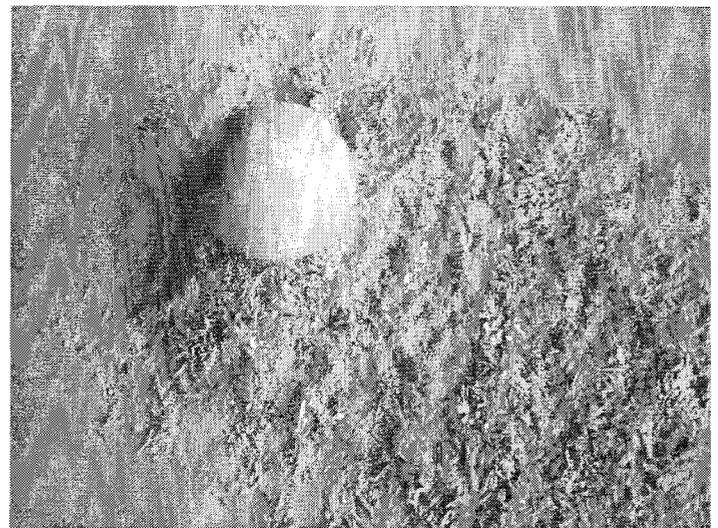
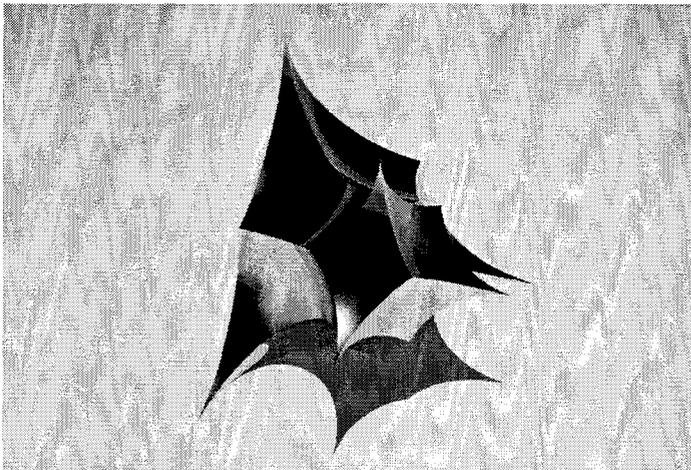


Pumping Up: Digital Steroids and the Design Studio

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SPEED

At the beginning of their studies in architecture is there a student who does not want to be more artistically effective, intellectually agile and just flat out fast? It is in their nature to want to immediately possess the information necessary to make them brilliant.

This past spring during the controversy regarding the use of steroids in Major League Baseball, Tony Kornheiser, a reporter for the Washington Post facetiously confessed to taking steroids in order to become, “bigger, stronger and faster on the keyboard”. “You should see me type now”, he wrote, “I’m unbelievably fast, yet precise at the same time. I’m the Eric Clapton of the laptop. I can type all of ‘Moby Dick’ in 14 minutes. I can type faster than Evelyn Wood can read it.” He goes on to say, “I couldn’t believe how powerful the steroids made my words. Suddenly I could throw in a word like ‘enigma’ without ever worrying what it actually meant. My vocabulary expanded exponentially. I used to be a three-syllable guy at

most. But under the influence of steroids I could bat out four-syllable words like – well, like ‘exponentially’ and five-syllable words like ‘onomatopoeia’ . . . Steroids gave me all sorts of confidence.”¹

One of the biggest challenges facing faculty teaching in the early years of architectural education is the impetuosity of the beginning student. The student senses that quickness is something of value in the arts. In this, they are essentially correct. What they typically lack, however, is the ability to distinguish between quickness and haste, between the ability to move swiftly with skill and precision, and the impulse to act on the spur of the moment without accuracy, attention to detail, or the background of thought and experience that speeds intuition. Understandably the beginning student is confused. How can they act quickly when the urge to act fast often leads them to the kind of crude and clumsy results that reveal their inexperience? How can they get going and act without delay when thinking carefully seems to slow them down so much?

SLOWNESS

No one wants to go slow. In our dynamic, hyper-digitized, cyberceptive² world it is embarrassing to be slow. The virtual world is accelerating at dizzying rate and images are multiplying exponentially. But, for most of us, the life that we live in the actual world remains constant.

Our inner world and the outer world are connected by a simple mathematical relationship. The rate at which we live affects the quality of our sensations. "If by some sudden magic", wrote Gyorgy Kepes, a half-century ago, "we were to live a million times more rapidly than we do, in surroundings that retained their present pace, the coming and going of day and night, the slowest movements of a sleeping child, would become a blur, a texture too smooth to be grasped by the senses."

The tempo of our lives can also be linked with our ability to retain what we perceive. In his novel, *Slowness*, Milan Kundera, develops a basic existential equation to explain this relationship. "There is a secret bond between slowness and memory, between speed and forgetting", he writes, ". . . the degree of slowness is directly proportional to the intensity of memory; the degree of speed is directly proportional to the intensity of forgetting."⁴

The urgent task of the teacher is to put the student in a position to fully perceive what they encounter, to grasp the secret bond between slowness and memory, between long attention and lasting impression, before they become seduced by the general euphoria of virtual reality and illusions of enhanced velocity.

THE RESISTANCE OF MATERIAL

The memory of making and depicting an actual physical object is hard to forget. It is a kind of durable knowledge.⁵ In the following one-week exercise students construct a plaster sphere and then begin to understand the thing they have made through drawing. A considerable effort is involved in the construction of the sphere. There is the making of the mold, the preparation of a place to pour, the mix of plaster and water, the meticulous cleaning of the workplace, waiting for the plaster to set, and finally transforming the rectangular solid into a spherical shape by turning it against a PVC pipe.

Making the sphere takes more time than anticipated. Each step in the sequence of events dilates time, and every lapse of concentration causes mistakes that multiply time. Initially, the slow pace is frustrating, but this experience in constructive concentration leads to unexpected enrichments of later work. Mixing the plaster with their hands, feeling the heat of the curing process, and turning the sphere, over and over, makes the student immediately more attentive to the sensuous nature of materials. Beyond tactile sensation the student mentally

grasps the fact that this and other constructive acts involve a complex sequence of events that take place over time.

With the sphere in hand the student then makes a drawing. Working backward from the standard practice of making drawings that are conceived in advance of concrete objects gives the student an edge in observation. They are already aware that the object they have made has certain qualities. They know where flaws exist and why they are there. Air, for example, is often trapped beneath the surface of the plaster. When they depict the object students often show this imperfection. They do this, I believe, not because the flaw is visible, but because their sphere is no longer a conceptual object. It inevitably retains traces of the process of construction that remain at the forefront of their consciousness.

This memory of a constructive process extends perception. It slows the student down and allows them to develop a patient and persistent approach to a series of actions. When they draw the shadow of the sphere, for example, they have acquired a heightened awareness of materials that makes them more attentive to the surface of the paper, the quality of the lead, and the pressure of their hand. Each consideration takes time, and none can be acquired in a hurry.

At the outset of this drawing the student already knows too much to preconceive the result. They know, from observation that the shadow of the sphere is something more than a uniformly dark space on the surface next to an object. And they know from experience that the relationships involved in the construction of an object are often too complex to understand in advance. So they act in order to have enough information to begin again. "Our efficiency," Renzo Piano writes, "implies the complexity of doing and doing again."⁶

THE PROMISE OF DIGITAL TECHNOLOGY

Advances in the virtual dimension promise to have a resounding impact on architects and architecture. "Technologies of simulation," according to media authority Derrick de Kerckhove, ". . . are becoming so flexible, affordable and user-friendly that they eliminate the need for the slow and difficult steps in drafting and modeling." He goes on to say, "They allow faster processing and rendering, hence a closer approximation to thinking. Imagining and imaging almost become one."⁷ The old-fashioned 'efficiency' of slowly building a constructive imagination through repeated acts of drawing and making has mercifully come to a close. Or has it? Have advanced digital technologies really changed how we learn to give shape to the content of our imagination?

Without doubt simulation technology has altered the speed at which designers conceive and produce images. Drawings and models that once took days and weeks can be created in a

fraction of that time. The physical simulation of mental images is at an all time high. A 3-d printer, for example, can make intricate models of computer renderings. An object that has just come to mind can be held in the hand a few hours later. Likewise, a CNC milling machine can turn a block of metal into a sensuous shape in the course of an afternoon. Casting such objects in the past would have taken advanced skill and painstaking effort. Now things can be fabricated in almost no time at all. You can have an idea at breakfast and an object in your hand before lunch. And, best of all, you can be producing other simulations between breakfast and lunch because you do not need to be present while the object is being made.

THE PROBLEM WITH SIMULATION TECHNOLOGY

But does the speed of processing and rendering bring us closer to thinking? Technologies of simulation imply that the rate of image production and consumption is directly proportional to the intensity of imagination. In other words our imagination will increase in force as we increase the speed at which we make and process images. It might be anachronistic to return to Leonardo, but he too subscribed to the idea that imagery and imagination have a direct proportional relationship. In his advice to painters he asks them to consider a new device for stimulating the mind. "Although it may appear trivial and almost ludicrous", he nevertheless advises the painter to look at almost nothing to improve their imagination—a wall spotted with stain, for example.⁸

Rapid simulation of mental images detached from the veracity of matter and the means of production has an illusory effect on the imagination that fosters constructive naiveté. Everything appears possible. When the real conditions of everyday life are suspended there is no limit to formal preconception.

The resistance of material, however, limits what can be conceived. Brancusi's numerous broken birds, for instance, were the result of a preconceived idea. He was simply forcing stone to do something that was not in its inelastic nature. His eventual success with the material is less an argument for preconceived form than it is a reason to support the interplay between idea and matter. "The artist", said Brancusi, "should know how to dig out the being that is within matter . . ."⁹

Rapid prototyping devices offer an illusion of instant sophistication. Students easily become enamored with how quickly thoughts become solidified as objects. In no time at all the reality of matter becomes a nuisance and immediate results become the object of their attention. This emphasis on quick reproduction rather than resolved thought is counterproductive to a student's intellectual growth. It encourages a premature confidence that, among other things, lacks substance.

THE TASK OF THE TEACHER

Architecture is more than appearance. It involves an invisible, ineluctable multiplicity. The perennial task of the teacher is to put the student in a position to order and structure intellectual difficulties, not to pretend they do not exist. Matter is just one of the multitude of forces that make up a building, an artwork, or a piece of furniture. It is a permanent part of the diverse and complex information that a student will have to bring together to creatively form a whole.

It is a mistake to believe that the speed of simulation technology is somehow linked to a heightened awareness of the world and elevated thought. The computer is a tool and tools in themselves do not open our outlook on life. Altering our worldview requires fundamental changes in the way we understand what we observe. And changes in perception take time. In his Nobel Lecture, the poet Joseph Brodsky said, "The one who writes a poem writes it above all because verse writing is an extraordinary accelerator of consciousness, of thinking, of comprehending the universe."¹⁰ Making architecture, like writing verse, is incredibly slow work because it is intertwined with basic questions of human being, of our nature and culture. It develops, for the most part, through quiet reflection, with thoughts that move at the speed of lead. Paradoxically, however, it is not velocity, but the ability to accustom oneself to working slowly within density that intensifies consciousness—especially at the beginning of one's education.

In the same way a poet becomes dependent on language, an architect becomes dependent on inanimate objects and the situations that they exist within. Drawing a sphere and placing it on a piece of paper appears to be an ordinary graphic exercise. Taken seriously, it is an *extra ordinary* accelerator of consciousness. It teaches a student something about relationships, about the effect of one thing on another. In time a student realizes that the object their mind is seeking is not the solid thing in front of their eyes, but our relationship to all things, from the ground where our work is positioned, to the edge of the universe

TWO STORIES ABOUT TEN YEARS

I would like to conclude with two stories about ten years. The first is the story of Chuang-Tzu, told by Italo Calvino at the conclusion of his chapter on 'Quickness' in his book *SIX MEMOS for the NEXT MILLENNIUM*.

"Among Chuang-Tzu's many skills, he was an expert draftsman. The king asked him to draw a crab. Chuang-Tzu replied that he needed five years, a country house, and twelve servants. Five years later the drawing was still not begun. 'I need another five years,' said Chuang-Tzu. The king granted them. At the end of these ten years, Chuang-

Tzu took up his brush and, in an instant, with a single-stroke, he drew a crab, the most perfect crab ever seen.”¹¹

The other story I heard during the first week of my architectural education. It was told that a former Dean of the school was having his office painted. One morning, before class, he was examining the work of the previous day and observed that the line between the wall and ceiling was a little wavy. Irritated that the quality of the work was under scrutiny, one of the painters remarked that he had ten years experience. The Dean corrected him saying, “No, you have one year of experience, ten times.”

The two stories point in the same direction. Vision is obtained by patience, diligence and some insight into basic themes of human existence. The immediacy of intuition is not likely to be found in a naïve approach to software commands. Rather it is something one earns by their by efforts to understand not only how, but why.

NOTES

¹ Kornheiser, Tony, ‘Steroids Are Getting Me All Pumped Up’. Washington Post, May 31, 2002, p. D 1.

² Ascott, Roy, *The Architecture of Cyberception*, quoted in de Kerckhove, Derrick, *The Architecture of Intelligence*, (Basel, Birkhäuser-Publishers for Architecture, 2001), p. 33.

³ “Cyberception not only implies a new body and a new consciousness but a redefinition of how we might live together in the inner space between the virtual and the real.”

⁴ Kundera, Milan, *Slowness*, New York, HarperCollins, 1995, p. 39.

⁵ Judd, Donald, “Some aspects of color in general and red and black in particular, *Daidalos* #51, Bertelsmann Fachzeitschriften GmbH, Berlin, 1991, p. 46.

⁶ “In Part VII Albers say to paste a red circle and a white circle on a black sheet of paper and then stare at the red circle. Then, look at the white circle: it is green or blue-green, the complementary of red. Allowing for everything human being subjective, this is absolutely objective. Color as knowledge is very durable. I find it difficult, maybe impossible, to forget”.

⁷ Piano, Renzo, ‘The Building Workshop’ in Robbins, Edward, *Why Architects Draw*, Cambridge, Mass., The MIT Press, 1994, p. 127.

Pirvandi e Riprovandi, “Trying and trying again – a sort of basic philosophy of experimental work”

⁸ de Kerckhove, *The Architecture of Intelligence*, p. 52.

⁹ MacCurdy, Edward (ed), *The Notebooks of Leonardo Da Vinci*, New York: Garden City Publishing Co., Inc., 1941, p. 873.

¹⁰ Bach, Teja, ‘Brancusi: The Reality of Sculpture’ in *Constantin Brancusi 1876-1957*, Philadelphia: Philadelphia Museum of Art, 1995, p. 24.

In his early birds (Yellow Bird, 1919) the veining resulting from a preexisting fault in the marble is unaligned, in later works (Bird, 1923-47) the veining becomes an integral part of the sculpture.

¹¹ Brodsky, Joseph, ‘An Uncommon Visage’, (1987) from the collection of essays, *On Grief and Reason*, New York, Farrar Strauss Giroux, 1995, p. 58.

“Having experienced this acceleration once, one is no longer capable of abandoning the chance to repeat this experience: one falls into dependency on this process, the way others fall into dependency on drugs or alcohol. One who finds himself in this sort of dependency on language is, I suppose, what they call a poet.

¹² Calvino, Italo, *Six Memos For The Next Millennium*, New York, Random House, 1988, p. 54.