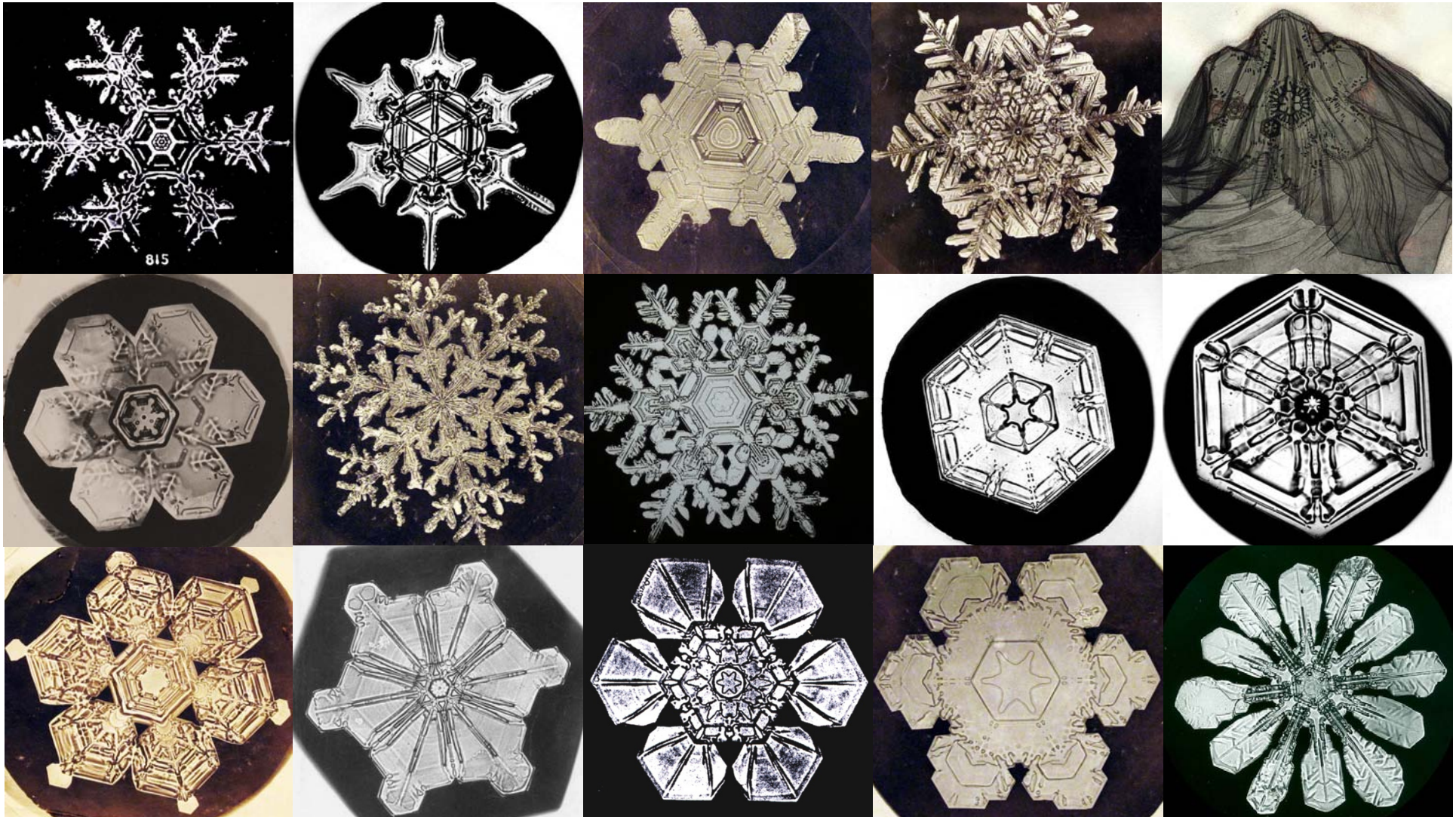
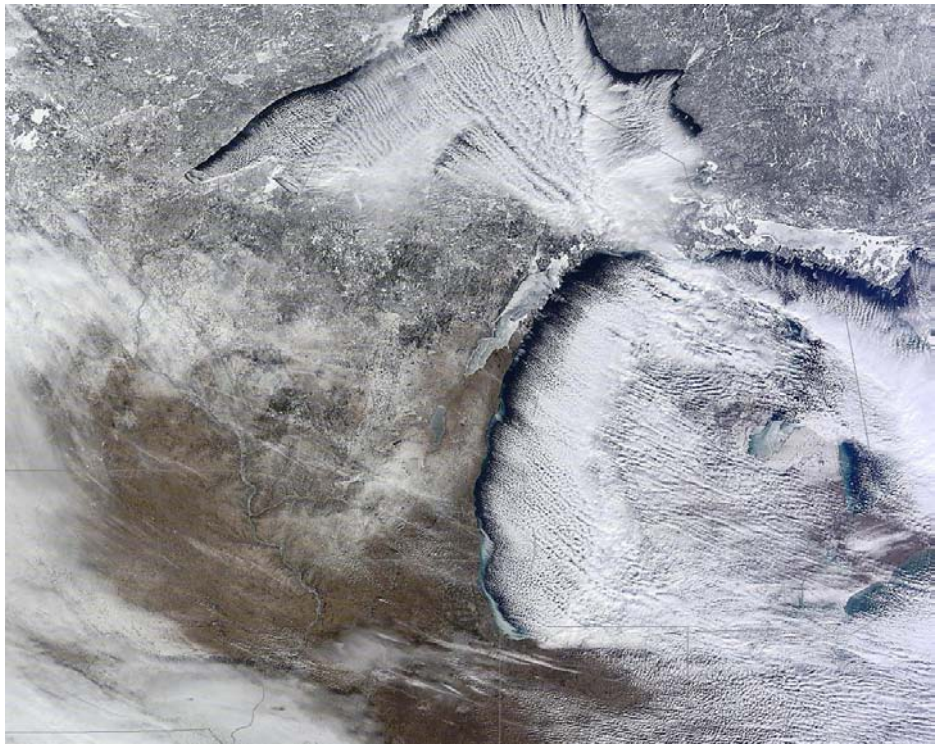


A LOT OF SNOW

ARC208 2014 Slivers Prize Competition

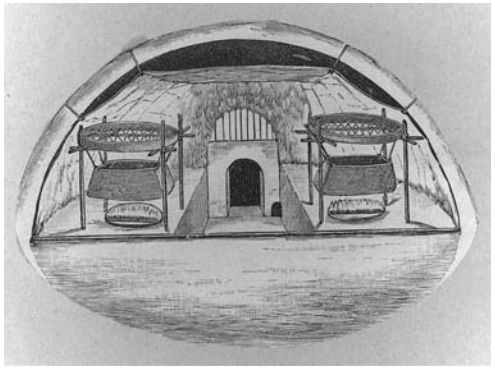


satelight image issustrating the “lake effect” taking place as a cold front moves across the great lakes

Salt City/ Snow Snow City/System City

Syracuse New York gets on, on average, 115.6 inches of snow per year. This is a lot of snow and it makes Syracuse the snowiest city of over fifty thousand residents in the United States. We are told that we owe our extreme snowiness to the “lake effect” in which very cold air sweeping down from the polar region and the far north of Canada encounters the relatively warmer and wetter air over lake Ontario pushing it eastward and chilling it. Since colder air cannot hold as much water as warmer air, this chilling causes the water vapor picked up from the lake to condense into liquid and then, in the winter, freeze into solid ice and fall out of the atmosphere. In this story, the city of Syracuse appears as a small point of friction and turbulence in the global weather system in which vast air volumes shift and collide and huge quantities of heat energy are exchanged as the earth turns and water changes phase from liquid, to vapor, to ice and then back to liquid again.

Syracuse is also, of course, is made up of other systems at other scales and staring different casts of characters and these interface with the weather. Roads must be cleared so that vehicles and people can continue to circulate and, with them, the value they produce and the money they earn and exchange with one another for good and services as well as the sociability that makes the city a collection of interconnected families, friends and neighbors adding up to a culture. Along with this information flows; “Neither snow nor rain nor heat nor gloom of night” must be allowed to prevent the mail (or FedEx) from getting through, if only so that seemingly sedentary architecture professors can continue to order books from amazon.com, pay with their credit cards and receive the packages that allow them to stay plugged into global circuits of discourse and the more local exchanges of the university. **To keep the snow from clogging these arteries of communication, circulation and exchange a social/technical subsystem for snow removal has been constructed. Snow is pushed off the streets with plows, blown from place to place with show blowers, salt (apparently mixed with beet juice in Syracuse) is spread liberally over the roadways to facilitate the melting of ice and, where urban density cannot afford to make room for mounds and banks of snow, it is loaded into trucks and taken to be dumped and shoveled with loaders backhoes into giant piles to await the spring thaw. All of this costs money and becomes a significant fiscal strain on cash-strapped northern municipalities. Nonetheless, the roads must be kept open, the dynamism of systems must be preserved and, therefore, the snow must be moved.**



Community of Igloos, Illustrations from Charles Francis Hall's *Arctic Researches and Life Among the Esquimaux*, 1865

igloo construction

Life on the Surface

Human beings live in the atmosphere in the way that other life forms are creatures of the sea. In this sense we are bottom dwellers, unable to “swim” in the air as birds do unless the capabilities of out bodies are augmented and enhanced by our technology. We also, however, live on the surface of the earth and so inhabit a boundary condition between air and water vapor above and earth or liquid water below. What we experience as weather is largely the effects of air currents flowing and churning across this more solid (though also in motion) surface that impedes and disturbs and introduces turbulence into them. These turbulent flows take place under the influence of, and in the process of vast quantities of energy being exchanged between the earth and its atmosphere and between volumes of air and water. Coming from solar radiation, the rotation of the earth and the friction of the air and the ground these energy flows drive the motion of air and the phase changes of water between vapor liquid and ice. We live on the surface, and to do so we create more surfaces and manipulate surfaces conditions to modify our environment in accordance with the demands of our survival in and enjoyment of the world. Finally, we are creatures of surface that, in distant memory of our ancestors who were sea creatures, we carry an small ocean within our bodies that our own skins contain and regulate the exchange of energy and material between it and the external environment. Life, it appears, is largely a question of creating surfaces and boundary conditions between the living interior and the presumed-to-be lifeless outside.

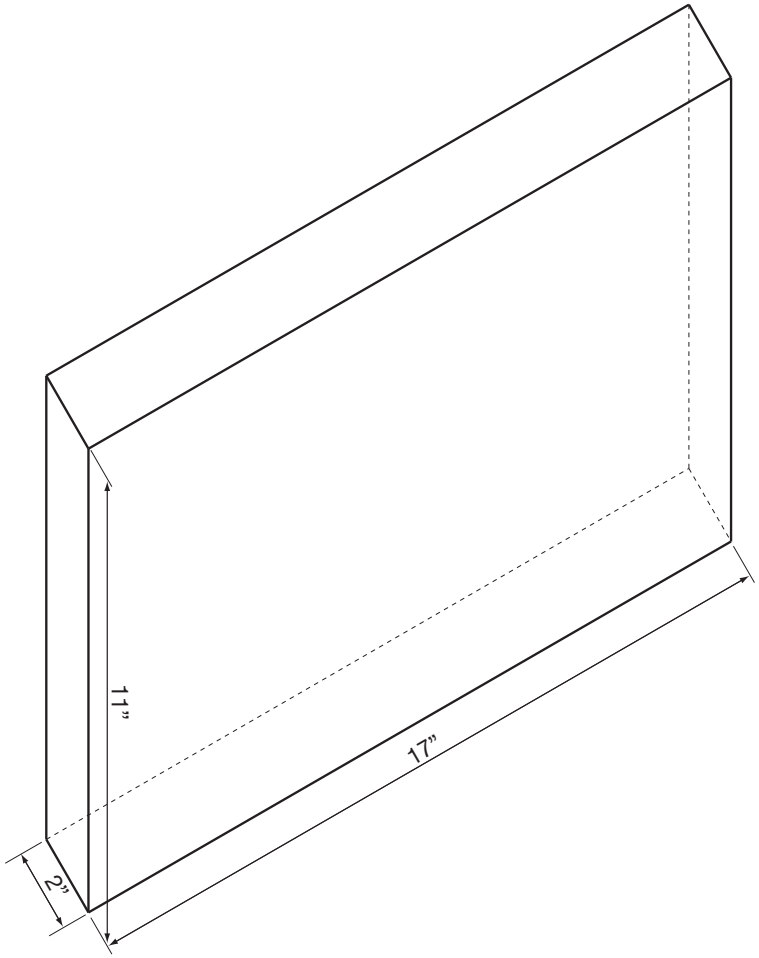
Conditions of surface appear in a variety of forms and the work of surface making and manipulation thus involves an equally diverse range of operations. Most immediate to architecture is the creation of walls that, in a doubling of our own skin, control the flow of light and heat between inside and outside and regulate vision and motion between interior and exterior. In landscape architecture the primary surfaces are horizontal and are augmentations of the surface of the earth. In landscape surfaces are designed to be permeable or impermeable to either absorb or collect and channel the flow of water, graded and treated to facilitate the motion of vehicles, people and other species and used to establish, or trouble the perception of “ground” and what is on it, under it or above it. Both skin-like and ground-like surfaces also have the potential to become screens that, through marking, inscription or projection receive and display information in the form of signs, marks, images or traces of events taking place.

A Lot of Snow

A consortium of your fellow Syracusians with interests in the Armory Square district has approached you in hopes that you can use your architectural expertise to help them with model a new approach to integrating Syracuse urban systems with the city's extraordinary environmental conditions. The Armory Square district has been the site of a redevelopment effort aimed at creating a zone for entertainment, socializing and ludic consumption that stands out as a warm spark of civic conviviality hopeful aspiration in the heart of a tough, chilly rust-belt city. Nonetheless, the corner of West Fayette and South Clinton streets is still only occupied by a under utilized, over priced parking lot that, especially in the cold winter months, is stands out as being glaringly empty and, frankly, boring and failing to realize the potentials of a site in this neighborhood.

Your clients propose that, rather than incurring the trouble and expense of hauling it out of the city center, the city should instad dump as much snow as possible on the site, creating a new, distinctively Syracusian, feature to the urban landscape. Your task is to determine what possible "architecture" a huge, urban, snow pile might have, to discover what potentials it holds as an esthetic object and a useful urban amenitie, and to create an evocative, compelling presentation that demonstrates the feasibility of the plan and generates popular interest and excitement.

Site: a parking lot and alleyway at the south-west corner of West Fayette and South Clinton streets in downtown Syracuse



Production

The materials you submit as your entry for the Slivers competition are limited to a single, volumetric “box” of dimensions 11”X17”X2” designed to be wall mounted and viewed from one of its 11”X17” sides. Box/ Boards must fill the entire allocated wall area but need not protrude the full 2” at all points.

You are encouraged to work in whatever media and materials you feel most facile and comfortable with, however, given the compressed work schedule it would seem most promising to use computer modeling software in only the lightest and most pragmatic ways and to focus instead on a small number of complex, compelling, information-dense images and constructions. Models, mockups and material studies (how closely does powdered sugar approximate the behavior of snow? How does snow scale?) are invited and encouraged but, unless they can be made to fit within the allocated volume, they should be photographed or otherwise documented and the resulting images worked into the submission layout.

Uncle Milton’s Giant Ant Farm

box compositions by Joseph Cornell

A corncrib showing the angle of repose of piled corn.

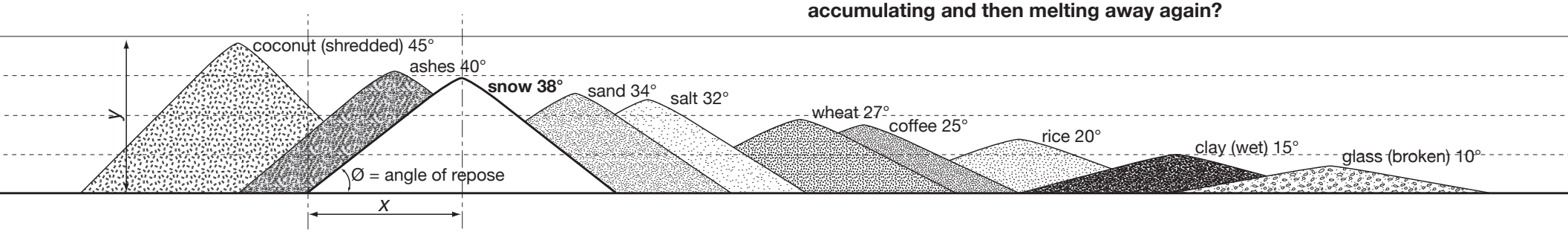
Appendix 01: An Architecture of Snow

Snow is made up of clusters of branching ice crystals and, when lying on the ground, the air trapped between them. Snow with larger and more intricately branched crystal structures is has more air and less solid ice by volume that snow with smaller, more granular crystals or snow in which the branching structures have been crushed when the snow was compacted. Light, fluffy snow formed under cold, dry conditions can have a ratio of water to snow volume, or "snow water equivalent" (SWE) as high 1:200 while wet, heavy snow can have and SWE as low as 1:12 or, when packed, even 1:60. SWE relates to volume but, given that water weighs a fairly (but not completely) constant 1g/cm3, it is easy to calculate the weight of snow when it is know and, likewise, to determine the SWE of particular snow buy weighing a sample.

As a granular material, snow, under ideal conditions, mounds up in piles whose shape is dictated by its angle of repose (Θ). This angle is function of a material's coefficient of static friction (μ_S) — that is its relative roughness, or slipperiness — such that: tan (Θ) ≈ μ_S). Conditions are, in fact, never ideal and snow can be compacted so that its stickiness supports it or formed into blocks or chunks and stacked. These, conditions will, however, always remain unstable and given the opportunity to become unstuck or for stacks to topple or crumble, snow will seek to return to the form of a conical pile with sides sloping at 38°, its natural angle of repose.

It is a hubris of architecture to imagine that a designer can inscribe form into the world in a direct, unilateral way. The development of modern materials has striven for ever greater degrees of plasticity and digital representation technology often trades in fantastic illusions of autonomy total control but whenever design is brought to bear in the real world there must be a negotiation between the forces that can be controlled by the designer and those that cannot. In designing with piles of snow this negotiation will be especially intense and you may find that you are mostly not negotiating from a position of strength. What you stand to gain, however, is the possibility of being in dialog with the vast forces that drive the slowly grinding world of rock and earth beneath us and the vast, swirling ocean of air and vapor above as they play out their cycles over many life times and, in a more human time-scale, with the techno/social/symbolic systems around us.

In designing your project consider the materiality of snow and the mechanics of its dumping, piling and shaping. Develop a working lexicon of techniques for creating effects and doing things with, and too the snow. Think of the possibilities for the site over the course of the year as the snow accumulates first in small piles, then in larger, and then as it melts back into liquid water and runs off in the spring, leaving the site dry and empty again. What programs and uses will you be able to introduce to the site? How will you choreograph the drama of the snow accumulating and then melting away again?



Appendix 02: Snow Tech

A dazzling array of machines, devices and techniques have been developed for managing and doing things with snow. Standard loaders and dump trucks are used to shovel it and haul it around, while specially designed shovels, snowplows and blowers push it, move it and throw it from place to place . In more specialized applications, conveyors, screws and bucket wheels may be deployed to move snow or move though snow. Snow fences and avalanche barriers are constructed to catch, stabilize or block the formation of snowdrifts. On a chemical level salt and ethanol is used to melt snow and keep ice from forming where it is not wanted while the ski industry uses snow making machines and compounds to create snow when it is desired. At the large scale, explosive charges or even artillery shells are used to trigger controlled avalanches in snow packed mountain terrain so that dangerous and unpredictable masses of snow do not accumulate.

Your will need to consider how snow moving and shaping technology will be deployed in the realization of your project. As snow is part of a constantly moving and changing system of weather, urban infrastructure and water freezing, melting, flowing and evaporating the "construction" of your project will be as much a choreography of machines and processes that for you, as the architect, will be less like composing a symphony or conducting an orchestra that it will be a karaoke sing-along with the forces of nature.

snow fences

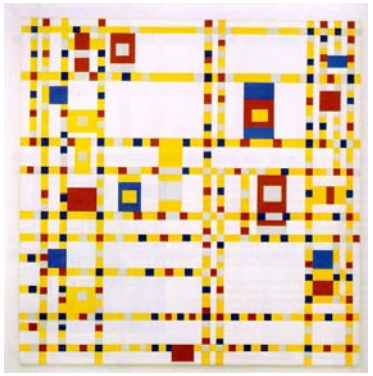
screw-style snow blower

avalanche control artillery

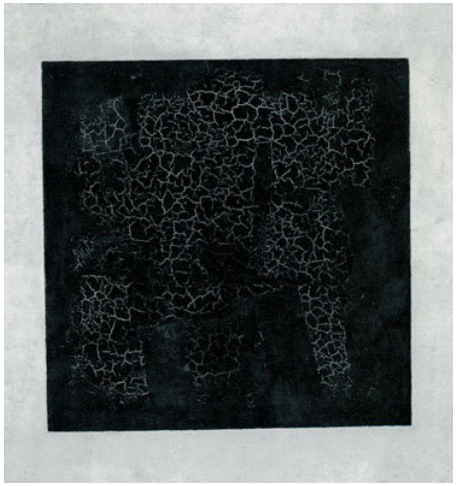
Appendix 03: Flux, Chaos and Entropy

In Renaissance art, thinking about and experimenting with composition assumed a central role in esthetic production. Composition — an abstract ordering or organizing of the elements of an artwork and a set of decisions made about a work's deployment of and relationship to its form — came to be considered as distinct from the representational, narrative or symbolic content of art, and as something that could have rules and orders of its own. In representational painting and sculpture, composition has been relied on to impart balance and proportion that makes pieces beautiful, impart sensations of motion or dynamism on the viewer or aid in the communication of narratives or symbolic information. These uses of composition were also applied to architecture for similar reasons and in a way that assumed architecture to be either a sculptural object or a collection of surfaces to be inscribed with visual information like paintings. This is, of course a very specific, and somewhat limited way of thinking about architecture that separates out all the things that architecture does, allows to happen, and shelters or contains. As modernity developed art became more abstract and, therefore, increasingly driven by its composition rather than its content and interested in pushing against the limits and boundaries of form until, in the early twentieth century, with painting "liberated" from the imperatives of representation by photography, it was possible to imagine completely abstract, purely compositional art. From there it was realized that if artworks did not need to have content then perhaps they could do without the abstract ordering of composition as well and move forward to become simply real objects, existing in the real world and organized by it's rules and forces and organizational principles. As it embraced modernity enough to become explicitly "modernist" Architecture also became increasingly minimal in its representational and ornamental aspects interested abstract ordering systems. Unlike art, however, architecture discovered that it was already "real" and embedded and entangled in the dynamics of the real world and that all attempts at composition in architecture were predicated on creating conditions of separation, evacuation, or disengagement from real-world systems within which design could take place. Architecture has yet to fully grasp the implications of this realization and, despite a short, desperate history of attempts to retreat back into the Renaissance, neo-classical mode of composition, it would seem that it is by forging ahead in this direction — into the real — that new territory will be opened the widest possibilities for new, hopeful, interesting architecture discovered.

In art, a "post-minimalist" tendency exists that moves beyond composition into a state of engagement with dynamic systems and working in concert with the chaotic, entropic and aleatoric forces and conditions in the world.



Piet Mondrian,
Broadway Boogie Woogie



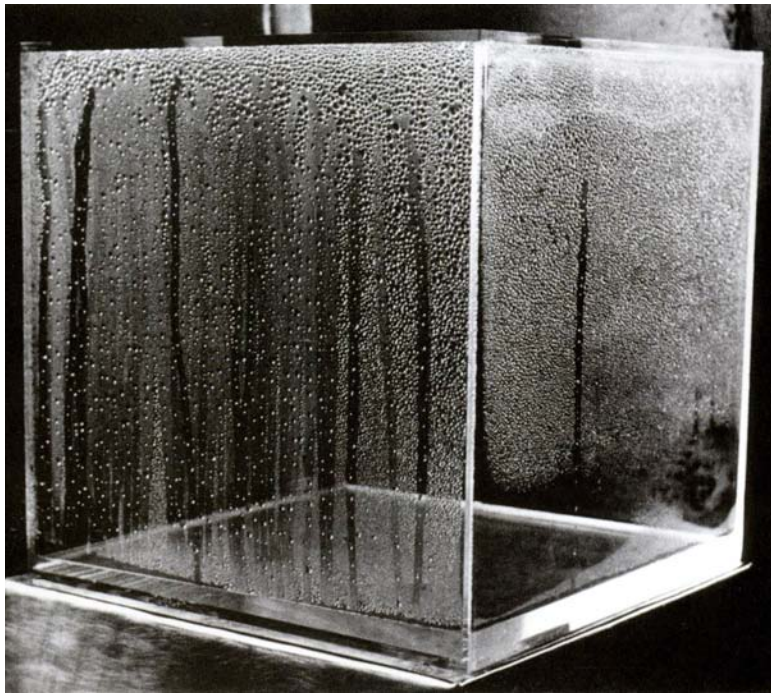
Kazimir Malevich *Black Square*
(showing extensive paint cracking)

Jackson Pollock in action

Jackson Pollock, *Untitled No. 31*

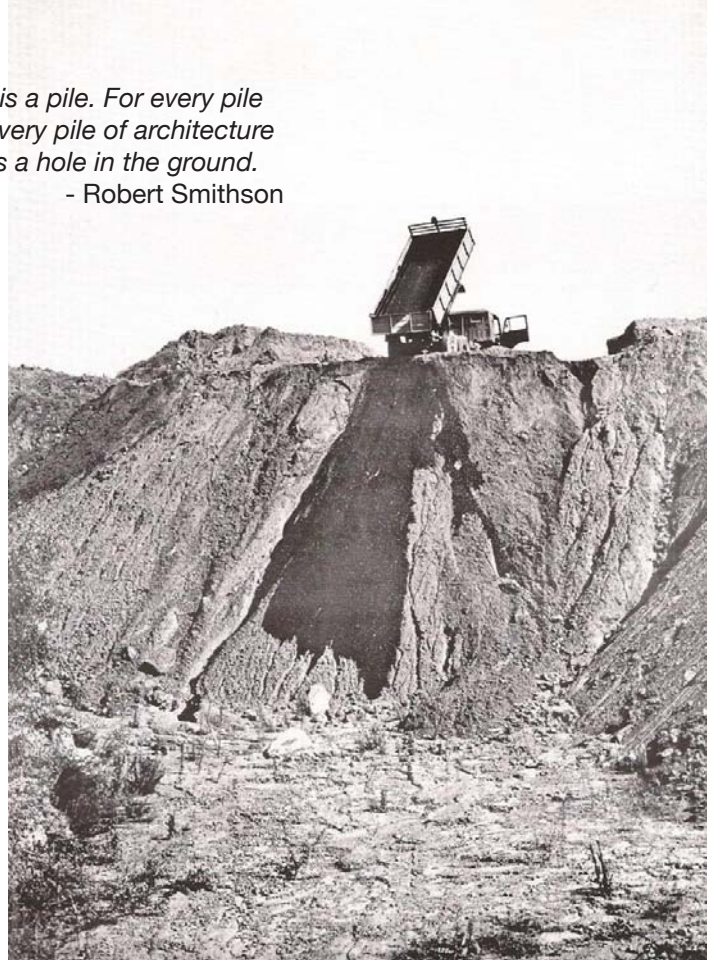
The post-minimalist tendency can be seen in Jackson Pollock's development of "action painting" where the marks on the canvas are made by paint dripping and flowing in the ways the viscous liquids do so that traces are left of the movement of the art's body and the moment of the paintings production.


Richard Serra begin thinking about words for actions and the way that actions fill space and make objects. To make his *Gutter Corner Splash* pieces he threw molten lead into the corners of his studio until long, angular objects were made that record the space of the room.



Hanes Haake created a miniature world in a box with his piece *Condensation Cube*. Here water evaporates and recondenses in a microcosmic weather system as energy flows and is exchanged and mater undergoes changes of phase.

For every pit there is a pile. For every pile there is a pit. For every pile of architecture somewhere there is a hole in the ground.
- Robert Smithson



Robert Smithson, *Asphalt Rundown*

Robert Smithson’s piece *Asphalt Rundown* “paints” a figure on a hillside — but not a composed figure. Instead, a truckload of asphalt is poured down the hill and allowed to flow and assume a shape dictated by the chaotic interactions of its own materiality and the texture and topography of the land. Smithson further explores the relations between objects, processes, and the dynamics of the natual world in *Partially Burried Woodshed* where, by way of creating a piece of public sculpture, earth was dumped onto the roof of a woodshed until it collapsed and the piece was then left to become overgrown with vegetation until blends back into the landscape....

Robert Smithson, *Partially Burried Woodshed*

Robert Smithson and Richard Serra walking on *Spiral Jetty*

Robert Smithson, *Spiral Jetty*

... In Smithson's *Spiral Jetty* the strongly composed spiral figure is in tension with the crudely jumbled rocks from which the jetty is constructed and the long-time-scale changes of the water rising and falling, the ground shifting and salt crystals forming and dissolving again as water evaporates into the atmosphere.

Olafur Eliasson also "paints" directly onto the landscape in *Green River* but, in this case, a non-toxic, green marker dye used to study ocean currents is added to rivers so that their flow is made visible and the work, the viewer and the artist and even the river are all shown to be connected and, together, immersed in ecological systems and dynamics bigger, and longer in duration than any of them.