

*ALLAN McCOLLUM:  
ARTIST*

Interview by JADE DELLINGER

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*JD: For those who have never seen or heard of a “fulgurite”, could you begin by providing some explanation or description of what they are and how they’re formed?*

AM: A fulgurite is typically the product of lightning hitting the soil. The heat of the lightning can instantly fuse a track of the bolt into the soil, or on the surfaces of rocks, or whatever. There are different kinds of fulgurites, but I’m interested in the sand fulgurites – they are formed when lightning hits the sand; lightning is powerful enough to melt a trackway under the ground which is basically an extension of the lightning bolt that we see above ground. Lightning doesn’t just stop when it hits the ground, it continues on down into the soil and even

branches out like it does in the air, and when it hits dry sand, it often leaves an impression of its path.

So the lightning creates a sort of 'trace object' that replicates the exact path it took. When it hits sand, it fuses the silica into glass.

*JD: The "trace object" is the fulgurite...*

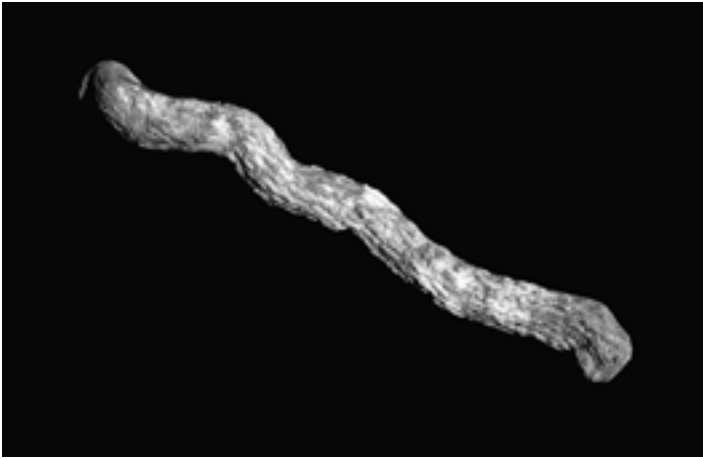
AM: Yes.

It makes this object by fusing the sand particles it passes through, because of the high heat created, which sometimes can be 50,000 degrees Fahrenheit – as hot as the surface of the sun. It is incredibly hot for like a fraction of a second, and it will fuse the sand into glass. After it cools, you can unearth this shape, the exact shape of the lightning bolt. It's a kind of track, a trace of a lightning itself, like a kind of fossil, and they are very fragile. Some geologists collect them. They often come out as tubes that have been collapsed because of the way the heat expands the gases and can contract the fulgurite as it cools.

The tube will sometimes collapse, so sometimes you see flat fulgurites. Lots of times you can see through the fulgurite like a tube and sometimes you can't, because one of the ends is closed off in a 'terminal sac.'

*JD: During his maiden voyage on the H.M.S. Beagle, the naturalist Charles Darwin unearthed a fulgurite while circumnavigating South America. How did you discover fulgurites, and what was it that sparked your interest?*

AM: I didn't know that lightning left a trace or that any such thing existed until about three years ago. I never thought about lightning too much. My last three series of projects seemed to involve visiting smaller American communities that have somehow or other become emotionally identified with some kind of local fossil or geological oddity. These geological oddities have sort of become a totem object within the community, and I was trying to figure out how to get more of this phenomenon into my projects. I wanted to find a means for having the community's sensibility regarding the object somehow included into the project



Fulgurite created by Allan McCollum and International Lightning Research Facility in Camp Blanding, Florida. Materials: Lightning and zircon sand.

itself. I was becoming interested in objects that were ‘created’ in a certain other way. I’d done the series of fossil projects, but I had become interested in objects that weren’t signs of life or death exactly, but were still discrete objects with a beginning and an end – like a story. Yet, they had somehow been created by nature, through geological processes. Especially objects that might serve as collectibles and had certain mystery around them and were in some way similar to an art object in that sense. I had my eyes open for mineralogical oddities. I had been visiting the mineralogical showrooms at different museums.

In the summer of 1995 I was on vacation in Florida driving around Volusia County, and read in the guidebook that there was a mineralogical museum that claimed to have over 25,000 mineral specimens. I thought well, that beats me with my *Over 10,000 Individual Works* project, so maybe I should go take a look at this competitor. (Laughter)

*JD: The Gillespie in Deland...*

AM: Yes. I went into the Gillespie Museum of Minerals at Stetson – the first private university to be founded in Florida in

1883. A man named Thomas Gillespie, and his wife Nellie, had donated their life-long collection of minerals back in the fifties to form this museum. You go in, and it's sort of a house, and all their rocks and so forth are on display. There were a lot of odd bits of things, and you weren't sure what they were.

There was this one object they called a 'sand spike' which was described as thought to have been created by lightning when it hits the sand. I remember thinking this is perfect object. It's beautiful, it's mysterious, it's got a funny sort of biomorphic or phallic shape, it looks almost like a magical object, and here it was created by lightning. It happened in an instant, it was a product of nature, and came from out of the heavens. It has a lot of sort of symbolic associations naturally attached to it. It was as if it were begging to become some kind of allegorical object. So I thought this is what I want to do, I want to find out about these objects.

I searched the World Wide Web, found lots of references, and even managed to figure out which of the many spellings for the word "fulgurite" was most common. Then, I sort of put these objects in the back of my mind for a future project...

Oddly, I later learned that the object prompting my investigation from the Gillespie Museum collection was not actually a fulgurite and hadn't been created by lightning. It was in fact a sand concretion from Southern California that had been mislabeled!

*JD: And ironically, you became fascinated with both fulgurites and sand spike concretions.*

AM: Both objects have a certain mystery, are associated with specific regions, and often confused with other kinds of geological oddities.

*JD: Can you describe the projects that led up to The Event: Petrified Lightning from Central Florida, and the themes that have generally interested you over the years?*

AM: Well, I had done a number of different series of works, maybe eleven or twelve that all basically have to do with the

'identity' of an artwork. I am interested in how we determine what is an artwork and what isn't an artwork, and how we determine what could be an artwork. I've thought about what feelings we have when looking at an artwork as compared with how we feel when we look at other kinds of objects, and so on. I've been trying to explore what kind of objects art objects are, and why some objects are more magical and expensive than others, and what aspects of our culture have created this system where things can become more valuable or less valuable depending on certain, sometimes seemingly unexpected conditions. For many years, since 1978, I worked on a series of paintings called the *Surrogate Paintings*, and the *Plaster Surrogates*,



Allan McCollum. *Plaster Surrogates*. 1982/83. Enamel on Hydrostone. Installed at Marian Goodman Gallery.

two very similar series, and they were simply meant to represent a sort of generic painting that might hang on a wall in a room somewhere. They weren't meant to be an art object exactly, just sort of a representation of an art object. The 'prop' idea seemed like a good metaphor for describing the place of art-in-the-world. If you make a 'showing' of an artwork in a gallery it becomes a prop in a sort of 'set,' like on a stage. How does that condition the activities of the people walking through

the gallery as they engage in this drama? The same goes for putting an artwork in a museum or in your home. I grew more and more towards thinking about the social function of an art object. The *Surrogate Paintings* were like imitations of artworks...

*JD: ...to be experienced like stage props in a theatrical production...*

AM: Exactly, and what grew out of that for me was an understanding that you couldn't define an art object without understanding the social function it served. You couldn't understand an art object unless you understood how and where it fit within the larger system of objects in general. You couldn't understand the system of objects unless you understood the culture as a whole, and the conditions that developed that culture. So I realized this trying to understand what a painting was – was not such a simple thing. An artwork didn't achieve its identity by just being of a piece of canvas with painted brushstrokes on it. It involved a very elaborate cultural system of making distinctions between an artwork and all the other objects that *weren't* artworks.

During a part of this time I was working at a museum of architecture and design, the Cooper Hewitt Museum in New York, in the registrar's department. There I came to understand very quickly and clearly that some objects were often separated from one another simply because they belonged either to wealthy people or to poor people, and the objects that were owned by wealthy people were sometimes *specifically* produced for wealthy people by their loyal artisans – and the more money the collector could afford, the more exotic the materials and the more expensive the object would become! (Laughter) And of course they were usually the one-of-a-kind types of concoction. I mean, who's to say what value the governor's wife's wedding dress would have if the governor's wife hadn't owned it? Is this truly a design criterion? So I started recognizing that all the arts sort of worked this same way, and in the interim, did a series of sculptured artworks, an ambiguous sort of 'vase' form, called the *Perfect Vehicles*, a kind of ginger jar-looking object. And then I started off a whole series of art objects to compliment the *Surrogate* project...

*JD: You're still doing this...*

AM: One of my basic beliefs is that what we call an art object has evolved into something very strange following the industrial revolution, in that as we are surrounded with more and more mass-produced objects, the more and more specifically we try to define what constitutes the quality of 'uniqueness.' I think that the ever-changing evolution of industrial mass production technology has a strong effect on what we consider to be 'unique,' and we keep having to rearrange our definitions. If we never had mass-produced objects, defining something as 'unique' would never have been all that necessary, because everything would be more-or-less unique. Since mass-produced copies have surrounded us for the last century and a half, we have had to invent an enhanced concept of uniqueness to compliment our concept of all the objects that are 'the same.' I don't know if we have to do this, but we do.

*JD: This, of course, is further complicated by the introduction of computers and proliferation of digital information. And yet, you seem to explore the identity of an art object through mass production - or perhaps more specifically, "hand-made" mass production...*

AM: I think that more than anything, the definition of an art object has generally meant 'not' mass-produced, rather an art object is done by hand, or by an individual artist. But in recent times, this way of defining an artwork has become questionable – whether a mass-produced object can actually be an art object or not. I'm exploring the identity of an art object through mass-producing objects, and I've tried to compare so-called art objects to other objects that aren't art objects – but which are objects that seem to mediate mystery, discovery, enchantment, emotion, or symbolic meaning. You see, I have very personal troubles with all this categorization of objects into better objects or worse objects, art and non-art. I find the whole process tortuous and shaming.

*JD: I suppose in an effort to understand the nature of objects, we've always put like things together – creating categories for sake of comparison...*



AM: Well, there was a time in history when art objects were put in the same museums as dinosaur bones and strange tools and death masks and stuffed animals: *Wunderkammers*, and Cabinets of Curiosities. These proto-museums weren't restricted to painting and sculpture, because there were so many types of objects that inspired awe and conveyed drama and aroused interest and could represent history, and so on. I have been especially interested in how objects like fossils can convey a sense of the deep past, for instance, and in some cases, maybe even in a more profound way than any man-made antiquity. When I first started mass-producing these 'signs' for art objects, I realized that after the first three or four series of complimentary works, I couldn't easily mass-produce things that felt 'old' – that you can't mass-produce the ancient! (Laughter) So I came up with a series of different objects that were 'ancient,' but already copies, because I thought that maybe mass-producing ancient copies wasn't such a problematic task as it would be to mass-produce ancient originals.

*JD: Fossils are sort of the most ancient copies, but you've not limited your investigation to fossils...*

AM: I went through three projects with ancient objects. First was *The Dog From Pompeii* project, which involved making actual casts of an actual famous archaeological find. The dog was actually discovered in 1874 as a 'natural mold,' and was subsequently filled with plaster by the archeologists excavating ancient Pompeii. The object we call "The dog from Pompeii" is an archeological find represented by a copy of the archeological find, and the original find itself was a copy (a mold) of the original dog, so it's like three or four generations of copying while the piece still remains ancient somehow. Then I did two projects involving dinosaur fossils. Dinosaur fossils seem to be so dramatic, and awe-inspiring, and amusing, and sort of frightening in their implications. I recognized that they held a lot of drama that you might also find in an art object, but they were produced by nature. I was wondering, how do you differentiate between the awe that is inspired when you see a dinosaur bone

from the awe you feel when you are looking at an artwork? It also seems that sometimes these objects become even more magical once they are put into a museum collection, they automatically seem that way, and that's a part of what I'm exploring in this fulgurite project.

*JD: Curators and exhibition designers consciously attempt not only to educate museum visitors – telling a story – but to emphasize this “magic” and inspire this “awe” through the presentation of objects.*

AM: Of course, artworks are rooted and conditioned in a lot of other terms. They don't just emerge from anywhere as ideal objects into some ideal space in a museum somewhere.



Allan McCollum. *The Dog from Pompeii*. 1991. Solid cast Hydrocal with polymer reinforcement.

I was also a fan of structuralist anthropology in the 60s and 70s. I came to understand that our culture determines the identity of an artwork and it's social role, but it also conditions our total perception of reality, including our perception of art! I began thinking, when I was a young painter, in my early 20's, I somehow started seeing much recent modern art in some sense caricaturing – re-presenting – the art that came before. I saw

that in Jackson Pollock and the abstract expressionists in that way: imitating abstract painting. I saw the Suprematists, the Cubists, the Impressionists, even the Surrealists in that way. For me, Marcel Duchamp was imitating sculpture. Daniel Buren and Robert Ryman, who so clearly seemed to be reducing painting to a set of a certain small number of distinctions, were functioning almost like structural anthropologists. Flat objects with stuff on them, hung on a wall = a painting. And Buren's work went way beyond the object itself, he worked to include the social and political position a painting occupies...

*JD: You mean white stuff or a few measured stripes thrown in...*

AM: Applied in some particular manner and hung some particular way on the wall. Yes, and Ryman played with this simple definition until it was an exquisite blend of the literalness of a painting and our categorical assumptions about what defined a painting.

So, following through with this thinking, I could envision an almost activist way of helping people see the painting not only as an object, but an object that is sometimes in one place, sometimes in another place. You can carry it around, and experience the art object as an object that gains definition in exchange. It is an object in transit, an object that is portable, an object that changes value and meaning depending on circumstances. I began to think about the conditions as much as I was thinking about the painting itself; and the condition that perhaps most inspired me was the common expectation that paintings should be unique. I thought the logic didn't follow, that this idea should only be understood in so far as mass production had created a new culture of longing for objects produced in quantity. I realized that the uniqueness we expect in an artwork is just the other side of the coin from what we feel when we go out and buy mass-produced things. Then I realized that in fact, of course, that is exactly why many of these jillions of unique art works have been produced over the last 150 years! It was in a way to counteract the insidiousness, or the imagined and alleged insidiousness, of the growing number of mass pro-

duced objects. So then I realized well, wait a minute, not only does a painting's 'nature' depend on conditions of the gallery, the art world, the market, the world of objects at large, etc...

*JD: It depends on conditions of mass production itself..*

AM: Yes! I think mass-production must have produced a situation where artworks had to become increasingly unique in order to do battle with this alleged creeping (Laughter) infiltration of common things! During that time, I also realized, that the way we organize objects is the way we organize our class system. And as I guess in certain ways, I grew up as kind of a victim of the class system, I recognized that if the objects we make reflect a kind of monarchical hierarchy – running from the common plentiful objects to the highly specialized expensive and valued objects – it's quite similar to how we organize our societies.

*JD: And with the triumph of democracy..*

AM: It seemed to me that as a more democratically-oriented culture has progressed, an aristocratic culture has had to withdraw – the more elitist groups have stepped up their production and consumption of special artworks. So at least symbolically they can maintain this feeling of being more special than others. I suffered from this kind of discrimination personally, being raised in a poor family, all the time, every day. At school it was always whether my clothes were good enough or expensive enough, or if I had had a haircut that month, or had old shoes, or that our lawn wasn't cut or our house wasn't painted, and our car was 15 years old, and so forth. So, I'd personally suffered this while watching my mother, my father and my family suffer from this. There was a constant discriminating gaze from people with better jobs, more money, and better or more valuable objects.

When I sort of got this figured out in my head, at first I protested about it a lot in my work and in my talking about my work. As time's gone on, I've tried to be constructive, to figure out what kind of objects could reconcile these distinctions and

still seem to be really interesting and beautiful – philosophically, spiritually, intellectually – to everyone without reference to uniqueness or individuality. Objects not even necessarily created through the agency of a ‘brilliant’ artist, but maybe just seeming to have emerged by themselves, possibly from faraway, nebulous machines or through geological processes, or whatever.

*JD: An ideology worth supporting...*

AM: One of the fantasies and mythologies I carry with me as I approach my life is that things maybe could emerge from within the world and become highly valued through some kind of fictional ‘natural merit’ rather than having been created through an elitist class’ fetishistic demand for ‘uniqueness.’ And then value could be immediately recognized, not created through a lot of social exchange and manipulation. This is my fantasy, of course. I don’t suppose that it’s really possible – or even desirable – but I think my explorations are just sort of experimenting with how this might happen, if it were possible.

So when I think about designing a project I don’t conceive of actual single, individual artworks. I just conceive of artworks that could be produced *en masse*, and in fact obtain more meaning *because* they are produced in large quantity, rather than *less* meaning because they are produced in large quantity.

This kind of wishing became the background of my work. In addition to the idea of a ‘painting’ or a ‘sculpture,’ I started following through with other collectibles that weren’t art but seemed to follow the same rules. I started collecting rocks and concretions and fossils and things from nature. And because I am interested in the principles of copying, and how the concept of something being copied conditions the way we perceive its value or meaning, I was drawn to fossils and objects that were essentially copies in the first place. I became drawn to objects that were copies at their very origin – natural casts, natural molds, petrified wood, and this sort of thing. I led myself into fulgurites because of course fulgurites – which are the ‘tracks’ of lightning bolts – are essentially ‘trace fossils,’ the trace of



Allan McCollum. *Over Ten Thousand Individual Works*. 1987/88. Enamel on cast Hydrostone.

events that happened earlier. They are truly fossils, even though they might have been created just yesterday. Again, a fulgurite is a 'copy' or 'replica' of the path of the lightning.

So my recent 'geological oddity' projects, including the fulgurites, are connected in my mind with the idea of how copies work, and how the art object works, in contrast to how the idea of 'rarity' can work in the world of gems and minerals and science.

I did one hundred and fifty copies or so of the 'chained dog' from Pompeii that was killed in 79 AD by the eruption of Mount Vesuvius. And with the help of the Carnegie Museum of Natural History, I did seven hundred and fifty dinosaur bone casts from dinosaur bones that were discovered in Utah early in the century...

*JD: The bones, like the "tracks," were from Utah?*



Allan McCollum. *Lost Objects*. 1991. Enamel on cement.

AM: Yes. The bones were from Utah, and from Colorado and Wyoming too. It was while I was working on the *Lost Objects* project in Utah that I discovered the dinosaur track natural casts found in the roofs of coal mines in the collection of the College of Eastern University Prehistoric Museum in Price City. That led me to the more recent *Natural Copy* project.

*JD: Do you have a master plan or approach to selecting these objects?*

AM: Well, I'm concocting this little story...

*JD: Okay...*

AM: If I were a folklorist, like Vladimir Propp...I would say, 'The hero goes down deep,' this could mean, goes into the mines, into the sand, into the mountain, into the cave, beneath the sea, into himself, into the unconscious, it could mean going down to your basement studio, I don't know. The hero goes down deep, and struggles with himself, his enemy, a dragon, his demons, his delusions, his fears, his psychosis, whatever. The hero then discovers, receives, steals, creates, a magical object. The hero brings the magical object up from the deep again and the object is received by the King, by the parent, by the art critic, by the rich art collector, by the museum, or whatever, and finally he marries the princess and ascends to the throne! (Laughter) So this kind of structure I am thinking about, like a fairy tale structure, and I'm saying, okay, well, the story of the artist and the story of the miner, in terms of that type of story that a culture might tell itself, in that sense are the same story. (Laughter) So, the theme of finding something and the theme of creating something seem sort of different, but I knew they were very similar themes.

I guess the idea of 'coming up' with a fulgurite was that it had all of the qualities that a fossil had, but it was created instantly. I felt that one of the mythologies that we have about the way artworks are created sometimes involves the concept of instantaneity, or, you know, the projections onto the artwork of a kind of instantaneity of manifestation. Certainly it became so with Jackson Pollock, and if you look at the impressionist brush strokes, you certainly see it there. A painting may seem very still, but an impressionist painting is easily recognizable as a collection of little tiny marks done with a brush stroke from a brush that an artist was holding with his hand. He instantly made a movement to create a brush stroke, so paintings can often be thousands of instant moments going into making up a single painting. Since the impressionists, this has been sort of the technique in painting.

*JD: You are interested in the mythology of instantaneousness and that of creation...*

AM: Something being created out of nothing or in an instant, a very common theme that has to do with producing art.



I am interested in this as an artist, because I share these mythologies with everybody else, but I think I want to sort of take that apart a little bit and enlarge the instant into a HUGE instant, this huge event. The result being some strange little wrinkled up little stick-looking thing called a fulgurite – which is then re-energized and amplified by producing ten thousand of them to display in one room. But the story being created as I carry through the project has this really primitive quality, like you go out into the woods, you go out in the field, you wait, you wait...

*JD: More waiting (Laughter)...*

AM: And just when you thought you could wait no longer, a storm cloud appears overhead, that special moment happens and you act. You send up the rocket, and lightning comes down and creates a treasure, a gift, and this gift then populates the world. So it's really the myths of inspiration and creation I'm sort of dramatizing, in maybe a kind of oblique way. I think that you can't learn about what an art object is without sort of looking at these myths. Because it's part of our condition of seeing artworks as art. I think this is what originally appealed to me about the fulgurites, how they were like magical objects, as well as like art. But, what also appealed to me, and it had been developing since my project in Utah was that people that live their lives in these geographical areas, they give another kind of meaning to these projects, there very own local meanings.

*JD: I suppose there's much pride taken in those unique or special qualities that distinguish communities.*

*My great-grandfather was a Baseball Hall of Famer who lived most of his life in the small town of Oakland City, Indiana. I remember there being "Oakland City – Home of Edd J. Roush" road signs as you drove into town. He was the first to receive a "key to the city," and every year they had an "Edd Roush Day" and parade down Main Street...*

AM: Yes, like that exactly. I was talking to a woman in Vernal, Utah, where the Dinosaur National Monument is located.

There is a culture of dinosauria in the community of Vernal. The people there identify with the dinosaur mythology because they live exactly where thousands and thousands and millions of dinosaurs roamed, and not only that, but enormous paleontological finds were made there. Carnegie made his first big finding in Vernal...he found his famous diplodocus (*Diplodocus Carnegiei*). They were the largest dinosaurs up to that time that had ever been found. He had to build his own train tracks to get to the site area! But since all that happened in the early 1900s the community has become aware of the value of this area and their motels have all been named the 'dino motel' and the 'raptor cafe' and so forth, and they have pictures of dinosaurs in all the shops. I was really intrigued by how it could have a certain kind of meaning scientifically, but also a really powerful cultural meaning for this small town. In fact, so much so, some of the local people were extremely bitter, it seemed to me, that Andrew Carnegie had come out there and stolen their treasures back when nobody knew anything about them. Before they got word that anything was going on, Carnegie had taken hosts of these dinosaur bones back to the 'east,' to Pittsburgh, and claimed them as his own. Even naming them all after himself, his wife, and so on!

*JD: It's like the Elgin Marbles in the British Museum, or innumerable other cultural artifacts taken by wealthy entrepreneurs or institutions for the price of a financed dig from countries that are now battling for the rightful return of their cultural heritage.*

AM: Exactly, and I hadn't really thought about that being the issue so much as... They were just things in the ground, and the fossils didn't have any sort of identification with wealth or art or anything 'cultural' exactly, they were just sort of in the middle of the desert. But to the scientists who believe in the scientific processes of evolution, extinction, gradualism, and so on, and that the world is really over four and a half billion years old, they think differently than these people. Carnegie had his own agenda, also, he valued them not only for their scientific worth, but for their incredible 'promotional' value. Carnegie made 8 or 9 cop-

ies of his diplodocus skeleton and he had them delivered to many major capital cities around the world as gifts – he’s got one in Mexico City, there’s one in Frankfurt Germany, there’s one in East Berlin, there’s one in London, they’re everywhere. They are still being produced, because MOSI, the Museum of Science and Industry in Tampa, is actually in the process of rebuilding yet two more casts from this same diplodocus as we speak, from the molds that were created by Carnegie.

*JD: So, what most people see in natural history museums are copies of the bones?*

AM: Well, that is something that’s interesting to me. No, I wouldn’t say they are all copies, it depends on whether the museum has enough money to purchase or finance the excavation of fossil remains. We think there are lots of complete dinosaur fossils around, but there are actually very few. Only three or four complete fossils of Tyrannosaurus Rex have been found, for instance. But there are many copies! Of course the College of Eastern Utah Prehistoric Museum in Price, which is right near some of the richer quarries, sponsors digs at the quarries just a few miles away. I don’t recall there being any copies at the Prehistoric Museum in Price. But you go to a museum in an area where you wouldn’t have found dinosaurs like Florida, or Washington, and all you’ll find in the museums...

*JD: ...is that travelling “Jurassic Park” exhibition of animatronic dinosaurs! (Laughter)*

AM: No, not those (Laughter), but polyester resin or plaster casts of actual dinosaur bones. And often, one dinosaur on display will have bones from many different individual animals. Their bones are all more or less alike, and very often during fossilization the animal’s head was lost, the head comes off, it rolls away, or whatever, so they are very happy to find skulls because they are rare.

*JD: There’s a lot of copying in the natural history museums...*

AM: It's just a part of life, and I guess what I thought was kind of intriguing about that and why it didn't seem so scandalous as it might in the art world is because what they are making copies of are objects that are *already* copies. There is no decreasing value except maybe some kind of archival or mythological value, but in terms of studying the structure of the bones there's usually not much difference. At least in terms of the external morphology of the bones. The CEU Museum in Utah, where they collect the dinosaur tracks from the ceilings of the local coal mines, they really specifically meant something very strong to the community, because Utah is a very fossil rich area, and it's a true coal-mining town. It was so smart for the community college to build this prehistoric museum. It's fantastic...It's probably the best junior college museum there is in America. I mean, it's not really a common thing and they have all the bones. The geologists and paleontologists find this museum an important center, because they are constantly sponsoring and running excavations. But, apart from the bones and the skeletons, the coal mine tracks were incidental pieces around the museum. I counted them, there were over 40 of these dinosaur tracks casts.

*JD: Perhaps you could explain what the dinosaur tracks are and why they're found in coal mines...*

AM: These tracks the miners find are not the imprint of a track, but rather the cast of the imprint of a track, so really they are 'natural casts' of dinosaur 'feet!' They were created during the process of peat turning to coal. The prehistoric peat bogs had a lot of natural footprints in them. When a bog was covered over with many layers of silt, the pressure would eventually turn the peat to coal, and the part of the silt that would fill the dinosaur tracks would become sandstone. So when they began to dig coal in contemporary times, they often discovered dinosaur tracks or 'casts' of the tracks in the ceilings of the mines. The miners would sometimes call local paleontologists to help, or they would chisel these things out by themselves. And some local natural history buffs would take them and try to classify

them and so forth, but of course once they are cut down there's not much information to gather about the behavior of the dinosaur. The people who collect them are coal miners who ask their boss if they can stay late after work and chisel down dinosaur tracks before the owners blow up the mine, after it's exhausted, for safety's sake, and so on. So they were constantly taking these tracks down and putting them in their living rooms and their offices and so forth. And after the Prehistoric Museum opened in the 1960s, one thing people liked to do was donate these tracks to the museum. Many local people took their tracks over to the museum, and said this is from such and such a coal mine and would you like to have it in your collection? In fact, they were more often donated "in memorium" of a deceased loved one.

*JD: And the museum reluctantly acquired them as "oddities" of local interest.*

AM: Well, maybe the museum didn't have so much 'scientific' enthusiasm, but I think they accepted them with enthusiasm because this increased the participation of the community. Because they needed community interest to keep this little place going. I was looking at these objects and they look just like some kind of art object. They look like some kind of modern abstract sculpture! At the same time they open out onto a whole history of another world, you know dinosaurs, and at the same time they are 'exchange objects' amongst the local people there. Kind of a totem in a way, that gives them as much value to the local culture as if they were of scientific interest. I think I fixated on this object that sat at the intersection of a number of different kinds of meanings. Yet, it was the same old story, you go down, you find a treasure, you come back up! So I decided to give the objects another level of mythology, and decided to duplicate them – because they were already duplicates – and put them in my own museum exhibits and gallery exhibits. I tried a little to get the museum interested in this, but they didn't seem to be so fascinated with the idea. But they very generously let me hire one of their preparators to make the molds for me, in their own paleo lab. In the winter very few people come



Natural casts of dinosaur footprints, chiseled down from the roofs of Utah coal mines. Collection of the College of Eastern Utah Prehistoric Museum, City of Price, Carbon County, Utah.

to the museum, and they sometimes need to lay people off, which they don't like to do, so I paid them to keep their two preparators working for three extra months or so. That was really their main reason for letting me do it, I suspect. We both helped each other. I think they also really loved the idea that somebody was interested in these things and that might have been a little guilt on their part because they weren't really so interested in them, scientifically.

*JD: Why did you decide to introduce the “Reprints” into the gallery and museum exhibitions of these works?*

AM: I tried to create didactic handouts that went with the exhibit because I wanted to imbue my art exhibit with the feeling of it being an educational project and as a part of an object that had meaning in the community of Price, Utah. I couldn't get their educational department interested in participating in this, so I did it all myself and I worked really hard and edited 21 different historical texts on dinosaur tracks found in coal mines and so on, with pictures. I printed them out on my laser printer and they looked pretty nice. They were all different colors, and they are used as didactic handouts whenever I show



Allan McCollum. *Natural Copies*. 1994. Enamel on polymer-enhanced Hydrocal.

the works. I felt disappointed that these flyers weren't being used at the museum itself, however. I wanted to contribute something back, you see. I was hoping that they would use them.

*JD: They are accessible via the World Wide Web...*

AM: Yes. In fact, Ron Wakkary at Stadium<sup>1</sup> offered to put them on their website, so that actual student paleontologists, or anyone who was interested in dinosaur tracks from coal mines could use them. We laboriously put these 21 different texts, different colors, to exactly duplicate the look of the handouts, and they're still on the web now.<sup>2</sup> You can just go there and download the PDF version of the texts. You can hand them out to your students.

*JD: Have you received any feedback?*

AM: I have gotten a good amount of email from young paleontology students and other dinosaur buffs telling me that they like the site and that they use it, and it was reviewed in a geological newsletter online once, I noticed. How the art world uses this project I have no idea. I did sell quite a few of the casts themselves, so obviously they had some exchange value in the art world, but I feel that the didactics have had more exchange value in the end. I would prefer it to be more balanced.

*JD: It has been important to you that the texts and objects are balanced (or of equal numerical weight) for the Florida Petrified Lightning project. I know you've spent several summers vacationing and exploring Florida, what interested you about working on a project there?*

AM: I don't know, Florida has a whole different geography. It's a relatively young landmass – certainly no dinosaurs were ever found there, but lots of prehistoric mammals. The culture it seems is relatively young especially on the central west coast...and I really like Florida! If I hadn't been vacationing down there two years ago, I probably would never have been doing the fulgurite project right now. I wouldn't have run into you, you never would have told me about Margie Miller at the USF Contemporary Art Museum trying to come up with a public art event with Wit Ostrenko at MOSI...

1 <http://www.stadiumweb.com>

2 <http://www.stadiumweb.com/Reprints/>



*JD: And did these journals you were reading following your discovery at the Gillespie Museum ultimately lead you to Dr. Uman?*

AM: Yes. One afternoon I was reading an article in Discover Magazine and ran across a little piece about Dr. Martin Uman, a well-known lightning expert from University of Florida in Gainesville, who actually collects fulgurites as a hobby and was doing research to see how lightning affects underground power lines. He had found fulgurites as a part of his research and used their path to discover once and for all that lightning does create a branched, random track in sand in the same way as a bolt of lightning we see in the sky. The lightning bolt just continues through sand following the same sort of torturous path that it does above the ground, and you can find it if you dig it up right away before it deteriorates or is messed up by moles, field mice or whatever. Dr. Uman's paleontologist friend Dan Cordier unearthed this fulgurite, and in the process they both had really learned quite a bit about lightning. The Discover article provided my first glimpse at a real fulgurite, and proof positive that it looked nothing like the sand spike concretion that was on display in Deland.

*JD: As I recall, you had already read one of Dr. Uman's books...*

AM: I had read the magazine article and I'd looked him up on the web and found out a little about him, I bought one of his books, *All About Lightning*, and I read that. He's really smart, and he's so funny and wry, and personally very generous, and likes to teach people about lightning, and he's chairman of the Electrical and Computer Engineering Department at the University of Florida...He's one of the worlds major lightning experts...

*JD: And a painter as it turned out!*

AM: Yes, and a painter...So I thought, this has got to be a pretty cool guy! (Laughter)

*JD: That was clear when we first visited, and realized he had painted that quirky picture of Benjamin Franklin on his office wall!*

AM: Right! He was a little secretive about this, in the beginning...

*JD: What was their interest in fulgurites? I mean, you talk about the dinosaur tracks in a way not having had much scientific value, and I guess initially they had discussed fulgurites not having much scientific value... They were using them to solve the path of the lightning to underground cables but...are there other unique characteristics, or what was their interest in working with you?*

AM: You know, I'm a little confused about their interest in fulgurites. Martin Uman's interest is connected with his interest in lightning, of course, and they reveal information about how lightning works, and he loves that, but also fulgurites are beautiful. I think he loves them as a fossil collector – he does collect fossils as well. Dan Cordier, the geologist was more hands-on with our experiments. Like a lot of geologists, he is interested in everything. He knows a little bit about everything from chemistry to biology to physics to



photograph by Jade Dellinger

The artist with Dr. Martin Uman, Chairman of the Electrical and Computer Engineering Department at University of Florida, Gainesville, Florida. Dr. Uman is an international lightning expert, the author of five books on lightning, and one of the inventors of the lightning sensor that made the National Lightning Detection Network possible.

engineering. He's a writer and an artist, also. I think Dan...scientists don't always work to produce 'great' discoveries, by far what most scientists do is just clarify certain little areas of study, and figure them out because they might be important someday. It's mainly just about adding to knowledge and the way the world works. I don't think anybody who studies fulgurites is looking to change the world for it, but within their fields... I think Dr. Uman just collects them because they are a little bit magical, they are fun, they are like a hobby that's related to his chief interest in lightning; and Dan has this interest in seeing how the high temperatures of lightning might affect different minerals in different sands. He studies sands and clays and soils, as a part of his profession. So he can actually gain a lot of information about these things from a fulgurite, too. He is an intensely curious man, he likes to know about everything.

*JD: And trace fossils too...*

AM: Yeah. He is a geologist, and he studies trace fossils of all kinds. Fulgurites are actually one kind of trace fossil! But with regard to the fulgurites, I think he saw our project as an opportunity to experiment with different kinds of sands, how they fuse at high heat, and so on. You know, when one person does a project in a science research situation like this, other people can piggyback their own experiments on top of that experiment, without having to pay anything extra. This is part of what academic research is about...collaborative...you know. There was a Japanese scientist during our project, for instance, who was taking extremely high-speed movies of the lightning to get data on heat expansion or moisture expansion or something. There can be scientists doing different experiments that have nothing to do with the actual experiments that the paying scientists are doing. Let's say there was the researcher who was triggering lightning to figure out how it might affect an underground pipe, well, that doesn't mean that some other scientists can't also sort of piggyback themselves onto that ex-

periment, and do photos of the lightning, or measure the air pressure, collect other miscellaneous data, and so forth.

*JD: To find out how intense the strike was, or...*

AM: Or how long the strike lasts, or how many return strokes are triggered compared with the humidity of the moment, or whatever! These issues are not really very important to the guy who is researching how to build underground electrical pipes, so you create one event and a lot of different meanings and results can be derived.

*JD: And their use of it somehow would always sort of channel through a number of other things...*

AM: Right...

*JD: Even if the other things had nothing to do with the ultimate project.*

AM: They just want to have data. Say that a strike is triggered to hit the 'Simulated House' that they have there at the International Lightning Research Facility (the 'Sim House'), and say that the lightning destroys some sort of electrical equipment that they have set in the Sim House, say a transformer or an electric toaster or something. So they want to know, I guess, how strong the lightning was, how many return strokes, what the charge was. They measure everything.

*JD: How did your experiment differ from the other ongoing research projects?*

AM: Well, of course, I was sending a rocket up to create a lightning strike to go into a bucket of sand to produce a fulgurite! This wasn't too scientific an experiment, because I didn't want the lightning to go through the instrumentation measuring the amperage and voltage; and I wanted to have a very simple-looking photograph of the lightning hitting the bucket, without all the equip-



The lightning research center's Simulated House, the 'Sim House,' used as a target for triggered lightning research.

ment and wiring around, and so forth. There was no way they could measure the charge of the lightning in my 'experiment.'

*JD: It was an aesthetic decision.*

AM: Yes, that was an aesthetic decision on my part, so I didn't give them a lot of scientific options for piggybacking any science onto my project...However, what the project seemed to do was create a sort of extra spirit of interest in fulgurites – which Dan had recently developed out of his curiosity and his working with Dr. Uman. Dr. Uman and Dan Cordier already had fulgurite collecting as a serious hobby, and had unearthed the world's longest fulgurite, and gotten it into the Guinness Book of World Records, but I'm not even sure they had a real goal in all this. I think they just thought they were really great objects, and they wanted to figure out something else to do with their lives besides studying sand and lightning, so...

*JD: And that was all transpiring when you first met them?*

AM: That was sort of going on before I got there – in fact, I wouldn't have even heard of them if they hadn't sent out a press release on the fulgurite finds, I'm sure! (Laughter) So I was brought to them through their own interests in fulgurites. Dan Cordier, the paleontologist, and I together figured out a way to direct the lightning through some PVC pipes that were closed at both ends to make capsules. We routed the lightning through these capsules so that the strikes would be enclosed. Dan figured it would make the fulgurites more robust because it wouldn't explode the sand, if they were contained.

*JD: During the initial meeting of course, there was a lot of discussion about how laborious this unearthing of the world's largest fulgurite was. You had made a suggestion and soon followed with drawings about how to do this whole experimentation above ground to simplify the process.*

AM: I think that was because they had never had any money to focus so specifically...It's unlikely that anyone before us had been willing or interested enough to pay any money to simply create a fulgurite for its own sake...usually fulgurites are only considered a by-product. They're looking at the effects of lightning on something else, or whatever. But to just get the fulgu-

rites themselves, and to spend tens of thousands of dollars to do this...it might be like staging a head-on car collision just to study skidmarks on the pavement! It would be preposterous. But after we left, the engineers out there, with all of this talk about creating fulgurites, finally came up with this great idea of piggybacking fulgurite experiments on top of every other experiment that they could. So every time a lightning would come down to hit their simulated airfield runway light, or whatever, they would also have another wire running to the side that would have a necklace of six or seven PVC pods. Each one had something different inside, to see what kind of fulgurites might be created! Part of their whole idea is that they could sell them and make thousands and thousands of dollars (Laughter) because there is a market for fulgurites. Not a very large one, probably. (Laughter) Since they were controlling the lightning, they could make them big and fat or whatever they wanted! (Laughter)

*JD: It's unusual to find large fulgurite specimens...They are so fragile...*

AM: It's not rare that they exist, but it's rare that people find them as long pieces or in an undamaged state. You sort of have to go right to where the lightning hit the next day because otherwise it's liable to erode really quickly.

*JD: And to excavate them you need the skills of a paleontologist...*

AM: Right. That helps. Dan knew how to consolidate a fossil on the excavation site, he knew how to dig carefully and use the gentle brushes to remove the sand. He knew all the techniques you need when you are excavating a fossil site. So he joined Dr. Uman enthusiastically as a part of his team, and he was excited to become part of our team, to help intentionally create fulgurites. Already before our project, whenever the Center had an appropriate lightning strike they would call Dan and say let's go excavate this fulgurite, and apparently, as he told us, he had contacts with a number of local golf courses. Whenever anyone witnessed lightning striking the golf course,

they were supposed to mark it with a flag or a rock or something and they were supposed to call him. He's an avid collector. For all I know maybe they are going to make a lot of money selling their fulgurites which I think, you know, would be such a weird sort of – what would you call it – rags to riches story. (Laughter) Anyway it wasn't something I expected to happen going into the project, that I was also going to sort of trigger the entrepreneurial spirit of these electrical engineers!

*JD: It seems you've had a role contributing not only to the research, but to an increased awareness of what these objects are... 50,000 students alone will have an opportunity to read about the project through the Tampa Tribune's "Art Links" tabloid about your fulgurite experiments and exhibition...*

AM: I think I contributed. If fulgurites were meant to be promoted at all, and I'm not sure why that would be, I guess I had a hand in helping. (Laughter) Dr. Uman and Dan told me that our project got their minds going. They designed projects that they had never designed before, and came up with theories that they had never thought about before. The idea of using different kinds of sands, pure sands, and mixtures of different pure sands resulted from our endeavors. Mike Stapleton, one of the engineers, even filled one of the pods with glass marbles to see if they would be fused into a whole! (Laughter)

So like I said, in the past I had been interested in the idea of how an object has a meaning both outside and inside the 'cultural sphere.' Interest in fulgurites was sort of already in process at the University of Florida. Fulgurites were already beginning to be realized and enjoyed in Gainesville. So in my doing this project on the heels of these other projects, where I had already done some studies on the local communities, I wanted to make this project even more about the community itself, or as much about the community as about UF and the International Lightning Research Facility. So I had to start learning about local history.

*JD: So what did you learn about the focus of lightning research in this area.*



AM: The lightning research facility is out there in central Florida, at Camp Blanding, which has miles of extra land because it needs such a huge amount of space for safety reasons. They are sending up rockets, and rockets are falling down, and they are attracting lightning. So when they decided that the facility would be created, they needed to put it far away from any population centers, of course. The facility wasn't created by the University of Florida by the way, it was created by a local power company, originally and transferred to the University of Florida at a later time. The University had always helped to sort of manage it apparently. If you were going to produce a lightning research facility you would want it to be where lightning already occurs. That would have to be...you know...there are certain kinds of conditions that create lightning...atmospheric, you know, connected with the geography...and Central Florida is, by its nature, the lightning capital of North America. This means that there are more lightning bolts there per square inch per year than in any other place in North America. In fact there's only a couple other places in the world that equal it. One is in Indonesia I believe, the other's in South Africa.

So, anyway it was because of the conditions of Florida's geography that this lightning research foundation was even there in the first place. They searched until they found a military base that was mostly unused, Camp Blanding, a military training camp near Starke, Florida. Starke is a community that grew from a population of around 1,300 before World War II, to a population of 20,000 during the war, as soldiers were being trained for missions in the South Pacific. But, since the war the population of Starke has gone down to about 3,000 people, so it's kind of a lonely, depressed place in certain ways. They have one major source of employment, and that's the du Pont sand mines. Du Pont has been mining sands for 50 years or something on that site. They rented part of it from the government, and regularly produce a number of different kinds of sand.

*JD: It's actually rather a restricted area.*

AM: Yes, this is why it's an ideal setting for the lightning research. Du Pont is there because there is so much sand there, and they have an international sand research lab there that studies the different kinds of constituent sands and how to separate ilmenite from zircon and titanium, and so on. I knew nothing about sand mining and it was really interesting to me.

*JD: Early on you and I were granted a tour of the du Pont facility with one of Dan's colleagues. They had that head geologist from Australia who put on a show for us with that big sifting device...*

AM: Yeah, yeah, that great spiral machine, like a tall, vertical revolving screw. You pour some mixed sand in at the top and it runs down this spiral and it's flushed with water and there are certain choices to make about angles of the blades that are determined by the qualities of the sands. Sometimes magnets along the way separate the iron-bearing sands, and when you get to the bottom there are maybe three separate holes and three totally different kinds of sand go into each hole, so you essentially wind up doing most of the refining in one step. I suppose you could continue to do it until it's even more refined, and so on. The machine is so simple in its basic concept – I'm sure there's a great deal of very exact science involved in the fine-tuning, but the concept itself is really so simple and primitive. It is like separating the wheat from the chaff by tossing your basket of grain into the air, essentially.

I had known about these mineral sand mines in the Camp Blanding area before I visited the Lightning Research Facility... I'd studied the area via the Internet. It's right next to Starke, which is a very small Floridian town, and is mostly only known for two things: Camp Blanding and the state penitentiary that houses Florida's electric chair. There's a couple of motels there, maybe mostly for people who come to visit prisoners, it's a pretty isolated town. Anyway they have a really great website that's designed and maintained by the local taxidermist, and I was able to learn a lot about the town and its history from the website. I read about how the city and many people in the town were employed by the du Pont mines.

So by the time we got to the location last summer to do the experimentation, I had learned a bit about Starke. That it was named after the original postmaster's girlfriend, etc., so I could feel a little more comfortable chatting with the local people. When I mentioned the local mineral mining operation to the UF electrical engineers, to see if they could direct me to it, they had no idea what I was talking about. Their interest was in the lightning, so I told them that most of the local people were employed at a sand mine, and I would really like to use local sands and let that be part of the story that I am trying to create here. During the course of the project Dan Cordier was hired by du Pont and was instrumental in arranging for them to donate a variety of local minerals for the fulgurite experiments and my mass-produced replicas.

*JD: I guess if you hadn't discovered the du Pont mines at Camp Blanding via the World Wide Web, these local sands might not have been included.*

AM: Exactly, and we also discovered that the Lightning Research Center itself was built on an area that had already been mined, and that the du Pont mines were more or less like 1/2 mile, 1/4 mile away. I was interested in using sands that had been mined from the very site and Dan with his own interests suggested they be divided into their separate constituents minerals to investigate what types of fulgurites might form in different types of sands. I think Dan was very clever because he got me excited about this, sort of implying that each one would be beautiful in its own way and as it turned out he was totally right. Every sand differed depending on the size of the grains, and the different structures of the different minerals, and this had not really been studied before.

*JD: These minerals have different melting points that also apparently affected fulgurite morphology.*

AM: Yes, that too. I don't think anyone had ever deliberately created a fulgurite into any sort of rarefied sand, this

was what was so exciting about it. Normally a fulgurite would sort of be found as a product of nature, and nature doesn't have dunes of distilled separated sands. It doesn't have pure sands, it's always a mixture.

*JD: The minerals and everything else...*

AM: Yeah, so there are normally all different kinds of things in a fulgurite. The form the fulgurite generally takes seems to be conditioned by the differing melting points and shapes of the grains of the sand. I think we sort of proved that. That was part of the fun of it for Dan, to see if our efforts to find the best-looking fulgurite could also teach you anything, and it did.

*JD: From the very beginning you wanted your project to have some kind of scientific value for them.*

AM: Well sure, and it was interesting how different your minds work. It never occurred to the scientists that the fulgurite that they wanted to help me create wasn't exactly the fulgurite that they wanted to make...

*JD: When you proposed this idea initially they were sort of pushing their interest in breaking the world's record and that the MOSI funding might give them an opportunity to...*

AM: Yes, I think that's exactly what was going through their minds. At first it seemed they were like, we've got this grant from the Museum of Science and Industry and we are going to take it and create the world's largest fulgurite. They thought, we are actually going to get paid for doing it, so we can devote more time to it. We can put it in the natural history museum in New York or Chicago, and we'll have contributed yet another great object to the Guinness Book of World Records. But that wasn't what I had in mind at all! That's something that had grown out of their own excitement about their recent finds. But they really did want to participate in the increase of knowledge about fulgurites. Like most scientists they are always look-

ing for funding and whatever possible opportunities might arise to help them pay for their work. People who do pure research don't usually have a lot of funding! The Lightning Facility of course is 50% commercial research, so they have people coming in to check their golf course rain shelters, or whatever. The other half is more pure academic science, and no one has ever come in for some aesthetic purpose. I don't know if they really understood what I was after initially, they were just fixated on making the longest fulgurite in the world. (Laughter)

*JD: There was a prioritization of research experiments and a sort of chain of command in the rocket launch trailer. Do you recall distinct similarities or differences between your process and the methods applied by the scientists, and did this affect the outcome?*

AM: When we started setting up the experiment, we had to resolve our differing expectations and our differing procedures and, as I mentioned before, one of them was whether or not my elegantly and simply shaped bright red trash receptacle was going to be metered or not. They had never done anything where they hadn't metered the charge of the lightning and I felt some resistance there, like this was hard to get them to do. One of the reasons it was hard turned out to be because they didn't know exactly how to send up the rocket without the copper wire breaking, since the rockets usually triggered the lightning to return right back to its point of launching, to the tower where all their instrumentation was installed. Generally, there weren't any lateral stresses on the thin wire trailing from the rocket. I didn't want the lightning directed to the instruments first, and then redirected to my experiment through some other wire, like they normally did. I wanted the lightning to hit by bucket with all that tortuosity of form it displays in nature. So we could get a dramatic photo of the Event!

*JD: The rockets were generally fired from the big launch tower, and resulting lightning directed through some instrumentation. Your project necessitated a portable rocket launcher placed several feet away from the red trash receptacle...*



World-record fulgurite, in the process of being excavated by Dan Cordier and Mike Stapleton at the Camp Blanding lightning research facility, in the summer of 1996.

AM: That's right, I wanted a more 'human scale' rocket launcher, placed about eight feet from the bucket, so they found a very small rocket launcher and set it up more like something you could use in your backyard, which I liked because I didn't want to create a big complicated event. Once they got everything figured out so perfectly, it turned out that it wasn't very difficult to do something like this. They were afraid that the rocket going up would snap the copper wire because it was having to shift its center of gravity. So they had to figure out some complicated arrangement with bungee cords which gave it some elasticity so that it wouldn't suddenly break the wire because of some kind lurch in its path... It turned out to be no real problem at all, but they managed to keep me anxiety-ridden about our chance of success!

*JD: Even though those hair-thin wires were Kevlar-coated they were quite fragile...*

AM: They hadn't exactly done this before. I'm sure these kinds of things come up in every scientific experiment. They have to redesign the experiments very quickly sometimes, on the spot, to get the data they're looking for in the form they want it. I really felt a little bit a part of that because I was using my ingenuity, too. I'm not an engineer, but I'm not stupid. I work in my studio all the time and figure out how to make casts and molds and do things, problem solve. It turned out to be very similar with these engineers. An issue comes up and they solve it on the fly. It reminded me a lot of the way you work when you are forced to be creative. When you...

*JD: ...are given a certain set of limitations...*

AM: They didn't always totally understand why I would want to do certain things in a certain way, but they were very nice and polite about it. On one or two occasions it sort of took bringing Martin himself out to the site to convince or encourage them to take certain leaps of faith! (Laughter)



The rocket and the sand-filled receptacle used in McCollum's lightning-triggering experiment to create the fulgurite.

*JD: It's difficult to abandon what you know, or have learned – to change habits or procedures.*

AM: For instance, because they are just studying lightning and not normally just creating fulgurites, they more or less guide the lightning strikes into the ground by having it follow the path of the copper wire to the surface of the ground, not down into the ground. And when they dig up the fulgurite it's just sort of naturally shaped, but if the wire is going through sand above the ground, the way we did it at first, the lightning just



follows the path of the wire. You get a fulgurite that's too straight, and doesn't look exactly natural. This is the way they had originally designed the process so we got a couple of fulgurites, and I was thinking they look so straight like pencils...they aren't really...They don't have a unique character of an object that nature created itself in a way. So I brought that up, I said, this isn't acceptable, let's figure out a way where the lightning is guided to the bucket, but once it gets to the bucket it flows through the sand itself without any artificial leader path or wire. Martin came up with the idea of burying two metal bolts, one attached to copper wire trailing from the rocket, and create a gap of a few inches between this first bolt and another bolt grounded into the soil with a six foot copper spike. So, theoretically, the lightning would flow down the path of the wire, but once it hit our receptacle it was on its own and the lightning arced through the sand by itself, following its own path in the sand.

What we were hoping to get was a fulgurite with a much more sort of biomorphic and random shape than it would have if we just directed it along the path of the wire. We would set the lightning free for a moment! Lightning really can't be trusted, of course. You can't just assume it's going to jump a seven-inch gap between a grounded rod and a metal bolt, just because you want it to. You just don't know what the hell it's going to do, there are so many factors involved. If you go off to the side it could pop out of the bucket and then jump to the rocket launcher. I read the other day about lightning that caught somebody's house on fire. The bolt glanced off of a pipe and struck the fire alarm simultaneously notifying the fire department! (Laughter)

*JD: Even from the beginning they had questions about whether the above ground thing would work because they feared it would still exit or explode the receptacle.*

AM: Yeah, that was another thing that had to be figured out, Dan worked it out. Nobody was sure if you could actually capture a fulgurite in any predictable way, in a bucket, I mean, experiments had been done before, but not in buckets or PVC tubes above the ground. So normally what would happen is

that lightning would just hit the earth at random, but the conditions of the sand were never really analyzed in advance. There was a real gap in scientific knowledge. Obviously, normal soil would be more tightly-packed than anything we could produce in a bucket by tamping it down, because we were looking for sand with very little moisture, so the refined sand was better for this, but it was very loose. The theory is that it's often moisture that terminates the formation of a fulgurite, as it's being produced in a fraction of a second. When the lightning hits the water table, it ends right there. The theory has been that the fulgurites don't go through anything that is highly conductive, they only go through things that are resistant. You only create a fulgurite in resistant material rather than conductive material.

*JD: The more water the more conduction, so you wanted dry sand.*

AM: Yes. Sand that's dry is not necessarily compact, so they didn't know whether this would create an explosive dispersal of all the sand, whether it would just become like a sand bomb, with sand all over the place and not create a fulgurite at all...so their theory was it would probably work better in a closed container where sand didn't have a chance to push outward and would sort of be forced to stay in the same place. All the grains would be forced to stay in the same place so that the lightning could work within a contained area, but they weren't sure if they should close the lid of the plastic pipe, for instance. They weren't sure if they should put a lid on and really totally enclose the pipe, because they thought, if we do that, the moisture in the sand and the expansion of the gases will blow the whole pipe up. They didn't know what would happen. So they left the top off at first, and they got a lightning strike into the tube and the whole top erupted like a volcano once the lightning hit it. It erupted with molten 'ejecta' that flew up out of the top and so whatever fulgurites might have been created were not, and this made things seem very unpredictable! (Laughter) So they decided to try closing the cap and then stand a long ways away from it. (Laughter) Which they normally do anyway, of course! The tube didn't explode when the next lightning hit, so they

figured there's enough cushioning in the sand itself to keep the lightning from exploding the pipe – and in fact it contains the heat better, and allows the fulgurite a little longer to form.

*JD: Does the duration of current or heat affect the formation of the fulgurite?*

AM: The longer the sand is exposed to heat the thicker the fulgurite will become, it seemed. Nobody had really figured this out before, so it was a lot of fun for me. My idea was sort of creating all of this scientific activity and debate. When Martin came up with this idea of having the lightning jump from one bolt to another, there was another experienced lightning expert working on the site, George Atlas, who theorized that it would never work at all. His theory was that you could never get lightning to jump like that. He has been studying lightning all his life also, so they argued about it and I decided to take Martin's side (Laughter) and give it a go.

*JD: Weather permitting! (Laughter)*

AM: Right! (Laughter)

*JD: Perhaps the most surprising aspect was that it took us seven weeks in Starke to get the necessary strike. Why the necessity to trigger your own strike to create a fulgurite, versus digging or simply borrowing on from an institution?*

AM: A natural fulgurite is of course a hollow tube, although they often collapse because of the way they are formed in the earth, the top of the tube is never really closed off. Apparently when the lightning travels through the soil and hits the groundwater the charge is dispersed, and because of gravity or the shrinking of gases or whatever, sometimes sand collects at the bottom and closes the tube – and that's what they call called a 'terminal sac.' But most fulgurites that you see in museums are a section somewhere between the terminal sac and the opening where it was found, so usually what you see is a section of a fulgurite. I

knew I didn't want my work to be a section of a fulgurite, I wanted it to be a discrete self-contained sort of modernist object. (Laughter) So I told the engineers I want a terminal sac at both ends and they said 'Good Luck!' (Laughter) Like they don't even know what really creates a single terminal sac, much less creating them at both ends of a fulgurite. This was the other part of the reason that Martin was so smart to come up with the idea of the lightning jumping the gap between the two metal rods. He was guessing that the lightning would be conducted away so fast through the metal, and at such a tiny point, that the sand would melt and close the ends.

*JD: He hypothesized.*

AM: That's right, he created a hypothesis, then we went through the experiment. Then we did it, we tried it, using pure zircon sand, which we had already determined as the sand that created the most elegant looking fulgurites, and we got a very good strike, and it worked! And sure enough it formed a terminal sac at each end, and Martin won the debate and I never got to hear how George reacted! I fired the rocket, I pushed the button at the exact moment they told me to (Laughter) and we waited for a storm cloud and the whole site went hot when the storm cloud appeared over the air space. The army stopped sending their rockets and helicopters and planes out on maneuvers and...

*JD: And the muses spoke to you... (Laughter)*

AM: And the muses were an electrical engineer called Mike Stapleton! (Laughter) Mike told me when to push the button. I got to be a key agent in a series of events that created a natural object, which is how I had wanted it. I wanted to be part of a strange chain of agencies, so that it would be questionable in the end to say at what point did Allan do anything. Well, I helped design the experiment, I followed it through, I pushed the button myself. That's enough, it's like stretching a canvas, putting your paintbrush in a jar and flicking it at the canvas. It's about like that. I was also very excited that the fulgurite

itself looked to me like a Roy Lichtenstein brush stroke in my mind. That was the first thing I thought when I looked at it and it really made me laugh. (Laughter)

*JD: So you had something very specific in mind in terms of what the outcome would be and you achieved that...*

AM: It involved a lot of real creative thinking and discussion on the part of everybody...

*JD: But the ongoing sort of simultaneous experiments, how did it affect your effort?*

AM: Well, it was a position I'd never found myself in before, of course. There's a hierarchy in a research facility. There were like eight or nine researchers doing experiments that summer. You are only going to get so many lightning bolts in any one 'lightning season,' so they have to create a lineup and use judgment. There's one person who is going to get this next strike and the cloud starts moving in and the situation gets hot and they are metering the charges in the clouds and in the earth, so you know when a lightning bolt might be triggerable. The gatekeeper has to decide what the priorities of the experiments are. I'm not sure what they based it on, I never asked. That would be a good question for Keith Rambo, this was his job.

*JD: More or less, I think it was dependent on how desperate they were to resolve certain experiments. They kind of talked about it, you know, if one experiment had to be completed in the next two months...*

AM: Yeah it all had to do with timetables and money, some people there had paid much less I'm sure than the others and some of the projects involved many more strikes, some of the projects were going to give you much more data. I was really pleased and surprised with my place in line. I wasn't at the bottom of the list exactly, but I certainly wasn't at the top. (Laughter) Which was to



Allan McCollum and Jade Dellinger at the International Lightning Research Facility at Camp Blanding, Florida. Summer 1997.

my advantage ultimately, because it turned out that certain other experimenters would send up their rockets first...

*JD: And those above you had less concern about the expense involved in firing rockets...*

AM: Right, each rocket that goes up costs \$1,000, whether it triggers lightning or not. Not to mention they pay for the use of the facility as a whole, as well. So the people first in line would often send their rockets up and they would fail to trigger any lightning. Even though they were at the top of the hierarchy, if the cloud really didn't have enough power and enough charge, if the situations weren't completely right, they spent their rockets figuring that out for the rest of us! So in a way by the time it got to be my turn, there had been some experimentation done to see what kind, or how high should the field go before we send up the rocket, or is it producing one strike per second, or one strike every minute, or ten minutes, or whatever. I could

take advantage of that data. None of my rockets failed to get a strike, as I remember, and I wound up feeling really lucky to be in third position instead of first.

*JD: Because they would fire five with no response...*

AM: And because of this we sort of learned how the clouds were functioning at that particular time, due to all those variables (like the weather, moisture, etc.).

*JD: What was it about this particular fulgurite that warranted the production of 10,000+ copies?*

AM: That's a loaded question! (Laughter)

*JD: Okay, maybe you could talk too about that number, 10,000+ copies.*



Lightning triggered by a small rocket strikes the launch tower at the Lightning Research facility at camp blandin. The research center is not only involved in academic research, it also studies how lightning affects underground pipes, power lines, electrical equipment, golf course shelters, airport runway lights, and other systems.

AM: Well let me say, I went into the project thinking if worse comes to worse I would just borrow one of Dr. Uman's fulgurites, or buy one of my own from a minerals dealer, and just reproduce it as the art piece. It still would have had meaning for me to have done that. We only had so much money and time available and there were other fulgurites around, so if our experiments hadn't produced the one I liked, I could have made some compromises here and there.

However, it really was worth the effort to try to design the project in the right way because as it turned out this particular fulgurite had such character that if you drew it you would recognize it anywhere. Like you would know the difference between Mickey Mouse and Donald Duck. This fulgurite had a shape, personality, sort of twisted, sort of looked like it had a head, a tail, looked a little bit like a snake, a stick, a brushstroke. A lot of different things. It had personality, as some natural fulgurites do, but certainly not all. In any case, I wound up with something I felt was pretty special. So while I think I might have gone ahead even if it hadn't been such a fine fulgurite, it was extremely rewarding to get such a great specimen, and the logic of making 10,000 well, you know, as I said earlier it's the logic of mass production that creates the concept of a unique object which the art world is so enchanted with.

I've gotten into the habit of producing thousands of objects. The number 10,000 sticks in my mind because once when I was younger I was helping coordinate a project for another artist, and I had to come up with 1,200 little wooden pegs, and I didn't want to make them by hand, and they all had to be the same size and shape, so I thought I'll take this job to a wood turner. I looked in the yellow pages and there was a wood turner who was not so far away from me in downtown Manhattan, and they advertised that there was no such thing as a job too small and that they were happy to do 'short runs,' and so on. So I went over there with this little 1-inch dowel with beveled edges that I'd made as a sample, and said I want something like this, can you turn these for me? The guy there said how many do you want and I said 1,200 and he looked at me like I was crazy and said you want 1,200? That's all? And he said we can't



do any number that small, that's ridiculous, and I said, well your Yellow Pages ad says you do short runs, what do you call a short run? Well, he said, for a short run, the minimum would be 10,000! So this is when it really hit me how the economics of mass production are so dramatically different from the economics of creating an artwork. The concept of what constitutes a large or a small quantity is so different, and it was really one of the experiences that got me interested in the idea of the whole distinction between the two ways of creating objects. So that number is kind of a magic number in my mind, 10,000, when anything smaller than that didn't even constitute a 'short run' to a manufacturer. So whenever it seems economically viable that I can create 10,000 of something, I will shoot for it. These fulgurite replicas I'm making are very small and not incredibly expensive to produce, so I started thinking about that figure in the beginning.

I had many other reasons for wanting a huge bulk of them too, for the look of the exhibit. Like I described before, an object has value because of many different reasons, and you have to travel all over the cultural map to see how that works, you almost have to be outside of the culture to figure it out. You can't release yourself from these cultural mythologies. One of the mythologies I wanted this work to explore was our dreams about 'instantaneous manifestation,' – hence the title of the project, 'The Event.' I want to create a huge amount of objects that followed out from a single event. Then, on top of that, to sort of illustrate or develop a mood suggesting the amount of knowledge you would need to understand an object. I decided to produce a mass quantity of didactic material, much more than was necessary or even desirable! (Laughter)

So I researched articles and texts and books on fulgurites, mostly journal articles, and I searched the American Museum of Natural History's library, and Internet sources. Martin helped me a lot by sending me literature in addition to that which I had been receiving from my old high school friend Jerry Tomlinson who now promotes crystal and mineral fairs, who turned out to be also interested in researching fulgurites with me. From many different magazine articles and books I was able to put together around 70



McCollum excavates his fulgurite from the PVC pipe “Pod” used as a receptacle for receiving the lightning strike at Camp Blanding.

booklets on fulgurites, the people who helped me with the project, the history of the experimentation and structure of fulgurites, the

mythology surrounding them, and also the history of the town of Starke the history of Camp Blanding, the history of the du Pont mines, the area that sort of surrounded it, and so on. I'm trying to sort of metaphorically represent the amount of knowledge and events it actually takes to give something meaning.

*JD: They were meant to function the same way the reprints were for the Natural Copies.*

AM: Yeah, but even more so. In this case, I wanted them to have weight and visibility and mass equal to the created objects themselves, to sort of create an equation, I wanted the apparent relative importance to be about the same in either case.

*JD: You initially investigated blown and cast glass fabricators, why did you decide on the particular technique you finally went with?*

AM: I thought that since a natural fulgurite is made of silica and glass, my fulgurites would be made that way also...It seemed natural that we should reproduce the 10,000+ in glass, but that was an idea that lasted about six hours when I realized the enormous expense of producing that many glass objects. And the impossibility of casting them in anything other than a heated iron mold, which had no flexibility. The thing would have been virtually impossible, but in the meantime I learned about glass, it actually is not that expensive to produce an object out of glass, it's just more than *I* could afford. But I also had an even better idea about how we could make them out of sand, like the souvenirs made out of sand that's been sort of cemented together with a little bit of epoxy. You see them a lot in Florida, in beach towns, they'll make a sandcastle actually made out of consolidated sand, they are typical souvenirs in this given area. The sand souvenirs they make in Florida are of course made from Floridian sand, and I like this sort of reference – using a material that already has a kind of meaning, a symbolic meaning that refers to the locale itself. I found a number of examples of sand castings in souvenir shops, and read the labels on the bottom to find the address of who made them, and sure enough I found one that was made in Sanford, Florida, just outside of Orlando, at a workshop called 'Sand



*The Event: Petrified Lightning from Central Florida*, by Allan McCollum, installed at the University of South Florida Contemporary Art Museum. Detail.

Creations.' They came up with a reasonable quote, and it seemed feasible that the project could be done this way. It also seemed to become more interesting if I could ask them to make the fulgurites out of the exact sand that the original artifact had been created in. So

we were eventually able to work with du Pont mining and they sent us over a couple of pallets of the same zircon sand we'd used to create the original fulgurite, which isn't cheap, and they donated it to us. The souvenir makers had to create some new techniques to work with this kind of sand, because they had always used just regular silica sand, which has a rougher grain to it, and the zircon sand has about twice the weight of normal sand.

*JD: You've titled the project 'The Event.' Exactly which event are you referring to?*

AM: Well, I guess if I were to give a short answer to that, it's that the event which seems to happen in an 'instant' only has meaning through a whole array of other surrounding facts and events, both in the past and in the future. So where is the actual event? I'm wondering this out loud in this project. I am calling it 'the event,' but what I am presenting is actually a picture of the event and a context that appears to condition the event, including the context that actually leads us to describe a lightning strike as an 'event' in the first place! The show should sort of be about whether an 'event and its context' can even be honestly broken down into two such clear-cut terms. One of the didactic texts I'm using for the project is a nice text by the American linguist Benjamin Whorf, where he reminds us that 'the flashing and the light are the same.' He studied Native American languages, and at first this sounds like a Zen koan of some kind, but he points out that these two separate 'events' – the light and the flashing – are actually better described as a single event. But because our European grammar needs a subject for every predicate, we have to posit an 'actor' along with every 'action,' so we experience a 'light' that 'flashes,' when it's so obvious when you think about it that the flashing and the light are the same! So it's sort of like the difficulty I have separating art objects from geological oddities, or mass-produced objects.

I'm not sure these 'events' can be so easily isolated from one another. 'The Event' plays on a lot of words, I mean the opening itself is going to be an event, the exhibit is an event,

the production was an event, the lightning was an event, the whole process was an event. The context that gives the objects meaning is defined by a whole series of 'events.' Or are all these events the same event? The collaboration amongst the sand casters and the engineers and the local newspapers and the two museums, it was out of this working together that I was able to sort of tease up this kind of object. Because of everyone around me sort of having some interest in it, because it coincided with a lot of local interests. I guess I'm looking for kind of a sense that all events are constructed this way, they don't just happen because one person decides they are going to create some meaning. It happens because we live in a culture with people with vastly different points of view and skills and interests. In a world that is changing and shifting and so forth, it's political it's geological, it's physical and cultural morphologies. These all form the conditions that create the emergence of 'events.' They are the condition of the object's emergence, not the individual artist sitting in his studio having brilliant ideas, and not thoroughly recognizing that his ideas would be nothing without a social context. The meaning would be questionable at best. His work might constitute no event whatsoever.

*JD: You've managed to construct complex layers of additional meaning for these objects through interaction with participants and the events surrounding their realization.*

AM: Yeah, and it seems like the meaning is sort of boiling up around it and through it. In a way that had nothing to do with me, but in a way gives the object more and more significance. These fulgurites themselves are such dinky little things that look so unimportant, so to see the meaning develop around them, it's a kind of interesting demonstration of how meaning can grow out of such a small item, the residue of some other event entirely.

*JD: Enthusiasm can be contagious, and people can't help but be absolutely engaged...*

AM: It's exactly the kind of thing I like to see. With my project, *Over 10,000 Individual Works* I was directly trying to satisfy a certain kind of historical...I was trying to make some kind of commentary on the differences between mass-produced culture and fine art culture at the same time – to reconcile these distinctions in a single kind of object. At the same time the project was kind of about who can create the most unique objects with the least amount of money. It was kind of like a Guinness Book of World Records approach, purposely very gimmicky and populist. The piece was really liked very much by people who knew nothing about contemporary art and I like it when things mean something to everybody.

*JD: The Natural Copies at the museum in Price, Utah it seems had that effect as well?*

AM: Well the curator there told me that they had really started to appreciate the tracks more since I had done my project. But frankly, that was all I ever heard. (Laughter) I really was pleased that she told that to me, and that meant a lot to me, but I have been getting so much more feedback with this Tampa project. I just didn't know how accomplish that it back then. I didn't have the money to stay in a hotel and get to know people.

*JD: It's changed the way you've worked. Perhaps as a result, your approach to projects and your relationship to institutions have evolved.*

AM: I think I'm becoming interested in the larger community, the community that conditions the meaning of the art community!

I keep thinking of this story from my personal life. I remember when I was a kid, back in 1949, I was five or six years old, I was living with my grandparents in the town of Fresno in central California, an agricultural center, and they had a really nice zoo in Fresno. The zoo was building up their collection at that time, and there was a fundraising drive specifically aimed at children, and they decided that they would buy a baby elephant and have it paid for by the children of the community.

They had a drive and it went on for a long time, for children to put pennies, nickels, and dimes into a jar that was on every counter of every store in town, as I recollect. Then when they got enough money, like \$2,000 or something, they were able to buy a baby elephant, and a contest for the children to 'name' the elephant was sponsored by the zoo, and they ultimately named it 'Nosey.' It really was like the 'children's elephant.' There was a plaque on Nosey's cage that said, 'Given to the City of Fresno by the Children of the San Joaquin Valley.'

Never, before or since, have I seen my own participation in a community effort reflected back to me like that... I had never felt... I had always felt alienated from public things, even as a child... This was one case in my life that I felt real civic pride, and actual great pride in myself, as well, I guess. When I walked into the zoo I always felt like I belonged, I always went straight to Nosey and read that little sign, because I had given a quarter or something to help buy the elephant. And I always felt the elephant was a little bit mine and as an adult I always wondered if the elephant would remember me. It seems that the elephant had some meaning to me partly because I had participated in the purchase of it.

This feeling is something that I often find lacking in my adult life. People who are wealthy can do this kind of thing all the time. They donate money to buildings, to educational institutions, they build hospitals, they build parks, they dedicate benches and sculptures and they are constantly seeing their contributions all over the place. They must feel they belong in the world a lot more than I know how to feel. Where my tax money is spent can seem very vague to me, like it's spent to foster institutions that make me feel out of place sometimes, like on art museums and opera houses! And my taxes go toward city services, of course, but frankly the police and the military sometimes scare me more than they make me feel safe! And I think it can be like this for many people, so to actually be able to go and look at Nosey, an elephant that I had helped buy specifically was a great feeling and, really, whoever designed that fundraising idea was brilliant! It meant something to me all my life and it still does, although unfortunately Nosey passed away in



1993. I drove back to Fresno on my last visit to California and saw a bronze statue of Nosey, as a baby, made by an animal sculptor, a bronze statue. Even though he's now dead, that damned elephant still has meaning to me. So, I know that the next time I go through Fresno I will definitely go look at that bronze sculpture again! (Laughter) Because it says right on the bronze sculpture, 'Given to the City of Fresno by the Children of the San Joaquin Valley.'

So, I think I want a little more of that in my life, it's something that is very hard for me to find in the art world alone. I want to figure out how being an artist might make me a better and happier member of the larger community. I think mass-production is already a huge part of our vocabulary in the forming of our communities, but I think that it is happening in a fairly unconscious way, oriented mostly to the 'market' and so on. If we could learn to look at these production techniques in a more conscious way – not seeing it as bad or good, but as a medium of symbolic meaning exchange – we could open up a whole new world of community feeling...

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*THE EVENT*

*PETRIFIED LIGHTNING FROM CENTRAL FLORIDA*

A PROJECT BY ALLAN MCCOLLUM

CONTEMPORARY ART MUSEUM  
UNIVERSITY OF SOUTH FLORIDA

MUSEUM OF SCIENCE AND INDUSTRY  
TAMPA, FLORIDA