Gravity and heat as tools for shaping glass

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GRAVITY AND HEAT AS TOOLS FOR SHAPING GLASS.

By

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1- INTRODUCTION.

2- TOOLS, MATERIALS AND CIRCUMSTANCES.

3- MY OWN CIRCUMSTANCES.

4- ON GLASS, HEAT AND GRAVITY.

5- CONCLUSION: THE PIECES.
"... I will discuss here "Art, whether I like it or not. Made by "Artists", most of whom have studied in art schools and aspired to the limited fame and fortune available to artists in a society that pays a lot of lip service to "creativity" but has little actual respect for art as an integral social function, as a "profession" or work, much less a necessity."

Lucy R. Lippard.
INTRODUCTION:

I am an object maker, an artist; as I work I think about process, materials, tools and their relationship with life. Everything is connected and forms an unbreakable chain, thus in my work my upbringing, my attitudes, my character and my opinions, my virtues and my defects are all one.

I have read parts of The Bible, The Popol Vuh (the sacred book of the Mayan Quiches), Herman Hess, Gabriel Garcia Marques, Gilal Kalil Gibran, Jorge Luis Borges, Huan Po, Philip Kapleau and Lucy R. Lippard; I admire the lives and the works of Picasso, Hamada, Bernard Leach and Michael Cardew and the works of Dale Chahuli, Harvey Littleton Fritz Dreisbach and Ben Moore. All of them have influenced me and form part of the background knowledge I now have; their ideas are now my ideas, because my own flesh and bones have experienced the reality of their statements and now form part of the point of view I have.

Picasso once said: "I do not have to explain my art because if I did I would not have to make it". This statement was valid in a time when there was a cultural consensus about visual impulses and symbolism but "the symbolic content of abstraction today is subterranean, inaccessible to the majority of viewers. We need the artist to tell us what it means because there is no longer a cultural consensus..." (1).

I will present here the ideas and experiences that explain the work I produced at R.I.T. over the last two years. I will try to present them clearly so they can be followed through. Whether they are understood or not, agreed with or not, is an issue impossible to deal with in this presentation.
Maybe the exact sciences (maths, physics) leave no room for speculation but when we deal with any form of personal expression "speculation is my element" (2). There are definitions (art, tools, gravity, feelings) in this presentation that I cannot prove because when "I ask myself 'what do you suppose it means?' Such ruminations combined with the few available facts are the only source of "accuracy" in a shifting field. There is not such a thing as objective art criticism..." (3) even objective self-criticism can be difficult. So the arguments and quotations I here present are there to support these definitions. Other emotions (peace, beauty, love, hate) can only be experienced and not defined, to try to explain them is like trying to explain the flavor of a fruit or the existence of God. On the other hand there are parts in this presentation in which I rely on the common knowledge and level of education of my colleagues. I talk, give an opinion and take a position only in places where I have found the field of art to be obscure and undefined so I clarify it and define it for myself, by doing this I expect to find people that agree with me which will (hopefully) bring us (mentally) closer. Finally: at least I expect my opinion to be respected as (paraphrasing Lucy R. Lippard) the opinion of an "eternal amateur" whose only desire is "to recall whatever is absent in people's lives and to transform this desire into reality" (4).

I feel one's upbringing and the circumstances around one's life are crucial and very relevant when it comes to analyzing the way one produces work. I present in this paper influences from my past and my present which contribute to my own art work, I believe that the key to true art is honesty in self expression. In order for our true self to show without veils or masks, one needs to let go to one's instincts,
inclinations and tendencies, thus responding to the circumstances of the moment and place in a relaxed way which will bring out our best expression: art. Or as Leo Tolstoy puts it: "I have mentioned three conditions of contagiousness in art, (Individuality of the feeling transmitted; clearness with which the feeling is transmitted and the sincerity with which the artist himself feels the emotion he transmits), but they may be all summed up into one, the last, sincerity..." (5)

This thesis is about how elements (pure or already altered) are taken by me, altered and rearranged, (cut, fused and slumped) according to the circumstances, to produce the work. By elements I mean concrete and abstract elements which may or may not appear in the finished piece, for example: time pyrometer, sand, brick and many others. All of these elements plus myself produced the work.

More specifically, this is presentation of how plate glass, glass rods, cullet, a glass cutter, oil, two boards of fiberfrax, six bricks, a pyrometer, a slumper oven, clay molds (kiln, potters wheel), gravity, heat and I came to produce a body of three dimensional work that has some of the character of each of the elements that came in contact to produce it. The degree of importance each element has depends on how much it contributes to the overall piece and on the degree it changes the work. When most of the work was done a majority of the elements remained constant but in certain pieces some new elements were tried in order to produce different effects. If all these elements had been given to another person (a different element) the results would obviously have been different.

For example when we compare the two pieces "Random grid #1" and "Random grid #2" the use of glass rods in #1 gives a character (round,
"RANDOM GRID I"
Fused and slumped glass cane.
25" high, 24" wide.
"RANDOM GRID II"

Fused and slumped clear plate glass.

24" wide, 12" high.
soft and flowing) different to "Random grid II" (straight, flat and angular)
which is made of plate glass. In the case of "cullet as an art form" the use of cullet brings a texture and sharpness into the work which is absent in the previous two examples.
"CULLET AS AN ART FORM"

Fused and slumped clear cane and cullet.

30" long, 14" high.
TOOLS, MATERIALS AND CIRCUMSTANCES:

Two of the philosophies that have most influenced me have been: Hinduism in its Yoga form and Zen Buddhism. Both of these religions consider the universe as a whole, a unity where any one thing is only a part, an element of the whole. My vision of art and art making is that a group of elements (including the maker) have come together in a certain time and space (a given moment in a given place) produce a work of art.

Tools are the elements used to produce an effect, materials are the elements affected by the tools, circumstances are the modifiers of tools and materials. In the work presented: the glass cutter, the fiberboard, the bricks, the slumper oven, the heat, the pyrometer and gravity were used as tools and the material was glass. I consider heat (temperature) a tool because a change in temperature would bring a change in the end result, I consider gravity a tool because as a law of nature it is impossible to avoid in hot glass working, here gravity is used to pull the material into whatever holds it. In the case of the work presented: gravity is allowed to affect the work until the heat is diminished at which time the work is frozen.

Tools are extensions of our hands, they do things to the materials we would not be able to do with our bare hands. Tools transform our energy and concentrate it to produce a mark that is associated with that specific tool and is sometimes impossible to produce in any other way. Materials in their untouched state come from nature, ("mater" means mother in Latin). Trees, stones, plants, minerals,
animals, etc. are formed by a natural process, ignored by human minds and untouched by human tools. Glass can be found in nature as a mineral called obsidian. Most of the glass used today is produced by human hands through the melting of minerals that are then cooled rapidly. Art making starts with the intentional transformation of these raw materials, the result (at any degree of transformation: i.e. cullet) is in my opinion a work of art, even if it only has been selected from a group (found object) or touched with our minds (conceptual art). The higher the degree of transformation of the raw material the more artistic an object is. In the case of primitive work the work is handled from the moment the raw materials are gathered, cleaned, and prepared to the final shaping and finishing, thus primitive works are strong works of art.

I have lived in places where primitivism is not just a word or a picture in a book but an everyday reality for people that produce objects with the attitudes and in the way it was done thousands of years ago. These people have never discussed their art with anybody, yet they do produce work that is strong and meaningful. Primitive people have been able to relate to their surroundings and express themselves in a naive, spontaneous and honest way, have been capable to adapt and respond to the circumstances in such a way that their art has always been recognized as good art. "I am attracted to the prehistoric sites and artifacts because I imagine they were not separated from their social context". (6)

As I pointed out before, circumstances are the modifiers of tools, materials and most of all: people. In a given time and place the work a person creates is unique to the circumstances surrounding that event and will never be repeated in full. Circumstances though not
visually present in the piece, make a difference when the piece is being made, their influence in the final result is greater than we would normally think.

Circumstances can be social, economic, emotional and physical. Social circumstances are those defined by periods in history and different societies; for example the social circumstances surrounding a glass blower in the sixteenth century Venice are different from those surrounding a glass blower of the Venice of today. Economic circumstances defined by the budget and availability, quantity and quality of materials or tools to be used, the fact that I had access to a large quantity of plate glass certainly had an impact on the type of work I turned out for this thesis. Physical circumstances are defined by the capacities of materials (viscosity, rate of cooling, plasticity), tools, (sharpness, shape) and people (skills). For instance: the physical limitation (circumstance) of the size of the slumper oven made possible "Fixed Directions" (48" x 36" x 18") the largest piece I could make at R.I.T. during my time there. Emotional circumstances are defined by the artist's attitudes and state of mind as he or she works. Of the above circumstances, Emotional circumstances are the most influential and of these need is the strongest, ("...that the artist should be impelled by an inner need to express his feelings...."(7). It may be a need for economic welfare, the need for the mastery of a technique (a challenge to ourselves) or a need for the emotional release."He (Picasso) regards art as a product of sadness and pain-and on this we agree..." Jaime Sabartes. (8). In my case I find it was a need to experience freedom of expression without restrictions.

Let us take a look at a different set of circumstances such
as those surrounding apprenticeship, maturity and mastery in the life of an artist. In the early years of their training, artists are engaged in the learning of techniques and the handling of tools and materials. While the new artist experiences the wonder of discovery the work often lacks control and the ability to project his intentions. As the artist acquires skill and knowledge of the materials, his work becomes more controlled and successfully accomplishes his intentions. The artist and his work have matured. When the tools become real extensions of the artist's hands and when the material holds few secrets then the control and intent of the artist is stamped on the material and the artist has mastered the technique and the material. A master's work is not so easily determined by unfavorable circumstances as that of a beginner.

The body of work of an artist can be more fully appreciated when all the circumstances are considered. On the other hand, the validity of an individual piece of art can be assessed by feeling its impact regardless of the circumstances surrounding the making of it.

When all the circumstances are considered the evaluation is objective; whereas an evaluation is subjective when looking at a piece in isolation.
"FIXED DIRECTIONS"
Fused and slumped clear plate glass.
48" x 36" x 18".
MY OWN CIRCUMSTANCES.

I am going to present the circumstances surrounding the production of the slumped glass pieces which I am using to structure this thesis.

Since my birth in 1952 I have lived in 22 places in 5 different countries, I have taught children, teenagers, adults and senior citizens. All this moving and varied experience has made me realize that I cannot be fixed to ideas and solutions, that every new situation has its own new solutions, that the only fixed thing in me should be an open mind and a fresh attitude toward whatever comes my way.

From my circumstances a sense of constant change has made me become flexible, able to shift, bend and twist according to whatever is necessary, to shape the events for the better.

Furthermore having been born in an underdeveloped country I grew up with the feeling that technology is complex and expensive. I think from this fact comes my tendency to use very little technology and a lot of my own hands. After all my hands go with me wherever I go and machines stay behind. It is a sort of technological minimalism. It is through my own effort that a simple technique can look elaborated. I tend toward efficiency, synthesis and simplicity. This are the basic qualities of my work and the reasons why I think the fused and slumped pieces presented here are valid as good attempts. These pieces create the most powerful visual effect with the minimum amount of energy, materials, tools and equipment. I reject adding to them color or texture because this would alter my characteristic minimalist proportion, (amount of technique to amount of effect).
Another of the great influences on my work has been Hindu music which is improvised within broad parameters around which the artist can move with a certain degree of freedom. As the group plays, each musician has the chance to lead the group which will adapt and follow him. Similarly in my collaboration with the tools and the materials, I set broad parameters and only sometimes lead the way. When I am passive and receptive I let a tool or the material lead the way and I respond to its suggestions recording the results. I learn from the material and follow its pattern of behavior. When I am more aggressive and creative I lead the way and use what I have learned.

I have talked about broad parameters within which I work. These parameters are limits, laws, assumptions within the work in progress. For instance the set of parameters used to make my previous work (in ceramics) were: the work had to have a style, and the techniques used by the pre-Columbian potters. Style was the most important parameter because it would make the viewer-user recall pre-Columbian work. To use music as an analogy I created a new arrangement of an old song. Thus my work, with some contemporary techniques exists in the pre-Columbian style.

With the slumped glass pieces, I had no cultural reference to style, so I started with a notion of form, a degree of intuition, an amount of knowledge of heat behavior plus a lot of experience of handling kilns. All this was translated into a naive attitude towards the transparent and translucent aspects of glass and its movement in the presence of heat.

First, I cut plate glass because by circumstances it was readily available. Then, recalling my previous pre-Columbian designs I bent it into ceramic molds, using my throwing ability, during the process
"UNTITLED"
Fused and slumped clear plate glass.
18" x 14" x 18".
of cutting and bending I suddenly became aware of my need for efficiency. The second attempt was more directed and intentional. By cutting triangles, squares and rectangles out of a rectangular sheet of glass, the entire sheet was utilized. (see graphic example).

Following this, I arranged the pieces on the fiberboard using the space in the most efficient and most visually interesting way. (The fact that all the pieces came from rectangular sheets of glass gave them a unity that continued even when they were rearranged). Once this was done, the pieces were fixed together by fusing them in place, the result was one new piece of glass. While recalling its origin it had a totally new character because the negative spaces had become stronger visual elements and were fixed as part of the new pattern. At this stage the piece was a two-dimensional piece of glass. It was further formed by putting it over clay forms the shape of which could vary. This process gave me an overwhelming number of possibilities.

My art comes from a "system". I use this system to produce a series of pieces related to each other (I made some forty pieces) in which each new piece represents a sequential development, a refinement of the same idea. The system can also be used to produce a quantity of work in order to take advantage of the circumstances that once different might not lend themselves to produce similar work. Once I have found a system that works with a group of elements in a set of circumstances I do not need to think or plan too much but I relax and react to the tools and materials as I produce. On the other hand the artist can fall into a false sense of security from knowing what works and is accepted he can stop developing artistically by relying on a safe system and dropping
investigation due to the fear of failure in new trials. I believe the credit or the role or an artist lies in the search and research of new arrangements and in the finding of new systems that lead to efficient and valid results. "Therefore, he (Picasso) must wipe the slate clean as soon as he feels he has exhausted a particular creative possibility. After each "period", he wants to leave a desert behind him and to find himself, alone with his master, before a new desert that he will populate with unexpected forms". (9).
PATTERN SIMILAR TO THAT ONE USED TO PRODUCE "STRUCTURE III"
"STRUCTURE III"
Fused and slumped clear plate glass.
14" high, 20" wide.
ON GLASS, HEAT AND GRAVITY:

Glass is the material, heat is the tool and gravity is the force with which the hot glass worker works.

Glass in its most pure state is a mass of molecules of silica the bonds of which have been gradually weakened by heat. Once soft these bonds move, shift and distort taking the shape of whatever contains them (isn't this what I intend to do with the circumstances around me?). Just like a liquid; as the temperature drops back the shape achieved (the work produced) "freezes" in place (becomes permanent) with the characteristics (visual aspects) of the liquid it once was (of the materials it once was). This fact is the basic principle of hot glass working. Annealing (a cooling process used to stabilize the stress created by the forces of contraction and expansion during the hot forming and uneven cooling) will not be dealt here because being totally technical, annealing has no relevance whatsoever in the visual end result, even though it has relevance on the amount of time the piece will last.

I feel hot glass is a material that has a life of its own, a mind of its own. This character stronger than any other material I have come across. Other materials that could resemble it would be hot metal or hot clay, but even these hot materials are not as responsive to shape change as glass when hot. I believe heat is what produces life in all things. Hot glass has so much of it that to me it behaves as live matter, a type of life that I compare with the life of a wild beast that has to be tamed in order to make it work.

Hot glass has to be worked at the speed determined by the
"AMPHIBIOUS COUPLE"

Fused and slumped clear plate glass.

32" long, 14" high.
movement of the hot mass. This means fast when hottest and slower as the mass cools down to the point of no movement. This decision of the artist has to be adapted to the behavior of the hot mass, unlike in clay throwing where the speed of work is decided by the speed of the wheel which is an immediate decision of the potter. Clay has to be pushed into place, hot glass falls (pulled by gravity) into place. You can touch and squeeze clay with your own hands, but you cannot touch hot glass directly without being harmed.

In hot glass working, gravity becomes a tool when we pull against and push in its direction bringing variation in the end result. Heat can be varied bringing variation in the end result. In the all the work presented the pull of gravity was used, letting more or less mass of glass hang out of a mold produces different results. For example a two inch mass of glass hanging out of a mold will bend in a soft curve while a four inch mass of the same glass out of the same mold at the same temperature will bend in a sharper curve. We can see this very clear in the pieces "Dome Ladder" and "Grid Tower" which are basically the same flat fused design left to bend in a large round mold in the case of "Dome Ladder" and in a small square mold in the case of "Grid Tower".

The combination of the elements; glass, heat, time and gravity, is the basic mixture with which the hot glass worker works, the understanding of the behavior of this mixture and its applications is what makes a good glass worker and brings a successful end result.
"GRID TOWER"  Fused and slumped clear plate glass. 12" high, 8" wide.

"DOME LADDER"  Fused and slumped clear plate glass. 10" high, 14" wide.
CONCLUSION: THE PIECES.

One of my concerns as an artist has always been to know what is my role, my position in the society I live in. In the previous years of my life as a potter I believed that my role as an artist-craftman was to produce work that could be used by others in their everyday life, so I engaged myself in the production of well designed functional objects. I intended this as an exchange for the services others did for me. The shoemaker made my shoes, the farmer grew my food, the mechanic fixed my car and I made vessels for all of them. The size, the proportions, the thickness, the texture and the color were all considered in order to make the piece function best for the job it was intended. I think this was an unselfish attitude toward crafts.

I consider fine art as a way of working in which the artist is totally free of commitments, where the only preconceived rule is the total spontaneous and relaxed expression of the artist and his or her relationship to the tools and materials, without thought of any future function. “The Roman Catholic critic Louis Martin-chauffier views Picasso as a complete genius, which includes the gift to mystify. But above all, he is possessed by a desperate thirst for freedom, and a consequent fear of committing himself to any routine”. (10)

The pieces I have presented here are a blend of my past, my previous practice of ceramics and the study of pre-Columbian design and my present attitude towards life, efficiency and adaptability to circumstances. There is little practicality in my work because they are fragile. And they are not functional because nothing can be done with them except looking at them. They are a relaxed expression of my own
"UNTITLED"

Fused and slumped clear plate glass.

14" x 12" x 15"
tendency for efficiency and my desire for balance and harmony of form, as well as the spontaneous tendency of glass to bend, melt, bead up and run depending on the temperature. The pleasure of seeing these tendencies materialized in three dimensions is the only reason for their existence.
I would like to thank professor John Morreal because during his course "Seminar in Aesthetic" this ideas began to take shape, Rob Levin and Michael Taylor who helped me to give them the intelligible shape they have here and my wife Doris for understanding that the time I spent near glass is as important to me as the time I spent at home.

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BIBLIOGRAPHY.

(1) Lucy R. Lippard, Overlay: Contemporary Art and the Art of Pre-history. (New York: Pantheon Books) 1983, p. II.

(2) Ibid., p. 3.

(3) Ibid., p. 3

(4) Ibid., p. 5.


(6) Lucy R. Lippard, Ibid., p. 7.

(7) Leo Tolstoy, Ibid., p. 70.


(9) Ibid, p. 2.

(10) Ibid, p. 2.