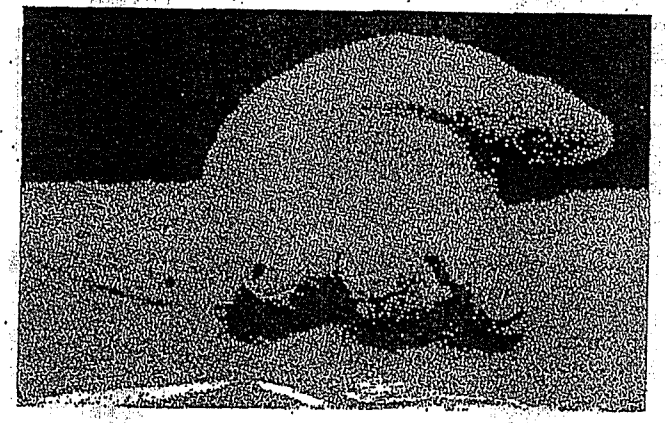
Projecting into the future, I can see two scenarios. In one, techno-clad humans live with ubiquitous computing, integrated into our homes, clothes, and bodies. I imagine data glasses receiving information about us from sensors buried deep within our bodies that could communicate a constant readout of blood glucose level. I, as the wearer, closely monitor myself and, at the appropriate time, communicate with my insulin delivery device to tell it to medicate me. In this scenario, I am in control of these devices, they do what I tell them to. In this fantasy, I am still a diseased person caring for myself.

In a second scenario, I live in a world of ubiquitous, body-based, clothing-based computing, but in this future, a small implantable device regulates my glucose levels and insulin needs. It operates autonomously. In this fantasy, I do not control my disease; my computer pancreas controls it for me. Manfred Clynes, a NASA scientist writing in the 1960s, defined a cyborg as a synergy between a machine and a human being that does not require any conscious thought on the part of the human.[1] In the second scenario, it is difficult for me to remember that I have diabetes. I have become, in Clynes's

terms, a cyborg. I wonder how my interactions with my meter may be a harbinger of the nascent stages of a cyborgian relationship.

The Austrian poet, Rainer Maria Rilke, said: "The future enters into us, in order to be transformed in us long before it happens."[2] I find my blue case and take out my meter, blood glucose testing strips, lancet device, syringe. Carefully I open a test strip packet, insert it into glucometer, load up my lancet device with a sharp, new needle, search the tips of my fingers for a choice spot, and prick myself. I squeeze my finger until a tiny droplet of blood forms and hold the glucometer close until the vacuum pulls in the correct amount of blood. As the meter counts down, I begin to prepare my shot and wait for my meter to tell me what to do.

Joseph Cevetello received his doctorate from Harvard University School of Education and is a specialist in e-learning design and technology use in adult learning.



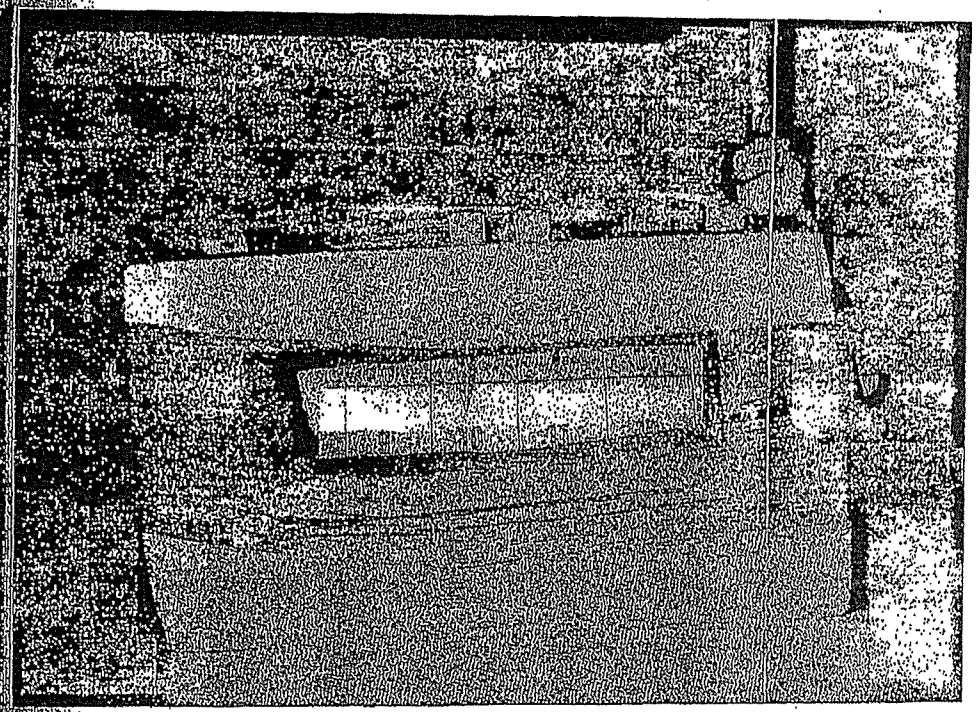
Functional perfection exercises a cold seduction, the functional satisfaction of a demonstration and an algebra. It has nothing to do with pleasure, with beauty (or horror), whose nature is conversely to rescue us from the demands of rationality and to plunge us once more into an absolute childhood (not into an ideal transparency, but into the illegible ambivalence of desire). . . .

All possible valences of an object, all its ambivalence, which cannot be reduced to any model, are reduced by design to two rational components, two general models—utility and the aesthetic—which design isolates and artificially opposes to one another. . . . But this artificial separation then permits evoking their reunification as an ideal scheme. Utility is separated from the aesthetic, they are *named* separately (for neither has any reality other than *being named separately*), then they are ideally reunited and all contradictions are resolved by this magical operation. Now, the two equally arbitrary agencies exist only to mislead.

—Jean Baudrillard, "Design and Environment or How Political Economy Escalates into Cyberblitz"

THE RADIO

Julian Beinart



The waterless coastline stretches thousands of miles, from just north of Cape Town all the way to Angola. I grew up in a small town at the southern tip of this desert and was a child when German submarines torpedoed Allied convoys and left survivors to waste away on this Skeleton Coast. My town was a hot and dull center for wheat farmers. The tallest building was the Dutch Reformed Church, an Afrikaner Gothic steeple, to which white dressed-up farmers' kids would march on Sunday mornings. My family belonged to the synagogue across the mud of a river, in an out-of-the-way place where its low, quasi-Ottoman façade faced no one. Colored people cleaned our house, drove my father's trucks, got drunk on Saturday mornings, and lived somewhere I did not know.

Later, when I was a sophomore in architecture school, I tried to do a measured drawing of the church for a class assignment. It was the only building in the town that seemed to merit my work. But I never was able to finish the drawing. The church was too big to measure, and somehow it stood outside me. It was a totally isolated and commanding thing, never to be messed with, never to be modified, never to change, and never to be entered by the likes of me, or, as I later understood, by all those colored Christians.

In many ways the Church fitted much of the dogma of the architecture I was taught. We never questioned client power or community access or social meaning in buildings. Our designed objects were to be seen on their own in space and to remain unaltered over time. We had the benighted obligation to innovate culture, a culture produced by Western heroes working for people like themselves. Our ideal was to have Palladio's clients,

princes with whom we could act out our professional narcissism.

Years later I was in South Africa again, now with graduate degrees from American universities and a sense of obligation to spread their wisdom. But to whom? The universities were segregated; increasingly uneasy, I taught basic design to freshmen, based on what I had learned at MIT from Gyorgy Kepes, who in turn had brought his version of the famous Bauhaus Vorkurs from Europe. The exercises of this fundamental course were meant to reduce students' reliance on past visual knowledge and to force them to deal with a formal language of vision completely new to them. The new language was abstract and universal, implying that it could be as international, yet as removed from local culture as Esperanto. In what Baudrillard refers to as this universal semantization of the environment, visibility was controlled.[1]

Soon after, in the early 1960s, I remember how shocked I was when I saw something I had not noticed before. Walking down a street in the middle of Durban, South Africa's most racially mixed city, I passed a boy carrying a wooden transistor radio. It was about six inches long and two inches wide, with a wooden handle and a hinged wooden dowel antenna about two feet long tapered to a small knob at its end. On the top of its body, one of three square wooden buttons was pressed down. A slit of broken glass covered a rectangular dial behind which was a piece of an old paper calendar numbered one to twelve. A red pointer was stuck on three; it could never move. Although it looked like a Braun transistor radio, this object never produced sound. I asked the boy about it and he said: "It can't play music, but I sing when I carry it. One day I'll have a real one."

From that time, quite suddenly, I began to see objects that had been invisible to me before. There were all kinds of wire bicycles, some of twisted soft metal, others shaped out of thin steel with yellow frames, red beaded tires, blue handles, and pedals. A friend sent me a three-by-two-foot black bicycle from Zambia, which had a movable front wheel. It had, so he said, been made by a boy to get himself a job in a bicycle repair shop.

Everywhere there were objects of emulation and imagination. Often they were copies of sophisticated machines now made by hand out of recycled, thrown away material: Honda motorcycles made from panels of sheet tin taken from Castle beer cans; a dark green Isuzu Trooper 4 × 4 made out of a single piece of wood; wire Volkswagen Beetles with engine covers that lifted up; a snout-pointed fighter plane with a South African flag on its rudder; a large helicopter made of wire with a working AM radio in its belly. In the mute transistor radio family, there were silent wooden Sony cell phones useful only for dreamed conversations.

Cheaply available, highly visible, and linguistically subtle, material from products carrying popular brand names and out-of-context messages (Coca-Cola, Sprite, and Fanta, among others) adorned tin lunch pails, cloth jockey caps, miniature delivery trucks, and almost everything else. Recently I bought a three-foot-long pantechnicon in New York. Made in Abidjan of Nestle coffee can metal, it repeatedly says:

> *Nescafé est un pur café soluble, fabriqué avec des grains de Robusta de Cote d'Ivoire, soigneusement selectionnés puis traité pour votre plus grand plaisir.*

And on an elegant racing bicycle from Cameroon there are small-type messages about "milk for baby's growth" and "just add water."

I have puzzled over these objects for a long time. In South Africa, I decided they were design responses to a technology that could not be purchased by poor people, whereas what I was teaching in the university derived from a German design pedagogy that eagerly embraced available modern technology. So I made a new version of my academic program and over a period of about six years taught it to local people at seven short-term summer schools in five African countries. We used anything that was available, often thrown-away rubbish. Passers-by dropped in off the streets and became students. Almost everyone responded to the exercises quickly and directly, often humorously. They seemed able to deal with issues of form with the same intensity and forthrightness of the boy in Durban.

Late one night I took some jazz musicians home to their black township on the southwestern side of Johannesburg. I had never been to Western Native Township before; whites did not go to such places. But I returned many times after to study the people and their houses, particularly the way they had plastered and painted the small boxes, which they had been renting from the municipality since the influenza epidemic of 1917. Over a few years a team of students and I documented the fronts of all 2,000 houses. The facades were patterns of rectangles, circles, and half-moons, a restricted palette of shapes from which a communal language had been assembled. So, instead of painting a hammer-and-sickle on his wall, the first local chairmen of the African National Congress chose an open circle with a serrated edge from the community's menu of forms, which he then read as an industrial rotor hub, a symbol of Russian progress. A woman who ran an illegal Fah-Fee (a popular Chinese-based betting game) saloon painted her lucky symbol, a horse, on her wall but made the horse of common triangles and half-moons. From these bare houses with seven people per room came an astounding decorated urbanism.

No designer on his or her own could have invented the decorative language of the Western Native Township community, nor could any designer have chosen the personal example each house displayed on its facade. Designers have tried their hand at animating dull housing and produced only abstract stereotypes. But many designers have learned the difference between professional and popular knowledge. They no longer see buildings as disassociated from their context; they try hard to revel in environments of complexity and difference; they design permanent monuments badly and ephemeral events much better; they treasure the every-day in open societies; and they know when to invite others unlike themselves in and when to stand aside.

We will never know whether we have lost the naive genius of the little boy in Durban. We work in the hope that such ability will be available not only to those who are poor, excluded, and have to dream about the possessions of those a class above them. Some believe that new technologies may help us nourish the full universe of our abilities. We have yet to see this in action, especially for people for whom our technology remains chimerical. But, above all, we need a social environment in which we see the value of others and do not consign them and their objects to invisibility. And if this happens, we may not have to choose between Afrikaner steeples and Zulu radios.

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Question 3: What does your design make you think of?

I think of dignity.—M. Myaluza

It makes me think of a butterfly. I am fond of them.—P. Butalezi

I think of my brother-in-law who did it to signify his success in his divorce case.—Phillip Letatola

It makes me appreciate the beauty of art.—Rhoda Nkile

It reminds me of two things: cypress trees and the insignia of a diamond card.—Phoofolo

I think of the Queen's crown.
—Joyce Swartbool

I think of the freedom of movement I had in WNT.—Johannes Maseke

It reminds me of the money I had spent on it.—Ruth

I think of wealth in the form of a diamond.—A. Mkhize

I think of nothing.—Joel Ngubane

I think of Chinese and Japanese flags.—S. Ramaphosa

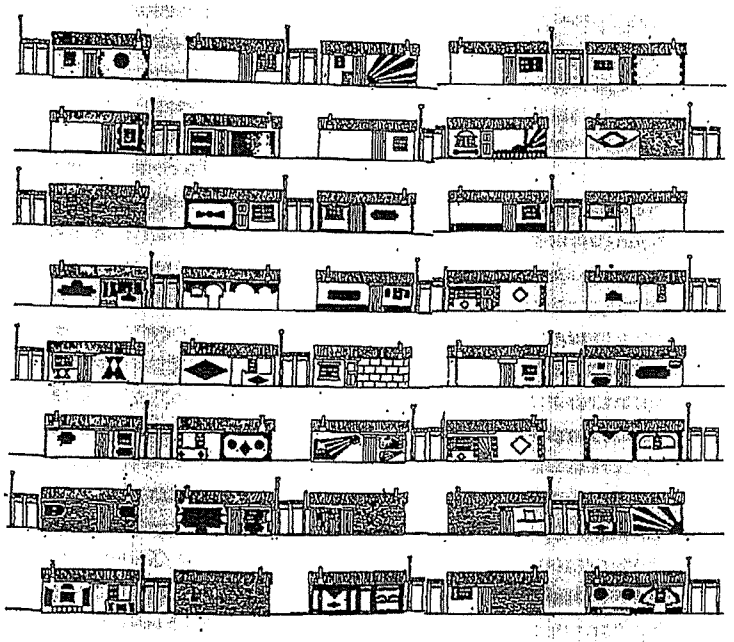
It makes me think of tombstones and graveyards. It is a memorial now because WNT is dead.—Phiri

I think of a horse. I am a fah-fee woman; a horse is my lucky number.
—Martha Sidzatana

I think of a razor which together with the black colour signifies "danger."
—Ishmail Setlodi

It makes me think of my late mother.
—M. Maiunga

It reminds me of my brother I have not seen for three years now.—Mashaba



[Electronic communication] . . . is on the way to transforming the entire public and private space of humanity, and first of all the limit between the private, the secret (private or public), and the public or the phenomenal. It is not only a technique, in the ordinary and limited sense of the term: at an unprecedented rhythm, in a quasi-instantaneous fashion, this instrumental possibility of production, of printing, of conservation, and of destruction of the archive must inevitably be accompanied by juridical and thus political transformations. . . . [Because of] these radical and interminable turbulances, we must take stock today of the [archived] classical works. . . . [C]lassical and extraordinary works move away from us at great speed, in a continually accelerated fashion. They burrow into the past at a distance more and more comparable to that which separates us from archaeological digs.

—Jacques Derrida, *Archive Fever*

THE ARCHIVE

Susan Yee

La Fondation Le Corbusier in Paris archives the work of the world-renowned architect, Le Corbusier. His work is studied by every student of architecture, and in the mid-1990s my task was to closely examine his sketches, drawings, notebooks, models, anything I could find that might help to construct a virtual model of one of his famed unbuilt projects, the Palace of the Soviets. The archives were located in Le Corbusier-designed buildings, Villa La Roche and Villa Jeanneret; the idea of sifting though the master architect's original drawings in a space that was conceived by the master himself thrilled me. The materials were rich: fluid sketches, detailed drawings, study models, and notes. I read his letters. I browsed through his datebook and imagined his days full of meetings. I examined his hand-scrawled calculations in the margins of sketches and did the math along with him. There were newspaper clippings. I remember finding one where his design was critiqued. Right on the clipping he had written "Idiote" in a vigorous and powerful hand. I could trace the precision and force of the incision into the newsprint. I felt his frustration, his spirit.

One day, I asked to see the overall plan drawing for his unbuilt design. I was escorted to a special room where Le Corbusier's largest drawings were viewed and waited for the curator to bring up the large rolled drawing. I waited in silence as the curator opened the scroll. It was so large that it spilled over the edge of the table. I had to walk around the drawing in order to see it. I expected to be given gloves, but I was not. I felt awkward. I stood there more than timid, almost paralyzed. I didn't know if I could or should touch it. And then the curator touched it, so I went ahead and touched it too with my bare hands. All I could think about was that this was Le Corbusier's original drawing. It was meticulously hand-drawn, but the drawing was dirty. There were marks on it, smudges, fingerprints, the marks of other hands, and now I added mine. I felt close to Le Corbusier as I walked around and around the drawing, looking at the parts that I wanted to replicate to bring home with me, touching the drawing as I walked. The paper was very thin.

The next day I came back to the archive and that same scroll was rolled out again. The ritual began again. I spent all day walking, touching, looking, thinking. On other days the ritual would be different. I looked at Le Corbusier's personal, handwritten letters. And one day, and this was the most miraculous of all, I found a little parchment bag full of paper squares of different colors and different sizes. I was there with a team of other MIT architects, and we all gravitated toward these playful cut-outs. Delighted with the discovery, we all immediately came to the same idea at once: that these were the elements Le Corbusier used when he was designing the Palace of the Soviets. These were the little squares he used to program the large project. He figured out the arrangement with little colored papers. One color was for meeting rooms, another was for public areas. Each function of the project had a designated color. And I imagined how he fiddled with these little bits of paper until he found a programmatic configuration that pleased him; I fiddled with them too.

On my last day at the archives, the curator approached me with pride, "Oh, you'll love what we're doing now. You won't ever have to come here! You won't ever have to look at these drawings anymore! We're putting

them all in a digital database!" She brought me to an adjacent room and showed me the exact drawing I had been looking at, the drawing around which I had been circling for days. It appeared on her computer as a small icon. If you clicked on it, it became larger. If I had accessed this drawing from home, I would never have grasped its dimensions, I would never have known that it was stored separately, carefully rolled, that it was dirty with smudges and fingerprints. The scans for the Web site gave me nothing to touch. I felt no awe about the scale of the drawings. Looking at the curator's scans made me think respectfully about mass consumption, about allowing everybody to have access, about the technical problems of how to use a cursor to move around the drawing on the screen, and about how differently I understood the digital image and the designer behind it.

Looking at the scans in the computer room made me miss the quiet of the physical archive, the ritual of bringing out the precious original drawings, the long minutes of unwinding. Sitting at the curator's computer in Paris, I followed her instructions and linked once again to the drawing. A moment later, some bit of business crossed my mind and I linked to MIT. Feeling like a saddened citizen of the information world, I felt transported to MIT through the link. I had a moment of shame.

That day with the curator was the first time I began to think about the transition from physical to digital. The evocative object, the Le Corbusier drawing in both its physical and digital form, made me wonder how automatic it had been for the curator to put the emotion of the archive out of mind, how easy it was to trade the value of touch and physicality for the powers of digitization.

I think of Turkle's distinction between instrumental and subjective technology, between what technology does for us and what it does to us as people.[1] The new Le Corbusier digital database did things for me. It allowed me to do things that I could not do before. I could search

it, manipulate it, copy it, save it, share it. But what did it do to me? It made the drawings feel anonymous and it made me feel anonymous. I felt no connection to the digital drawings on the screen, no sense of the architect who drew it.

As I came to terms with my anonymity, my lack of connection, and the loss of my former rituals in the physical archive, I felt fortunate to be in a generation of designers that straddles both physical and digital worlds, a generation that creates, values, and understands handmade drawings and models as well as digital ones.

In my work designing technology-enhanced studios at MIT, I often think about Le Corbusier's drawings and the drawings that designers make today. Today's drawings and models are constructed on the computer. They have never been physical. They are born digital. They will never be touched. I think about how a new generation will be trained to favor computational techniques and algorithmic methods of design. Instrumentally, these technologies offer opportunities for innovation in design development and construction. Subjectively, however, what will these technologies do to us? How will they affect the way we feel, see ourselves, and see design? How will future students of architecture come to experience the designs of a master from the pre-digital era? And what of the "old masters" of our first digital era? Will future students be satisfied to simply understand the algorithms that generated their designs? Will we still crave some pilgrimage such as the one I took to Paris? But there will be no place to go; it will all be on a collection of servers. What will this do to our emotional understanding of the human process of design? What rituals might we invent to recover the body's intimate involvement with these new traces of human imagination? Will we be able to feel the human connection through digital archives? Will we care?

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