

The Garden in the Machine

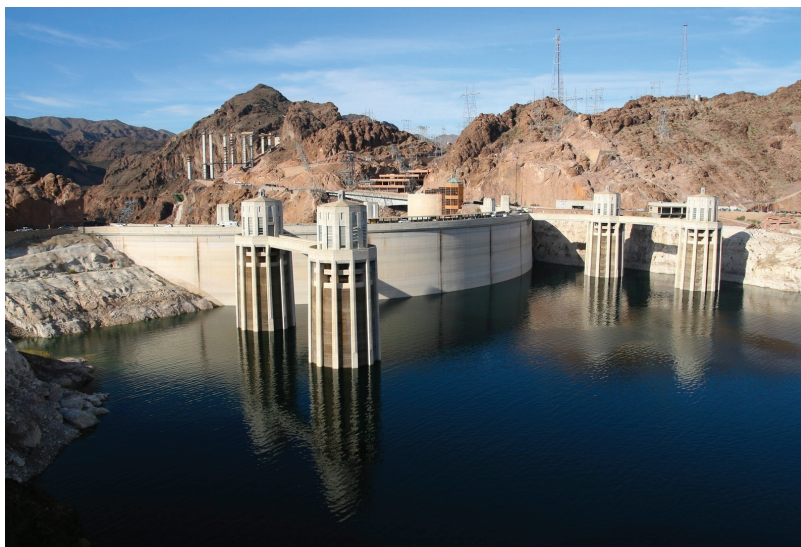
In the early twenty-first century, we are obsessed with nature and technology, but seldom at the same time. The treehugger is probably also an iPhone hugger, but never on the same day. We are fascinated by ecological systems and mobile networks, the environment and the Internet, the Grand Canyon and Hoover Dam. Inevitably, when our cool machines have to be placed in our beloved gardens, problems arise. We may place it away from

view or even try to hide it in plain sight with a carefully designed camouflage. (Wasn't it poignant to see the sky blue patterns on the boxes hiding the reactors at Fukushima?) Our obsession with nature and technology is the cognitive dissonance of our time.

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A hard-earned lesson of the twentieth century is that there is no good way to put the machine in the garden. Perhaps it's time to try a different strategy and put the garden in the machine. Maybe H. R. Geiger isn't so crazy after all in his lust for biomechanical compositions. Take a look at Boston Dynamics' *BigDog* or General Atomics' *Predator*—these aren't exactly steam engines. The largest civil engineering project in the history of Europe, the *Large Hadron Collider* is a 27-mile long circle buried 175 meters below the surface of the earth, and its purpose is to recreate, in miniature, the Big Bang itself. What kind of machine recreates the birthplace of nature? Somewhere in Switzerland, the garden is quite literally inside the machine. Do you remember the first time you surfed the Internet? Do you remember that uncanny sensation of entering into an ocean? As the scales and ambitions of machines broach the sublime, our machines enter into ever-stranger relationships with our gardens.

Hold these thoughts as we start the project. Let's see if we can approach the problem a little differently this time. You will be asked to develop speculative research and designs for a large infrastructural machine (like a hydroelectric dam or a particle accelerator) along with small architectural interventions (like a visitors' center), but you will be asked to rise above the banalities that always seem to accidentally arise from this situation. Like Palladio's *Villa Rotunda* straddling a productive landscape, how might you locate higher architectural ambitions for an architecture that straddles a giant machine?



01

THE FARM AND THE CLOUD

The acculturation of nature is an ambition that marks the boundaries of the human being. Who knows where it exactly started. The discovery of fire? Agriculture? The sharpening of a stone? The techniques of cultivating a universe of unruly materials and savage forces that started perhaps with the planting of a random seed span millennia and find us now rebooting organisms and rewiring entire ecologies. The sunlight that was once nothing but divine inspiration is now nothing but vibrations in space-time. Teasing little electrons out of wafers of silicon, patterning their flows through circuits and switches, we calculate and index our thoughts and activities through a central nervous system that now exists on a planetary scale. We farm energy and construct virtual clouds that serve as everyday adjuncts to our lives. It is nothing short of sublime.

The long view of the human being's acculturation of nature is necessary to witness the absolute magnificence of where we are and what we are now capable of doing. It is in this historical perspective that sustainability looks like an overly modest agenda. Where we are in this history is not the moment where we pull back and reach a gentle homeostasis with nature, but the moment where we witness some of the most radical transformations yet of the natural order. We are seeing the distinction between the natural and the artificial becoming difficult—perhaps even unnecessary.

You will tap untold reservoirs of energy and fabricate conjunctures of organisms and machines through computational paradigms. The synthetic regimes that are to emerge will span scales as small as the atom and as large as the planet. But somewhere in between is where you will work as an architect. First, it is necessary for you to learn everything you can about technological possibilities and intelligently extrapolate modes of pragmatism. But more importantly, in the strange afterglow of these radical transformations you may recognize some new sensations and feelings that have not yet found concrete expression. It is your job as a designer to do something about this.

Figure 1: Hoover Dam



02

THE SUBLIME, AMERICAN STYLE

The American narrative of liberation and self-reliance has always been a peculiar theatre unfolding on the stage of nature. This isn't the nature of the scientist. It is the nature of the frontiersman and the cowboy. It is the nature of poets like Walt Whitman; of novelists like Hermann Melville; of painters like Thomas Moran. It is a nature resplendent with divine providence, where the individual would find fulfillment through a retreat from civilization. It is a nature as much in the imagination as it is in the geology. It is a nature that forms the aesthetic undercurrent of America's nature politics.

From sea to shining sea, the riches of America's natural history have come to represent a peculiar cultural identity that is overlooked by those unfamiliar with America's peculiar obsession with nature. The natural splendor and limitless bounty found in the early push through the wilderness is a fundamental mythology of America. Theodore Roosevelt, the president that instituted the first of the national parks, was the quintessential American in this respect. Roosevelt wrote after camping in Yosemite, "It was like lying in a great solemn cathedral, far vaster and more beautiful than any built by the hand of man." Similar sentiments would be expressed throughout American literature. Whitman would find everything he needed for self-fulfillment in a blade of grass. Melville looked to the strangeness of the ocean for enlightenment, away from the drudgery of New York City offices where scribes were trapped. Painters such as Moran and Church would famously render these sentiments into sublime images of a Yellowstone or a Niagara of the imagination.

This narrative of the individual living within the providence of a resplendent nature is conflicted and filled with contradiction. While families take their children to Yellowstone and Niagara, elsewhere in the landscape, American power exerts a dark power. A walk through the *Boneyard* or the nuclear testing sites of Nevada tells a very different story about America. Be it television, Internet, interstate or nuclear winter, a very strange technological sublime was born in America.

Figure 2: Boston Dynamics, "BigDog"



03

Figure 3: The Technological Sublime

Figure 4: *Machine Language*,
Ruy Klein (1996)

Figure 5: *Strange Objects*,
Ruy Klein (2012)

It is in this conflicted milieu that America's architecture had a difficult birth. Hating the emergence of a monstrous technology, Sullivan would fantasize about buildings blooming from the seed germs of nature, while Wright would reject urbanization as an inhuman existence, looking to the endless prairies of the Midwest for inspiration. Likewise, in the more pedestrian arenas of strip malls and subdivisions, there is an ever-present reluctance to spend a penny more than necessary on buildings, as architecture has never been necessary for America's cultural identity. Unlike Cape Canaveral, Hoover Dam, or a mushroom cloud, American architecture is not where we look for the sublime.

EXERCISE 1: MACHINE LANGUAGE

If you compare the activity of the engineer to that of the set designer, a strange relationship is evident between functionality and meaning. While both the engineer and the set designer might be working on designing machines, one produces for the world, while the other produces for the imagination. One is constrained by quantities, while the other is constrained by qualities. Though both are working on machines, they seem to be completely unrelated activities. However, there is a strange history of one influencing the other. Though Stanley Kubrick was certainly influenced by the engineering projects of the aerospace industry in the set design for *2001*, it is undeniable that Kubrick has now influenced an entire generation of aerospace engineers with his vivid imagery.

As a first step toward developing your 'giant machine,' this first exercise sets focus on the morphology of machines, to discern a visual and formal logic constituting your own personal 'machine language.'

Collect drawings and images of machines. Select and edit them carefully to build up a library that has some consistency.

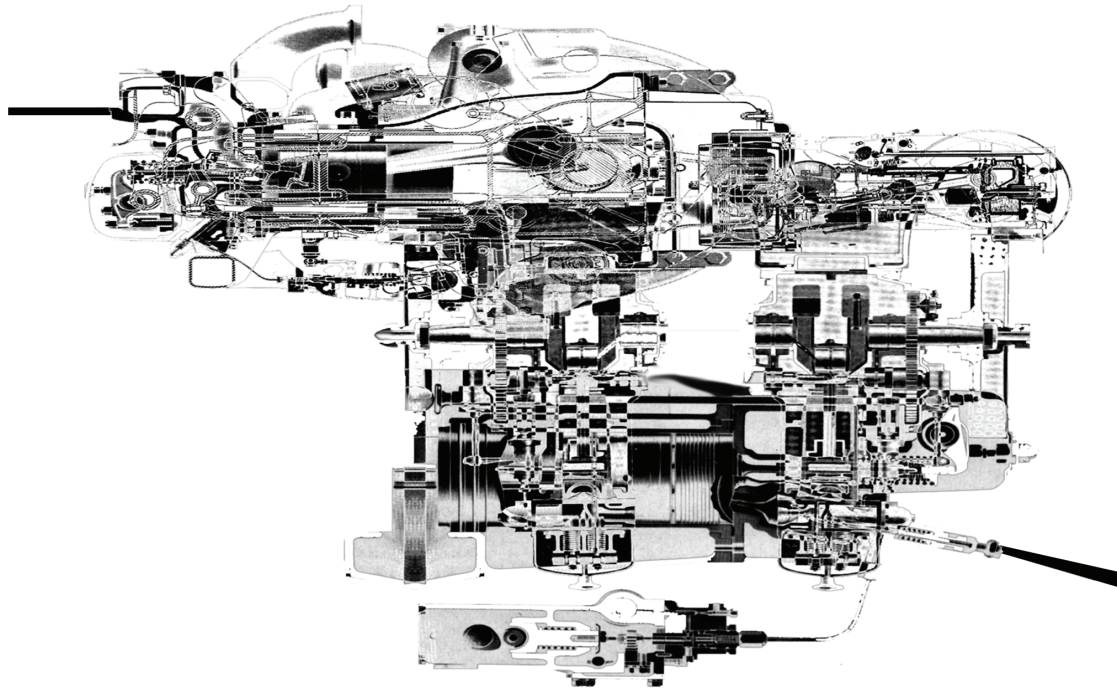
Using Photoshop, produce five well developed collages incorporating your library.

Develop a simple narrative that goes with your collages.

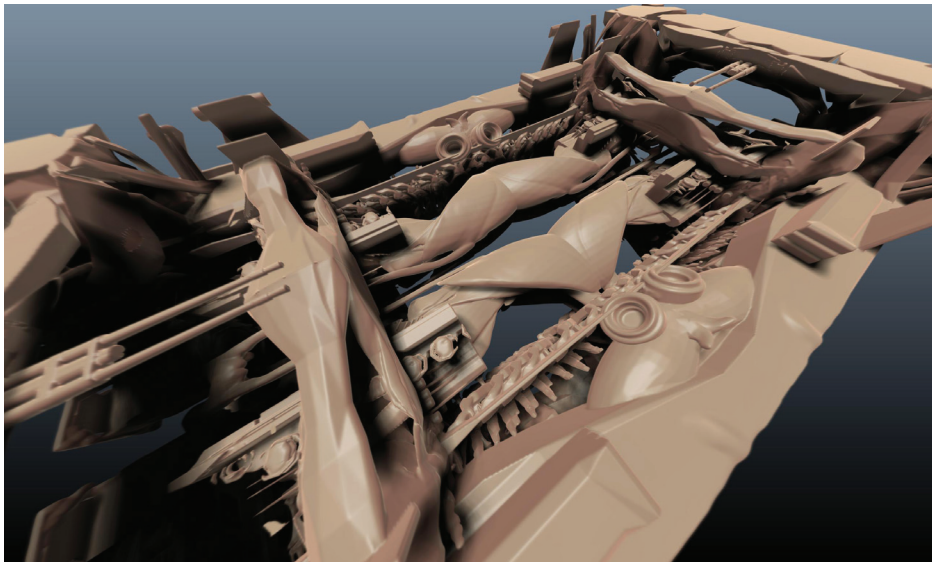
EXERCISE 2: KITBASHING

The second exercise of this semester looks to build on the successes (and failures) of the first problem. The 2-D development of a "machine language" using collage techniques will now transition to the 3-D development of assemblages using advanced voxel modeling and polygon processing techniques. The resulting assemblages of the exercise are to be understood as the first sketches of your "giant machine."

Though digital modeling usually assumes an attitude of building from scratch a new world, in this exercise you are asked to think differently about the existing world and reformat existing objects into new relationships. You are asked to observe the peculiarity of formal assumptions in voxel modeling where contour and figure take a backseat to mass and resolution. The difference between NURBS/Polygon modeling and voxel modeling is roughly analogous to the difference between vector and pixel graphics.



04



05

The liquidity and promiscuity of objects is to be understood as both a technical and theoretical interest of this exercise.

Using preexisting digital models, construct five new assemblages incorporating a digital “kitbashing” techniques (3D-Coat, Meshlab, & Rhino).

Due on the day of the review will be drawings and renderings of the five new assemblages in a single PDF presentation. ♦

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