Karina's crescendo

by

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INTRODUCTION

It is rare to find a city that is so proud and open about its diversity, sexuality, and history as New Orleans. The city is as real as the basic human urges, which gives it everlasting infamy. Some people call it a city full of sin and sinners but I call it a city full of everyday people who do not lie to themselves so they can sleep at night. Very few people could consider such a city home, but I did, and I had no plans to leave the city prematurely. That was until Hurricane Katrina intervened. The storm caused an unexpected shift in the lives of tens of thousands of people, and has had a profound effect on me personally. Unfortunately I lost everything I owned in the catastrophe, something that wreaked havoc on me psychologically. In some ways I feel as though a part of me was destroyed along with the city, and I am not sure if I will ever fully recover.

Looking back on it, I can also consider Katrina to be an unexpected gift. The hurricane has helped me see the world from a new vantage point. The storm helped me to realize what is important in my life, which has given me a new voice as an artist; a voice that not only has something to say, but also the wisdom and compassion that only a life changing experience can bring. This real life research has directly influenced the creation of the *"W" Making Machine* and the *New Orleans Community Music Machine*. After nearly three years, I have realized two important facts: 1) I am disappointed in our government and 2) people working together as a community is the best way to make positive change. Had the government, local and national, and the people of New Orleans

improved their cooperation and worked together during Hurricane Katrina, I believe things might not have gotten so bad during its wake.

My thesis sculptures are directly dependant on my life experience before, during and after Katrina. This event has changed not only the way I look at life, but also the way I create art. Prior to the hurricane, my artwork was much more formalist. I tried to let the natural beauty of the material take front seat and rarely dealt with the conceptual side. Post Katrina, I find political undertones in just about everything I create. The storm has opened my eyes to the fact that nothing is neutral and that politics surround everything we do in America. I now feel that as an artist, it is my job to express my opinions through my artwork. The opinions that I have formed in order to bring me to these conclusions may not be agreeable to everyone, but I believe in them deeply. These feelings have created the first sense of emotional certainty I have felt since the onset of Hurricane Katrina.

THE ARTWORK

"W" Making Machine

The creation of the *"W" Making Machine* sprang from the joining of two different inspirations. The conceptual inspiration for this sculpture came from the inability of the government to work toward the common good of its people. Formally, on the other hand, the *"W" Making Machine* started out more aesthetically pleasing than anything else. I had always wanted to make something that had very little function but a high aesthetic. Two major artistic influences on my work have been Arthur Ganson and Jean Tinguely. Both of these kinetic artists use found objects and mechanisms to activate their work, but the work seemingly has little use or function, a topic discussed later in this paper. Because of my recent life changes, I knew I wanted to make a political piece, so it did not take very long for me to bridge the gap between both ideas.

The *"W" Making Machine* (Photo 1) was my way of representing my political dissatisfaction. I decided to make a machine that would have the appearance of a fully operational factory that worked no matter how old and dilapidated it might seem. The dichotomy between the appearance of function and lack of actual function is very important to me in this piece. Although it appears to work, there is no real "purpose" or outcome, the sculpture is a metaphor for the workings of our state and federal government during Hurricane Katrina, especially in regards to FEMA and the lack of communication between the Mayor, Governor, and President.

It is important that a sense of irony comes across when people view this sculpture. Making a letter of the alphabet is absurd, especially when the machine assigned to making them does not actually work. One of the many definitions of the word irony is "the outcome of events contrary to what was, or might have been, expected." I point to this definition in the sculpture not only by my previous example, but also by using recognizable objects such as a backhoe, exhaust fan, and water tower, all of which have a very specific function. By stripping these forms of their function and placing them in an unexpected location, I have created an incongruity between expected function and actual function. Had I decided to create totally abstract forms instead, the feeling of irony would have been lost.

Metaphor and symbolism also play a big part in the *"W" Making Machine."* I chose to use recognizable objects that I consider comparable to the events that surrounded Hurricane Katrina. The dome shaped container is meant to represent the Superdome in New Orleans and the legs (Photo 2) are modeled after the crawfish that live in that particular region of the United States. The homemade harmonica inside the dome (Photo 3) is meant to represent the music upon which the city was built. I chose to hide it inside the dome in order to connect with all the different parts of the city that only a local would know about. The piece below the dome and between the legs of the sculpture is meant to represent my time in Iowa because it is modeled after a cow milking machine (Photo 2). The industrial black tubing is taken directly from an automobile's engine and represents the drive out of New Orleans. The factory is meant to represent the industrial part of the

city. New Orleans is one of the biggest port cities in the United States and there are dozens of shipping yards along the Mississippi River used to hold the containers taken off ships. The backhoe (Photo 4) is typically used in the construction or destruction of objects and is a metaphor for the destruction and recovery efforts that occurred in Hurricane Katrina's wake. The smoke stacks on the "factory" are intended to look as if they could spew chemicals into the air at any moment, much like many factories do in America. The water tower part of the sculpture (Photo 5) sits on an oilrig structure and reflects the direct connection of the Bush Administration to the oil industry. The water tower itself is actually used as a reliquary, which holds some debris I took from the city shortly after the storm. Even the granite the sculpture sits on is meant to imitate the water that surrounded the city once the levees broke in New Orleans. The "W" in the title is also a direct reference to George W. Bush. Every part of the sculpture has some sort of metaphor attached to it, even the scale of the piece. I made the sculpture small to emphasize how insignificant the people of New Orleans felt after Hurricane Katrina, myself included.

Although this piece is riddled with metaphor, it is my belief that the viewer can still appreciate it without all of this knowledge. The use of subtlety in this piece is also what makes it successful in my opinion.

New Orleans Community Music Machine

The *New Orleans Community Music Machine* is my direct response to Hurricane Katrina (Photos 6a & 6b). I wanted to create something that would move beyond traditional fine art and actually integrates the viewer into part of the works completion. After a couple of years of reflection and some deep thinking, I honestly feel that if people would have worked together from the onset of the storm, the situation might not have gotten so bad in New Orleans.

Although this piece is called the *New Orleans Community Music Machine*, sound is rather inconsequential to making this sculpture successful. Music is simply the vehicle I am using to introduce a larger idea. I feel it to be more important that four people work together to complete the idea, which will activate the sculpture as an art form. The whole point behind this sculptural work is to encourage the effectiveness of community. Without communities, I believe people would be unable to function. We as humans constantly rely on one another in order to make it through each day. In order for our lives to maintain balance, we rely on a whole web of people to do their jobs effectively. For example, tasks like renting a movie, buying groceries, and cooking a meal are dependent upon relying on other people, many of whom we have never even met before. The breach of contracts of simple things can affect our lives in a major way, such as someone not taking their role as an operator of a car seriously, or a person failing to restock the shelves in a convenient store. We depend on these anonymous people daily without thought or

question. My desire is for people to realize that without all four people coming together to operate this sculpture, it is nothing more than a bunch of old rusted metal.

There are four different stations that the viewers must encounter in order to operate this sculpture. Two of the stations require a person to pedal a stationary bike, which is attached to a squirrel cage fan (Photo 7 & 8), in order to make wind to power the organ pipes, attached to the *Music Machine*. Another person is required at a third station to pull cables attached to the organ pipes (Photo 9). The cables open valves, which in turn let the wind into each pipe in order to make a sound. A fourth person stands at a station that will operate a drum and cymbal by either stepping on a foot pedal or pulling on a cable, respectively (Photo 10). Three of the four stations-the two bikes and the organ pipe operator-are directly dependent upon each other in order to make them work properly. The faster the bike riders pedal, the more wind they create and the louder the pipes will sound when the operator opens the valves. The drum station of the sculpture represents those people who feel that they are independent and isolated without a community. They seem to go through their lives not depending on anyone but themselves, but in reality they are just as intertwined in society as the rest of us are. The drum will operate without the presence of others, but to what point and purpose? The noise created will eventually identify that person as someone who requires attention from others and hopefully realize that with the addition of others, the sound will be more complete.

Because art is constantly changing and evolving, I do not feel as though this sculpture is the exact answer I am looking for when it comes to my questions about community. On the contrary, I look at this sculpture as a source of inspiration for future works of art. It has taken me three years to realize exactly what I want to say with my art. Now that I have found my voice, I fully intend on letting it be heard. Interactive pieces not only bring people together, but they also transcend the traditional role of fine art. In the past, works of art were judged solely by their aesthetic quality: how "beautiful" an object or painting was. Interaction with a work of art was rarely considered, which is mirrored in our galleries and museums, where no one is allowed to touch a work of art. When an item is dubbed as "a work of art," it historically becomes something precious and vulnerable. Even items made from commonplace materials such as stone or metal are considered untouchable once put in this environment. My views are in contrast to this position. If the works were not meant to be touched, why would some artists spend hours working on surface texture? The eye can only suggest what something will feel like, but the sense of touch gives the viewer a whole new understanding of a work of art. This new experience is exactly what I want people to take with them when they participate with my work. Hurricane Katrina was the catalyst for me to reconfigure how I looked at life, and I would like to help others look at the world differently through interaction with my sculpture. In my opinion, we are in desperate need of transforming how we view and value art.

ARTISTIC INFLUENCES

I am not reinventing the wheel with my sculptures. The history of Kinetic Sculpture has been established by a number of respected artists, by many of whom I have been directly influenced, especially Arthur Ganson and Jean Tinguely. These two artists are able to captivate my attention unlike any others. Their uses of ingenious mechanisms are awe-inspiring not only because of how they are made, but also their function. Their seemingly complex structures usually culminate in very insignificant tasks, something I like to replicate in my work. The underlying themes of ambiguous emotion and psychological abstraction in both Ganson's and Tinguely's work have had a great impact on me as an artist as well. In order to see where my art making ideas and processes come from you need to look at my biggest influence, Arthur Ganson.

Arthur Ganson, the self proclaimed "gestural engineer" was born in Hartford, Connecticut, in 1955. Directly influenced by the comics of Rube Goldberg, and with no previous engineering exposure, Ganson started creating kinetic art at the University of New Hampshire in 1975.[1] In 1982, Arthur Ganson created a sculpture for the World Sculpture Racing Society, an event held annually in Cambridge, Massachusetts. His piece, *Faster*, has directly influenced my artwork. It is one of the rare examples of a sculpture that truly interacts with its audience, and accomplishes the goal of kinetic

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[1] Martha Davidson, *Metaphysics in Motion: Arthur Ganson*, http://invention.smithsonian.org/centerpieces/ilives/ganson/ganson.html (December 2007).

artists by completely removing the distance between art and life.[2] The sculpture consists of a plastic hand, a pen with index cards, a series of gears and axles, and a cart with bicycle wheels. When the viewer pushes the cart, the axle in the wheels spins a series of oddly shaped cams, which are attached to the plastic hand and makes it write the word "faster" in cursive on the index cards. The faster the person pushes the cart, the faster the cart demands to be pushed. Making the viewer an integral part of a sculptures completion is mirrored in my *Community Music Machine*.

One of the main concerns for Ganson is to describe real, and not simulated, motion in his work, an attribute I strive for in my work. Through his research of mechanics, he has been able to create realistic interpretations of naturally occurring phenomena, like wind or water, using simple found objects or hand made gear systems made out of clothes hangers. His work has been described as gestural, humorous, evocative, and introspective.[3] These are the very ideas I would like to convey in my new work. Many of Ganson's works elicit human emotions such as pity, empathy, sadness, or glee.[4] Ganson feels that an important aspect in his work is what the viewer brings to it. "When making a sculpture, it's always a challenge to say enough but not say too much, to coax with some kind of recognizable bait, then leave the viewer to draw his or her own

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[2] Ann Wilson Lloyd, "Arthur Ganson and His Elegant Mischief Machines," *Sculpture*, (October 1998): 12-13.
[3] Davidson
[4] Lloyd: 12

conclusions and thereby find personal meaning."[5] In his work *Machine with Wishbone*, 1988, Ganson enables a chicken wishbone to walk by creating a complex mechanical system that is attached to it. As the bone moves, it drags the machine behind it. Depending on how one views this machine, it delivers different messages. If viewed through the eyes of a child, the machine may seem whimsical as the bow legged wishbone ambles across the floor. If viewed with the perspective of irony, it can be seen as a sort of metaphor alluding to our industrial society and how we seem to be slaves in a never ending struggle to break free from the very instrument that drives us. It is all a matter of perspective when looking at Ganson's work. The ideas of incorporating not only the viewers' physical presence but also their emotions are something I try to accomplish in my works as well.

The idea behind Ganson's piece *Machine with Roller Chain*, 1996, directly influenced my *"W" Making Machine*. In it, he uses an ordinary bicycle chain and small motor to make an ever-mutating sculpture. As the chain is run through the motor, it is constantly pushing itself out of the way to make room for the rest of the chain that is soon to follow. The result is continual permeations of positive and negative spaces. Also, each time the chain passes through the motor, it undergoes more subtle changes as well. Each little ball on the chain is being continuously rubbed, which alters its metallic sheen. This machine subtly ridicules society in that it looks like it is in constant change, but it actually performing the same act over and over again. Its subtle irony in part

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[5] *Gestural Engineer: The Sculpture of Arthur Ganson*, http://web.mit.edu/museum/exhibitions/ganson/html (December 2007).

inspired my own *"W" Making Machine*. A cross between a mechanical engineer and a choreographer, Arthur Ganson has changed the way I look at three-dimensional art. His combination of metaphor, movement, and audience participation give his sculptures a unique vitality and sensitivity I have never before seen, and has influenced me more than any other artist.

Another kinetic artist who has helped inspire my body of work is Jean Tinguely. Tinguely was known for his large-scale kinetic sculptures resembling modern machines making use of complicated wheel and gear systems made almost entirely out of found objects. But, unlike most modern machines, his creations seem to use the maximum amount of energy while producing a minimum amount of work.[6] In other words, Tinguely is famous for glorifying imperfection in his monster-like machines in an attempt to satirize the amount of overproduction of material goods created by a highly industrialized society.[7] I was really inspired by how successful Tinguely's use of machines translated into an abstract metaphor concerning larger social problems. This subtlety appealed to me because not only did I want to make a sculpture that meant something to me politically but I also wanted the work to communicate to the viewer on a purely aesthetic level. The use of found objects and gear systems can be found on both the *"W" Making Machine* and the *New Orleans Community Music Machine*.

In his sculptural "happening" *Homage to New York*, Tinguely created a series of timers which would go off every three minutes that would cause a chain reaction leading

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[6] Guy Brett, *Kinetic Art*, (London: Studio-Vista, 1968), p. 37.
[7] Brett, 37

to its overall destruction.[8] For twenty-seven minutes, an audience of two hundred and fifty people watched as the machine consumed itself in fire and smoke until at last the piece no longer existed. The destruction of this piece spoke to me because of what I witnessed in the aftermath of Hurricane Katrina. But, rather than creating something that furthered destruction, I wanted to turn the idea on its head and create a piece that encouraged a solution of a natural disaster through community efforts and viewer participation.

Another influential kinetic artist has been Alexander Calder. Calder was fascinated with the circus as a child, and while living in Paris, he created articulating toys using found objects including wire, string, rubber, and cloth, naming it *Cirque Calder*.[9] These simple creations would perform a multitude of different playful functions, all modeled after different circus performers and performances. Because the toys could not move on their own accord, Calder had to push, pull, or manipulate the creations using his own energy. Because the artist becomes essential in the sculpture's activation, the space between the real and un-real is completely eliminated while the artist is interacting with the piece, a theme that is apparent in my work. More important than that is the direct influence Calder has had on the scale of the *"W" Making Machine."* Calder's *Cirque* could easily fit into a suitcase and be toted around with him while he traveled. Because I was trained as a stone carver, much of my pre-Katrina work had to be moved using a fork-lift, so I

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[8] Brett, 37
[9] Jacob Baal-Yeshiva, *Alexander Calder*, (Koln: Taschen, 2002).

was obviously envious of anyone who didn't have enormous shipping costs when transporting a work.

While the previous artists have influenced me through research and art history classes, a fourth artist named STRETCH has directly influenced me and my art making through personal contact and working with him. He is the person I will give credit to for helping me bridge the gap between the idea of community and applying it to my art. STRETCH has his hand in almost everything in the Crossroads District in Kansas City, Missouri. Besides his gallery and workspace he also owns a restaurant there, sits on the city council, fixes up abandoned properties and rents them out, and has recently added a large concert arena to the back area of his shop where local artists can come and play their music. He also made a number of appearances on the television program *Extreme Make Over: Home Edition* where he would plug Kansas City and his community. He would even go so far as to hire people off the streets to do odd jobs for him so they could have a little money in their pockets. Whenever STRETCH needed something he couldn't make, he would always buy local to help support the local economy. Therefore, he is the essence of a community artist.

Previously, I had not thought much about supporting local businesses, but instead would simply try to get what I needed at the cheapest price, even if I had to order it from another country. As soon as STRETCH's idea was introduced to me, it made perfect sense. Community is now a major theme in my new works of art because of STRETCH's example.

MECHANICAL AND MUSICAL INFLUENCE

Rather than drawing inspiration from art found in galleries and museums, I am just as, if not more, influenced by feats of engineering and architecture. To me, these are reminders of not only ingenuity, but also hard physical labor. When I look at industrial objects, I can appreciate the design, but I am more drawn to the processes used in the creation and execution of that particular object, including the workers involved. As an example, I have an affinity for rivets found in architectural structures, specifically steel bridges. Rather than being drawn to their particular function I am more appreciative and interested in how they were put to use. In the past, it took a team of three or four people to heat the rivet, throw the rivet to the place needed, hold the rivet, and finally pound the rivet into place. These workers can easily be overlooked when viewing a work of art.

An important component in my body of work, particularly in the *New Orleans Community Music Machine*, is to pursue all facets of community, not only in direct viewer interaction but also in the creation of the work. Part of my process of creation manifested itself through seeking advice from local business people who specialize in a very specific niche, ranging from engineering to bicycle repair.

Dobson Organ Company in Lake City, Iowa, played a key role in the construction and execution of the *New Orleans Community Music Machine*. I was first introduced to Dobson Oran Company while on a field trip for an advanced woods and metals class at Iowa State University. We were shown around the various parts of the building including where the organs are assembled, where the bellows are constructed, and where the pipes

were made. I had all ready begun to formulate plans for a large scale thesis sculpture relating directly to New Orleans and its rich musical history, and because the region has such a strong Catholic influence, I thought the addition of an organ or organ pipes would be appropriate.

After finalizing the plans behind my Community Music Machine, I made a return visit to Dobson Organ Company and met with Len Dobson about my idea for including organ pipes on a sculpture. He was more than willing to discuss how pipes worked, a subject I had no experience with previously. Pipes are relatively simple mechanisms that work by blowing air in one end where a small chamber fills with the wind. The wind is compressed through a small gap in the cap of the pipe and blown across a beveled piece of wood directly across from it. The wind is split by the bevel creating a vibration, which is reverberated through a long hollow tube to increase its pitch (Photo 11 and Figure 1). He showed me examples of different styles of pipes including a standard metal pipe, a trumpet pipe, and a wooden pipe. After a discussion about financial concerns regarding the cost of making metal pipes, Mr. Dobson explained to me how pipes could also be made from less expensive poplar hardwood. He went on to give me a handout containing detailed instructions on how to construct wooden pipes. The handout included valuable information about the thickness of wood for each size pipe to the size of the opening in its mouth to ensure optimum performance (Figures 2 & 3). Without this information, I would not have been able to make pipes that worked properly.

The next problem I encountered which required the assistance of a specialty business was how to generate wind to make the pipes sound. I visited Lennox Heating and Air Conditioning in Ames, Iowa, to ask if they had any squirrel cage fans in old heaters they would be willing to donate. A squirrel cage fan is designed specifically for creating large amounts of air and is usually found in heaters or air conditioners. One of the managers, Jerry, was eager to help after finding out they would be used in a sculpture based around community involvement. Jerry donated two small fans at first, but as construction of the sculpture ensued, I soon found out that I would be needing larger fans in order to make the pipes sound. Jerry again donated two larger fans, both of which are a part of the *Music Machine*.

While constructing this sculpture, I consulted with two civil engineers, Michael Cushing and Ryan Eisele, to discuss increasing the efficiency of airflow from the squirrel cage fans to the organ pipes. They encouraged me to think of air just like water; it always takes the path of least resistance and any leaks could decrease productivity exponentially. Both engineers also advised me to get rid of any hard angles that the air might encounter on the way to the pipe, so I replaced all the PVC tubing with a more gentle curving air hose and plugged all leaks. An increase in productivity was immediately noticeable.

Because I wanted direct audience participation with the sculpture, I thought that using a bicycle would be the most effect means to power the squirrel cage fans in addition to creating the most powerful source of non-motorized wind. I had seen examples of people rigging bicycles up to power washing machines and blenders, so I knew the

premise was sound. After a brief search, I found two bicycles on the side of the road that would be suitable to use in the sculpture. Again I found myself faced with the problem of having an idea but not the knowledge necessary to put it into action. So, I visited Skunk River Cycles in Ames, IA, where I was introduced to owner, Ron Ritz. Ron explained to me that a bicycle's tire will spin faster if the chain is placed on the large sprocket of the foot crank and attached to the small sprocket of the wheels axel. He then went on to explain to me that if I needed to increase productivity further, I could attach a gear train to the bicycles. I found out that a gear train is the addition of another set of large and small sprockets to the previous set of large and small sprockets (Figure 4). The additional large sprocket shares the same axel as the first small sprocket, where another chain is attached to the second small sprocket. The axel of the second small sprocket is attached to the squirrel cage fan and makes it turn. The increase in productivity is directly proportional to the gear ratio of each large and small sprocket. Ron also donated eight sprocket sets, thirteen broken bicycle frames, and a bag of various bicycle chain.

After installing the bicycle sprockets, I became aware of their inability to power the squirrel cage fans because of their size. The ratio of small to large sprocket size was not great enough, so I turned to the internet for help. After only a brief Google search, I found a website that contained information about gear ratios and gear trains written in a language I could understand having no previous engineering education. The website www.howstuffworks.com took me on a step-by-step explanation of how gears work, understanding the concept of the gear ratio, and finally about gear trains. (Figure 5) This

information reiterated my feelings about the bicycle sprockets and reinforced the fact that larger sprockets were necessary to increase the gear ratio needed to power the squirrel cage fans at optimum levels.

Hokel's, the machine shop in Ames, IA, had been advising me on the proper hardware to use on various mechanisms of the *Community Music Machine*, such as the addition of the pillow block bearings. These bearings reduce the amount of friction while the axel turns, which will increase productivity to the fans. I also found weld-able sprockets with the help of the people at Hokel's. These sprockets have exchangeable inserts in their center, which adjust according to the size of the axel, and are machine lathed to be perfectly round. Without the addition of these special sprockets, the squirrel cage fans would not spin at the proper speed necessary to power the pipes.

PROCESS

"W" Making Machine

The vast majority of the "W" Making Machine is made from yellow brass, an alloy of copper and zinc. A very workable metal, it is conducive to withstanding a great deal of manipulation, and in my opinion, is the most cost effective metal with the best aesthetic quality. I crafted every single component of the piece, aside from the screws used for cold joining and the gears used to spin the harmonica. Each of these components involved very complicated processes, both in design and execution. For example, there are three different types of solder used depending upon the order of construction. Solder is an alloy of silver and brass used in the process of bonding two pieces of metal together by melting it at a connection point and allowed to cool. Each type has a different melting point, each above eleven hundred degrees Fahrenheit, and is used in different stages of construction. The first metal joined receives the solder with the highest melting point and the progressive metal additions receive the solder with the lowest melting point. This ensures that excess heat will not compromise the joint later in the construction process.

I needed to learn a body of metalsmithing techniques necessary for the construction of the various components. For instance, to create the two domical structures used as a case for the harmonica I utilized a technique called raising, a process that involves compressing metal upon itself to achieve a volumetric, often bowl like form. I began by cutting a flat piece of metal into a circle, with its center point pre-marked. The

size of the circle is determined by adding the height plus the diameter of the desired finished vessel. The circle is annealed, or heated to remove any work hardening it might contain as a result of the metal processing, using an acetylene torch. Concentric circles are drawn at one-quarter inch intervals from the piece of metals center point, resulting in something similar to a topographical map, and are used as an aiming guide for the mallet blows used to shape it. The flat piece of metal is then domed slightly by sinking it into a depression carved out of a wooden stump, which will ease the start of the raising process. A nylon mallet is used in order to keep from thinning the metal, which will result in either a tear or weak spots. Holding the domed metal with my left hand and the hammer with my right, I would strike the metal along the marked circle lines against a stake starting in the center, turning the metal disc slowly with my left hand and keeping the angle consistent where the metal touches the stake. After one complete rotation, or a pass, I would move out one ring and start another pass. Once the rings have been hit to the very edge of the metal, it is considered a full coursing. After a coursing, the metal would be re-annealed in order to remove the work hardening, which occurred while being struck against the stake. Work hardening is the phenomenon that occurs when a piece of metal is compressed or bent back and forth enough times until it becomes stiff and refuses to bend any more and eventually breaks. If a piece of metal is not annealed when work hardening occurs, the metal will then crack, something that is extremely difficult to repair. Once annealed and remarked, the metal is returned to the stake for another coursing. The extremity of the angle at which it is being hit against the stake and the number of

coursings will determine curvature of the dome. For example, the bottom dome on the *"W" Making Machine* is more bowl like whereas the top is more conical. The reason for this is because each had a different number of coursings and they were held at different angles using different sized stakes. This is a very labor intensive process and each dome took between eight and twelve coursings of nine passes each.

Another technique includes scoring and bending the metal, an example of which can be seen in the angular sections of the factory and backhoe components of the sculpture. In this process the metal is scored in a straight line until seven eighths of the way through. It is then annealed to relieve any work hardening. After it has cooled, the metal is bent to form an angle. The angle is then soldered in order to strengthen it by healing the scored line.

Pattern making was another necessary technique needed when creating this sculpture. I drew patterns on paper first and attached them using tape to see if the desired shape would result without wasting metal. After finding the correct pattern, each individual piece needed to be cut out using a jeweler's hand saw or metal shear and either manipulated further by using a number of different metal forming stakes and hammers or soldered to another piece of metal to create hollow form constructions.

Using these techniques, it took me over a year to complete the *"W" Making Machine*. Although this sculpture is much smaller in scale than the *Community Music Machine*, it served as prototype due to the fact I would be making a large scale piece but assembling it in very much the same way.

The New Orleans Community Music Machine

The process behind the *Music Machine* varied a great deal from the processes used in the *"W" Making Machine*. While it too was a fabricated form, this sculpture is much larger in scale, emphasizes viewer interaction more, and requires many more moving parts. The aesthetic of the sculpture is based on one of decay and destruction. Many of the pieces of metal used are considered to be useless and of little value because of the amount of rust on them.

In another attempt to alter the way things are valued, and to make the *New Orleans Community Music Machine* truly dependent upon community, I collected the majority of the material through donation, or I found it the side of the road. I followed my path home after Hurricane Katrina and found people willing to donate unwanted scrap metal to be used in the construction of this sculpture from Louisiana, Mississippi, Missouri, and Iowa. Many of the pieces of metal were taken off a ship that sank in the Mississippi River during Hurricane Katrina. These extra connections to the storm that changed my life have meant a lot to me while creating this sculpture. I felt obligated to take the destruction and turn it into something usable again. This material's intended purpose, or life, was cut short during the storm, but it now has new use.

Other material used during this sculpture's creation was donated from people who felt it would be going to a good cause. Several owners of scrap yards, who usually profit on either its resale value or its worth as a recyclable product donated a lot of the material,

as well as people who just had extra metal laying around and wanted to get rid of it. I was very nervous about asking people to donate something of worth, especially with the high price of metal today. I was not sure what their responses might be. To my surprise, I had to do very little before most people were willing to donate. In advance of the trip intended to collect material, I had spent many hours researching salvage yards along Interstate 55, from Memphis to New Orleans, and had practiced a speech in which I would ask for only one or two pieces of usable steel from each business. In the end, however, the generosity and interest from the community was so great that I only visited ten places before I felt I had enough material to start construction on this machine.

The first step of the sculpture was the construction of the organ pipes. I had been given a handout with detailed instructions on exact measurements needed to make various size pipes. Each pipe contains exactly the same component parts, increased or decreased proportionally to vary a pipe's pitch. The majority of each pipe is constructed of poplar, a hardwood native to the United States with a greenish tint, something recommended to me by the Dobson Organ Company. Each pipe consists of four sides, three of which are similar, and one that is different. The unique side becomes the face of the pipe, which incorporates a beveled edge and stands shorter than the rest. The air is split as it is forced out of the cap and blown across the beveled edge creating a sound for each pipe. The sound is amplified as it vibrates through the hollow confines of the chamber resulting in an audible noise. The length of each pipe is related to its pitch, so the longer the pipe the lower the pitch, and the shorter the pipe the higher its pitch. The

cap of each pipe is made using cherry wood. Cherry is used because it is a much harder wood than poplar, which means it is less likely to move if humidity is introduced in the environment where the pipes are resting. It is important that the cap does not move because it contains a small groove in the top in which the air escape the pipe, and any unnecessary variation will result in the pipes inability to function.

The air chamber upon which the organ pipes sit is also made of wood. To ensure proper function, it is made from plywood in order to restrict the normal expansion and contraction of wood to an absolute minimum. This box is used to house the wind created by the squirrel cage fans and diverts it through carefully sized hole adapted to fit each individual pipe. Inside this air chamber there are fifteen blocks of wood, eight of which are glued into place and run the entire width of the box. These are used as separators for the other seven blocks (Photo 12). All fifteen blocks are three quarters of an inch in height while the chamber is only one inch tall. The addition of another piece of one eighth of an inch plywood is placed on top of these blocks, acting as a barrier to keep the blocks from falling out of line when turned upside down. This resulting one eighth of an inch opening spans the length of the chamber and creates a pocket for the air to move once inside. The seven blocks that are not glued down are identical except for the placement of the air hole. This is dependant upon where the pipes are located on the top of the box. Each individual block has a spring attached to it on one end, using small eyehole screws, and a cable attached to it on the other end. There is a hole drilled in each block and inch behind a hole drilled in the tip of the box. When the cable is pulled, the hole in the block

lines up with the hole in the box and air is allowed to escape. Because they are spring loaded, they are snapped back into the closed position when the cable is released. Each cable is attached to a pulley system, which is subsequently attached to the mechanism described earlier in this paper that plays the organ pipes.

During the metal fabrication of this sculpture I was limited to a chop saw, grinder, electric hand drill, MIG welder, and plasma cutter. I attached the majority of the individual components using a two hundred and twenty volt wire feed MIG welder. In order to weld rusted metal, the area being welded along with an area for the electrical current to be attached must be cleaned off until the rust is gone and bare metal is revealed. If rust remains, it will pollute the weld making it less strong and more likely to break if stress is applied. It is important the electric current touches bare metal because when the copper wire emitted from the welder touches the bare metal being welded, it completes the circuit and causes the wire to heat rapidly, bonding the two pieces together.

Once each component was welded together, I drilled holes in the metal and bolted them together using three eighth inch bolts of varying sizes, lock washers, and nuts. This type of joinery is referred to as "cold joinery" because no heat was used to attach the two pieces of metal. Through the use of nuts and bolts, the joinery becomes temporary whereas other types of cold joining are more permanent, such as the rivets mentioned previously. This decision allows for ease of assembly, disassembly, and transport. The largest component in this sculpture is the drum station's stand, previously an incline press weight lifting bench, which is still light enough to be manipulated by a single

person. Another large piece of the sculpture that is cold joined through the use of a suspension system is the drum. It is actually an old bathtub I found on the side of the road in New Orleans. I drilled two holes six inches apart from each other on both ends of the bathtub. I then threaded cable through the holes and tied them to each crossbar directly above them, letting it hang freely.

One bicycle has a series of two gear trains attached to it while the second has a more complex series of three gear trains. An extra gear train was added to one bicycle because it is powering a smaller squirrel cage fan and needed the increased productivity to create enough wind to power the organ pipes.

The continual evolution of this piece and its processes became apparent when I made a return trip to Dobson Organ Company two days before the sculptures installation. The addition of a piece of cardboard to the beveled edge of each pipe was suggested by John Streufert, the Voicer at Dobson, in order to decrease the distance necessary to split the wind and subsequently increase the quality of sound emitted by each pipe in the case of lower than optimum air pressure. This type of out-of-the-box thinking and troubleshooting by others and myself has been paramount every step of the way while creating the *New Orleans Community Music Machine*.

CONCLUSION

When I came to Iowa State, I wanted to make work that would help me cope with the aftermath of Hurricane Katrina. I was looking for closure from what I had just been through. The emotional and psychological toll that my mind and body endured after Katrina left me questioning everything I had ever learned. The world seemed to be flipped on its axis and I felt as though I was free falling out of control. The ease at which everything I owned was destroyed left me sick to my stomach at times. The total lack of respect for human life at the hands of the United States government during Hurricane Katrina is something I will never forget. It has taken me three years to get my head around much of what has happened, let alone form an opinion on how I feel. Having a creative outlet such as art making has allowed me to process these emotions and respond to them accordingly. Hurricane Katrina was the catalyst that sparked a new direction and way of thinking in my artwork. Because of how many situations were handled before, during, and after the hurricane, the idea of people working together is not only important but also desperately needed. Due to the current conditions in our society, I feel that people working together toward a common goal is an appropriate solution to many problems we face as a nation. With that in mind, I look forward to delving into this vast arena of inspiration for future works

APPENDIX

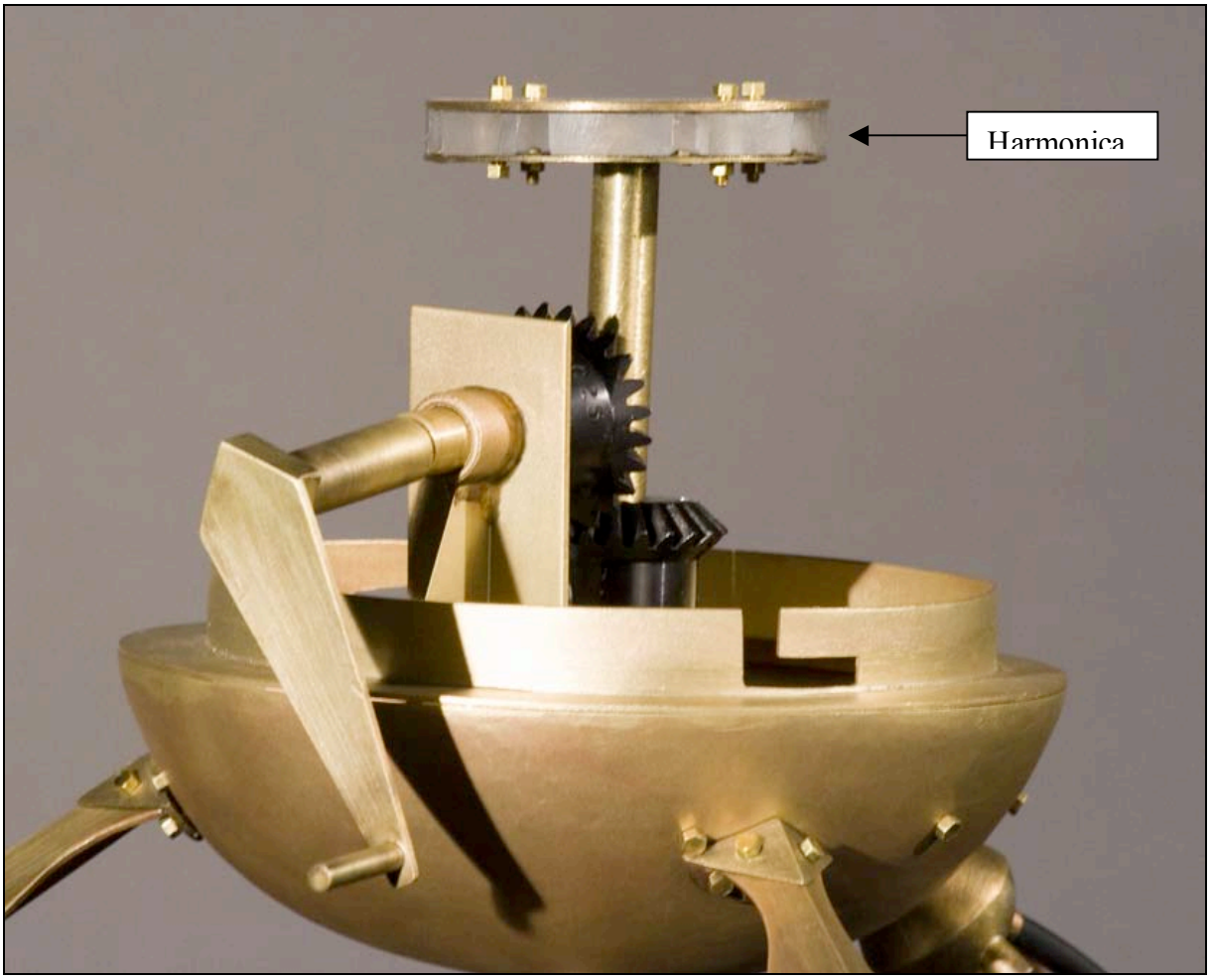
Photo 1

"W" Making Machine
Brass and rubber tubing
2006-07

6**Photo 2**

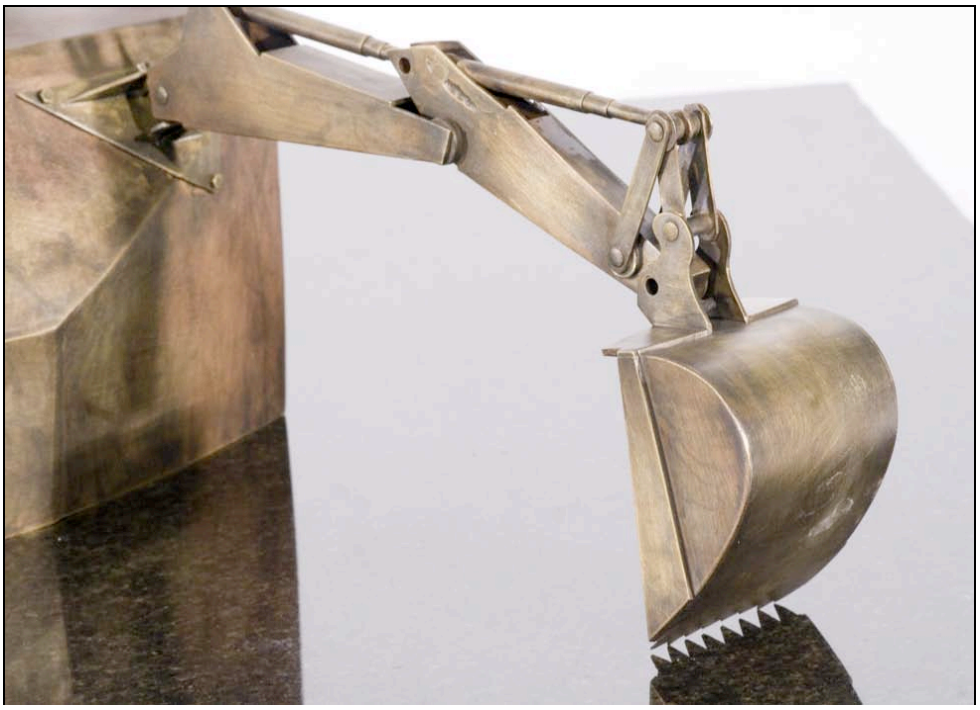
"W" Making Machine by Michael Stanley, 2007. Images of legs modeled after crawfish (front) and item modeled from a cow milking machine (back).

Photo 3



"W" Making Machine by Michael Stanley, 2007. Image of harmonica used as a metaphor in reference to the music of New Orleans.

Photo 4

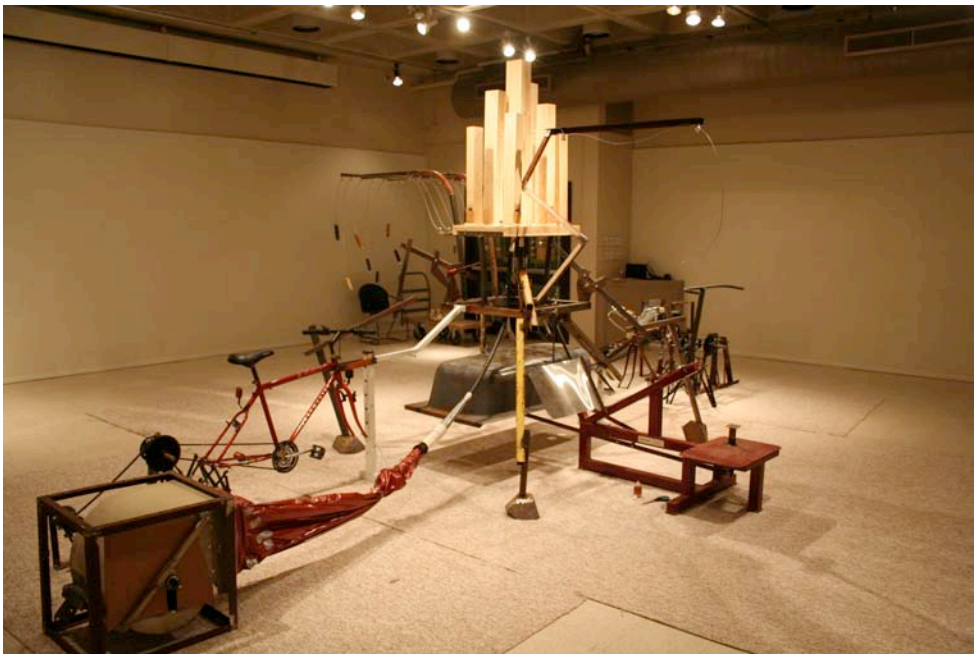


"W" Making Machine by Michael Stanley, 2007. Image of articulating backhoe representing the destruction caused by Hurricane Katrina.

Figure 5

"W" Making Machine by Michael Stanley, 2007. Image of water tower used as a reliquary holding debris from Hurricane Katrina.

Photo 6a



New Orleans Community Music Machine
Steel, wood, rubber, vinyl, chain, cable
2008

Photo 6b

New Orleans Community Music Machine by Michael Stanley, 2008.

Photo 7

New Orleans Community Music Machine by Michael Stanley, 2008.
Image of a bicycle station utilizing three gear trains to power a squirrel cage fan

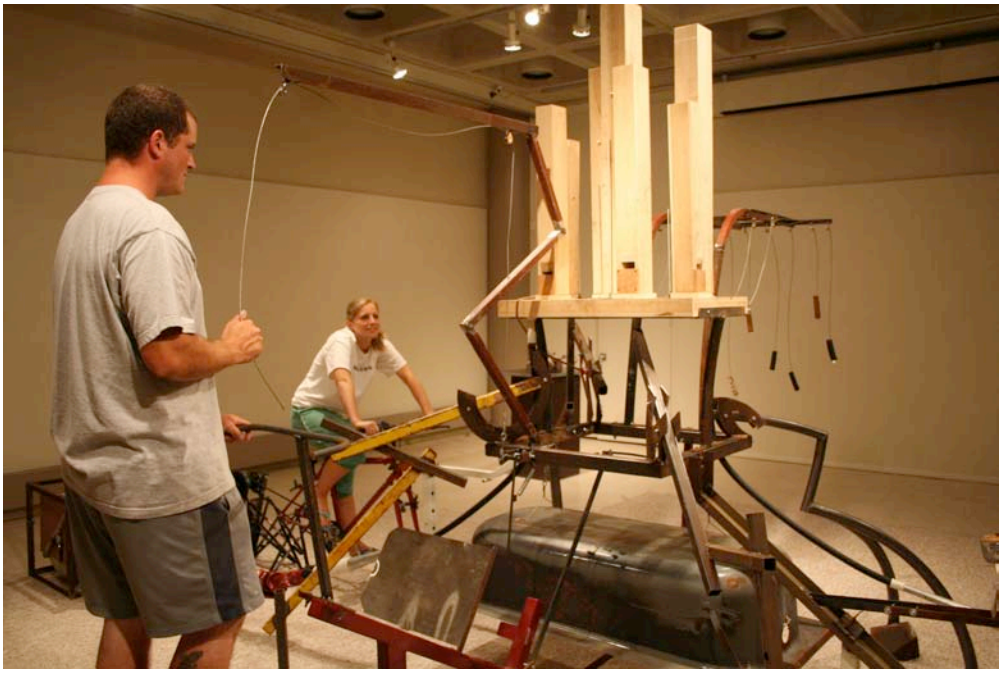
Photo 8

New Orleans Community Music Machine by Michael Stanley, 2008.
Detail of a bicycle station utilizing two gear trains to power a squirrel cage fan

Photo 9

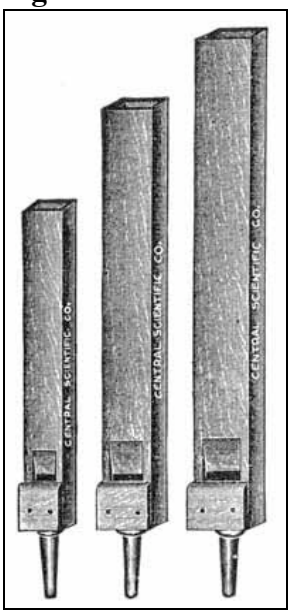
New Orleans Community Music Machine by Michael Stanley, 2008.
Image of organ operator station and one bicycle station in use

Photo 10



New Orleans Community Music Machine by Michael Stanley, 2008.
Image of drum station and one bicycle station in use

Figure 1

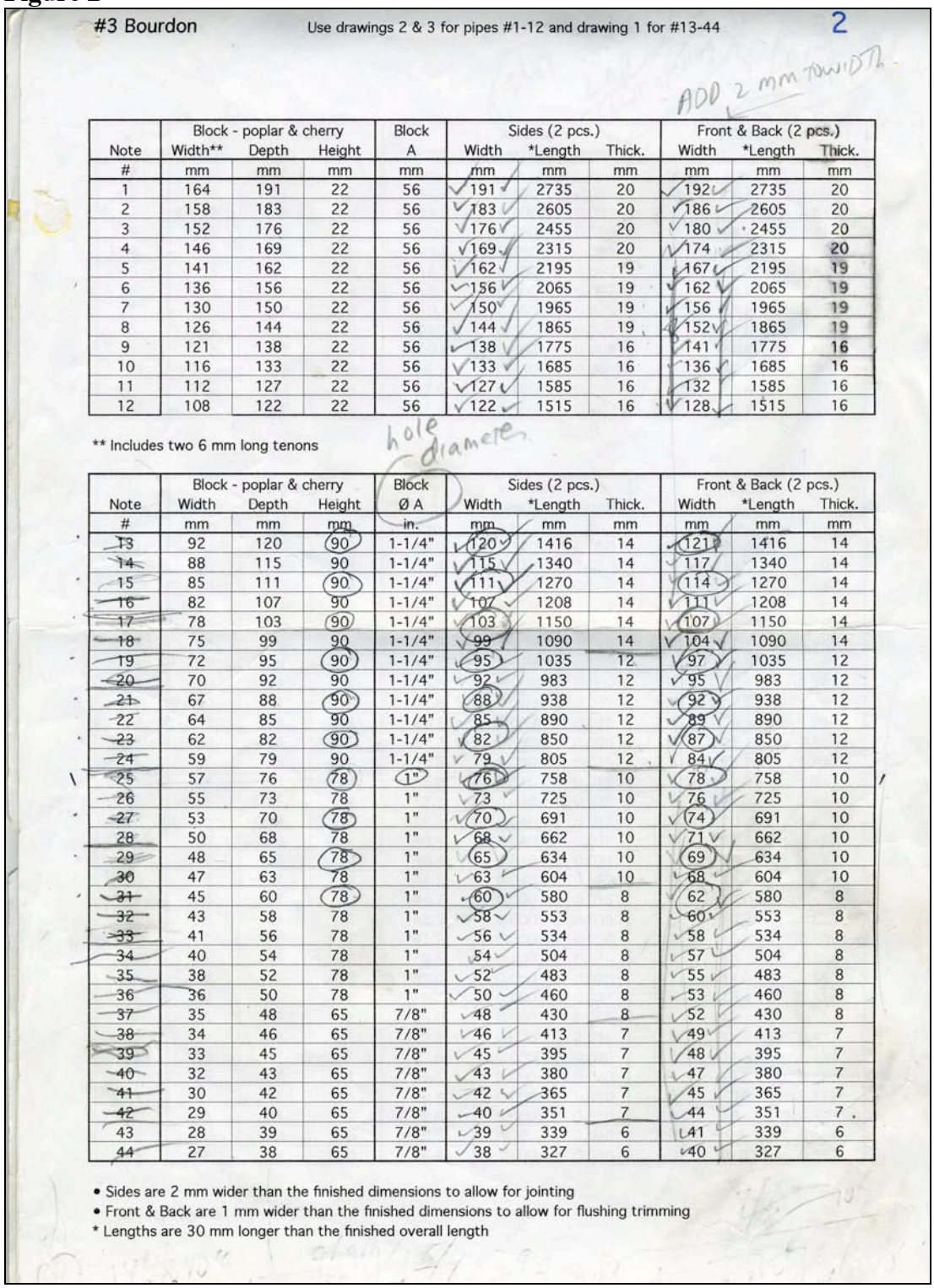


Wooden organ pipes
http://www.gutenberg.org/files/16593/16593-h/images/image_188.jpg

Photo 12

New Orleans Community Music Machine by Michael Stanley, 2008.
Image of organ pipes attached to the sculpture

Figure 2



#3 Bourdon — Use drawings 2 & 3 for pipes #1-12 and drawing 1 for #13-44 — 2

ADD 2 mm TO WIDTH

Note	Block - poplar & cherry Width**	Depth	Height	Block A	Sides (2 pcs.) Width	*Length	Thick.	Front & Back (2 pcs.) Width	*Length	Thick.
#	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1	164	191	22	56	191	2735	20	192	2735	20
2	158	183	22	56	183	2605	20	186	2605	20
3	152	176	22	56	176	2455	20	180	2455	20
4	146	169	22	56	169	2315	20	174	2315	20
5	141	162	22	56	162	2195	19	167	2195	19
6	136	156	22	56	156	2065	19	162	2065	19
7	130	150	22	56	150	1965	19	156	1965	19
8	126	144	22	56	144	1865	19	152	1865	19
9	121	138	22	56	138	1775	16	141	1775	16
10	116	133	22	56	133	1685	16	136	1685	16
11	112	127	22	56	127	1585	16	132	1585	16
12	108	122	22	56	122	1515	16	128	1515	16

** Includes two 6 mm long tenons

hole diameter

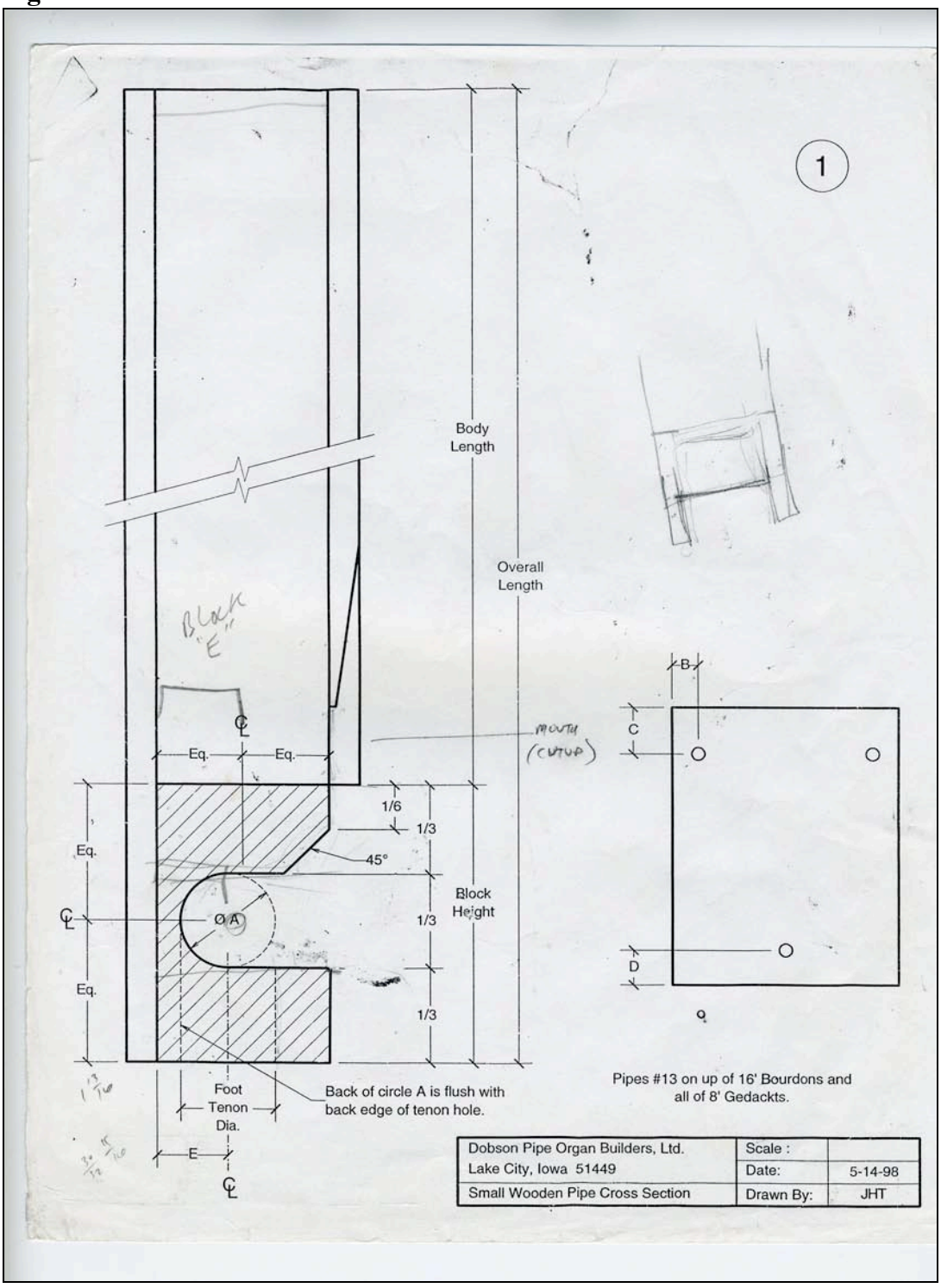
Note	Block - poplar & cherry Width	Depth	Height	Block Ø A	Sides (2 pcs.) Width	*Length	Thick.	Front & Back (2 pcs.) Width	*Length	Thick.
#	mm	mm	mm	in.	mm	mm	mm	mm	mm	mm
13	92	120	90	1-1/4"	120	1416	14	121	1416	14
14	88	115	90	1-1/4"	115	1340	14	117	1340	14
15	85	111	90	1-1/4"	111	1270	14	114	1270	14
16	82	107	90	1-1/4"	107	1208	14	111	1208	14
17	78	103	90	1-1/4"	103	1150	14	107	1150	14
18	75	99	90	1-1/4"	99	1090	14	104	1090	14
19	72	95	90	1-1/4"	95	1035	12	97	1035	12
20	70	92	90	1-1/4"	92	983	12	95	983	12
21	67	88	90	1-1/4"	88	938	12	92	938	12
22	64	85	90	1-1/4"	85	890	12	89	890	12
23	62	82	90	1-1/4"	82	850	12	87	850	12
24	59	79	90	1-1/4"	79	805	12	84	805	12
25	57	76	78	1"	76	758	10	78	758	10
26	55	73	78	1"	73	725	10	76	725	10
27	53	70	78	1"	70	691	10	74	691	10
28	50	68	78	1"	68	662	10	71	662	10
29	48	65	78	1"	65	634	10	69	634	10
30	47	63	78	1"	63	604	10	68	604	10
31	45	60	78	1"	60	580	8	62	580	8
32	43	58	78	1"	58	553	8	60	553	8
33	41	56	78	1"	56	534	8	58	534	8
34	40	54	78	1"	54	504	8	57	504	8
35	38	52	78	1"	52	483	8	55	483	8
36	36	50	78	1"	50	460	8	53	460	8
37	35	48	65	7/8"	48	430	8	52	430	8
38	34	46	65	7/8"	46	413	7	49	413	7
39	33	45	65	7/8"	45	395	7	48	395	7
40	32	43	65	7/8"	43	380	7	47	380	7
41	30	42	65	7/8"	42	365	7	45	365	7
42	29	40	65	7/8"	40	351	7	44	351	7
43	28	39	65	7/8"	39	339	6	41	339	6
44	27	38	65	7/8"	38	327	6	40	327	6

- Sides are 2 mm wider than the finished dimensions to allow for jointing
- Front & Back are 1 mm wider than the finished dimensions to allow for flushing trimming

* Lengths are 30 mm longer than the finished overall length

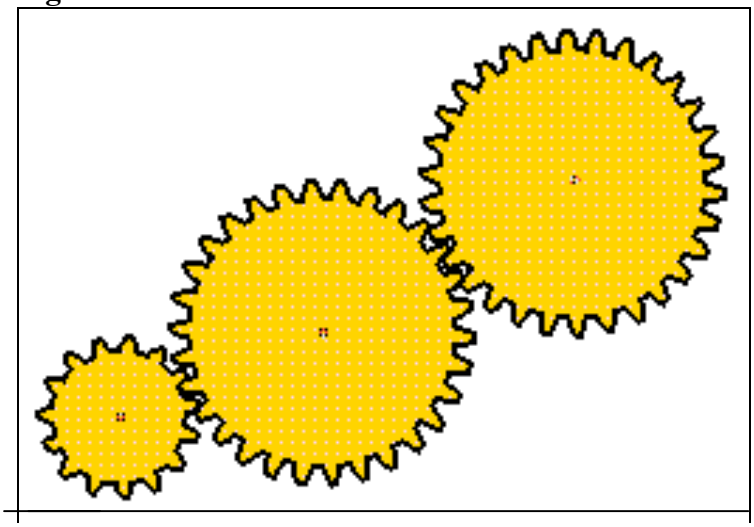
Organ pipe cut list donated by Dobson Organ Company showing organ pipe lengths used for the *New Orleans Community Music Machine*

Figure 3



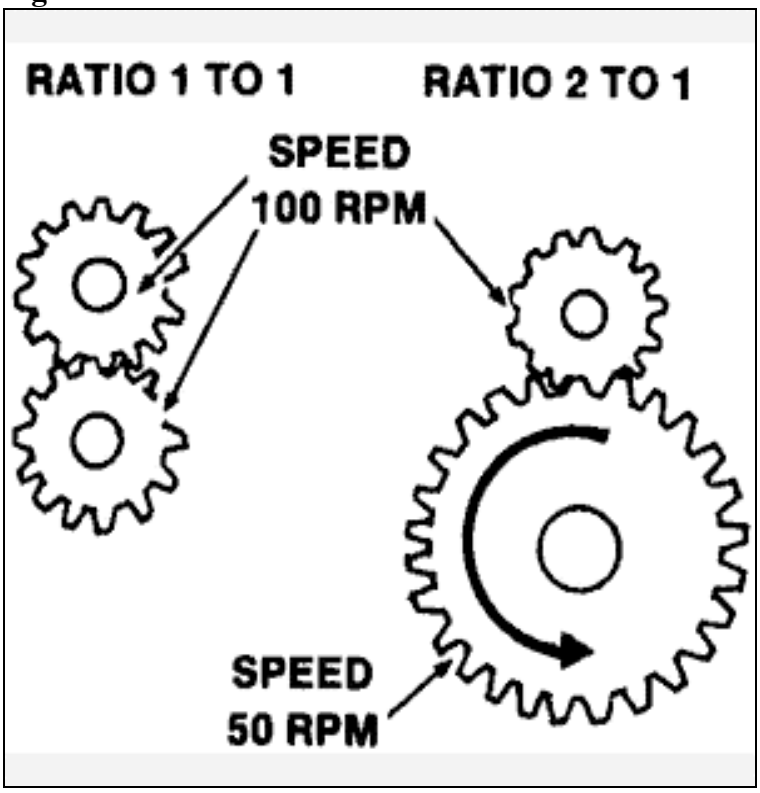
Parts list donated by Dobson Organ Company used as directions for organ pipe construction

Figure 4



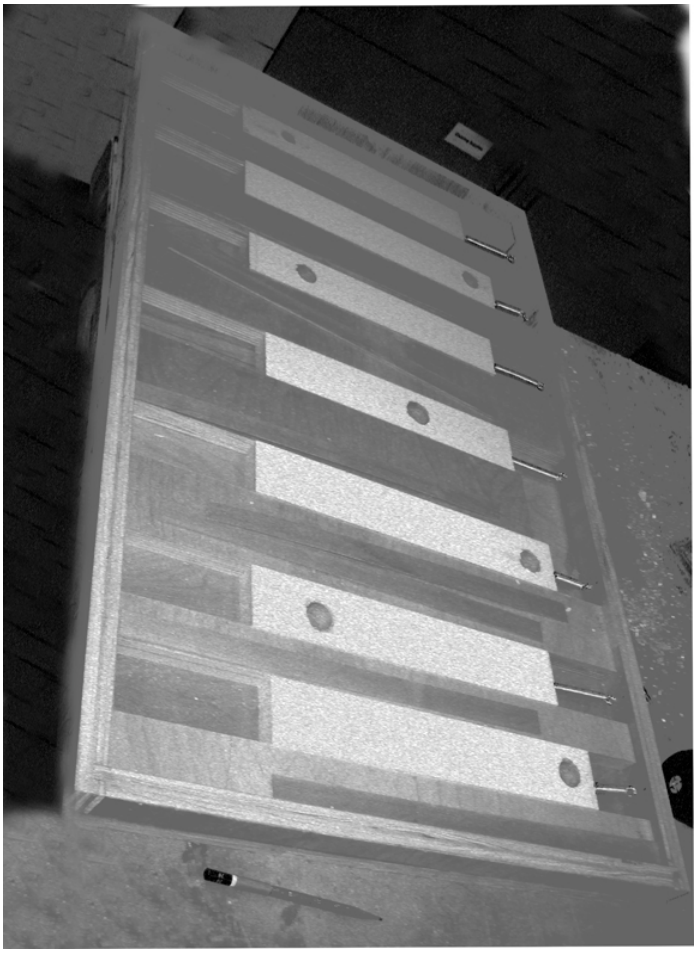
Example of a gear train
http://www.cs.cmu.edu/~rapidproto/mechanisms/figures/gear.train.gif

Figure 5



Example of gear ratios used to increase bicycle productivity
http://www.procarcare.com/images/shar/encyclopedia/8852JG06.gif

Photo 12



Detail of spring loaded blocks with holes drilled. Used to release air into organ pipes.

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