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The Endlessness, Correalism, and Galaxies of Frederick Kiesler

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Abstract

Frederick Kiesler's Endless House was a response to the principles of functionalism that dominated architectural theory during his lifetime. The house was developed from his philosophy of correalism and his galaxial art. Correalism explains his understanding of the universe as correlating proposing an integration of technology into architecture, and galaxial art is a method for producing art based upon his idea of art as ritual. Kiesler attempted to apply his new awareness to the Endless House design. In many ways, he was successful in uniting theory and design, but the house was never built. While highlighting the work's deficiencies this fact distracts his critics causing them to overlook his actual accomplishments.

Abrégé

La "Endless House" de Frederick Kieslers a été une réponse aux principes du fonctionnalisme qui a dominé la théorie architecturale pendant le cours de sa vie. La maison a été conçue d'après sa philosophie du corréalisme et de l'art galaxial. Le corréalisme explique sa compréhension de l'univers comme étant corrélatif en proposant une intégration de la technologie à l'achitecture, et l'art galaxial est une méthode de production d'un art basé sur l'idée de l'art en tant que rituel. Kiesler a tenté d'appliquer sa nouvelle perception à la conception de la "Endless House". Dans bien des cas, il a réussi à unir la théorie et la conception, mais le maison n'a jamais été construite. Le fait d'avoir souligné les défauts de son travail a distrait ses critiques en leur faisant oublier de considérer l'oeuvre qu'il a vraiment accomplie.

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Introduction

"Unorthodox architectural theory"[1] is how Ada Louise Huxtable identified Frederick Kiesler's plan for his Endless House in a 1960 New York Times column. She further described his theory as important and influential, but also as maddening. Huxtable felt that Kiesler's theory was an insult to architecture because it was not defined by structural technique, it did not begin with traditional architectural floor plans, and it therefore was not architectural. Huxtable was a proponent of the functionalist theories of architects like Walter Gropius and Mies van der Rohe, who espoused that the architectural equation should be solved with structure and plans. Not only did Kiesler not conform to Huxtable's expectations but his choice to utilize art and sculpture instead of function as a method of generation further provoked her. She bristled, "Sculpture becomes structure, by a slick expertly rationalized, unpardonable reversal of legitimate architectural procedures."[2]

It was and is naive to accept Huxtable's rebuke of Kiesler's work based on such a simplistic critique. The story of the Endless House cannot be summarized by a concept of architecture that is limited to a gestalt of structure and floor plan flavored with a twentieth century bias. Kiesler's definition of architecture and his goals for design were never as mundane. He believed architecture could harness the secrets of the universe and use them to enrich the human experience. This would be achieved through an embrace of technological improvements and guided by the hand of a master artist, ultimately

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[1] Ada Louise Huxtable, "Architecture on TV," *New York Times*, March 27, 1960.
[2] Ibid.

providing an environment that facilitates being. Unlike the philosopher who seeks to answer the question of being, Kiesler avoided the ontological. He instead accepted human existence, and his theory aimed to expand individual being to a heightened level.

The true level of Kiesler's success is impossible to determine for many reasons. Not the least significant is that his Endless House was never actually built. Also important was that he intended its impact to be felt at an individual level. The personal nature of his aim reinforces the complexity of discussing the unbuilt Endless House, as it cannot be directly experienced. Regardless, even Huxtable acknowledged that Kiesler's peers viewed his ideas as important, and it is imperative to understand the complexity of his purpose before critiquing the work. Kiesler felt that the architecture of his time was misguided in its functionalist preoccupation, so he developed his theory of correalism as an alternative. Simultaneously, he developed a personal approach to art that made it possible for two and three-dimensional pieces to express the ideas of his theory. An understanding of the progression from theory to physical reality is essential for explaining how Kiesler could move directly from sculpture to architecture without concern for the functionalist standard approach. However flawed in its execution, the Endless House was the culmination of Kiesler's theory.

The Science of Correalism

Like Huxtable, many who participated in the world of architecture during Kiesler's life embraced functionalism. Early twentieth century movements like the Bauhaus and de Stijl, produced a vast number of designers who promoted the use of technological advances as the foundation for good design. Kiesler believed that architectural design should instead provide for human physical and spiritual health through intentional environmental control rather than relying on the properties of new building materials to dictate the design. Functionalists favored an architecture that glorified material abilities placing primacy on their functionality rather than on providing for human need. Kiesler considered such design uneducated at best. In fact, he felt that functional designs that embrace technology without discrimination are more capable of damaging rather than improving human health, however unintentionally. When glass, concrete, and steel technology dictated architectural design they threatened to strip away the last remnants of tradition and with it humanity's connection to the universe. "Functionalism is determinism," Kiesler proclaimed, "and therefore stillborn.... Functionalism relieves the architect of responsibility to his concept. He mechanizes in terms of the current inherited conception of the practical, and little more. Actually, however, he does violence to the freedom and self-realization of the basic functions of living man."[1] Kiesler did not believe architecture to be the only discipline wooed by technology's charm but he recognized architecture's role as the most significant relating

[1] Frederick Kiesler, "Pseudo-functionalism in Modern Architecture," *Partisan Review*, July 14, 1949, 735.

to human existence. He consequently responded to the functionalist trend with his own theory, the 'Science of Correalism'.

Correalism was a general law, based on a process of assessment starting from what Kiesler identified as the 'part-sciences'. The part sciences included disciplines such as chemistry, physics, and biology and he first evaluated them based on how they ultimately affected human health. He then filtered through his discoveries to determine the parts that were relevant to building design and finally, applied this new understanding to architectural design. He published his theory as, "On Correalism and Biotechnique: A Definition and Test of a New Approach to Building Design," in the *Architectural Record* of September 1939.

Kiesler's 'Science of Correalism' was intended to fix the inconsistencies he perceived in the discipline of architecture as applied to building design. He understood contemporary architecture as a field divided arbitrarily into three components: art, technology, and economy. Functional architecture focused on improving the human experience through the integration of new technology; Kiesler felt that the functionalist attachment to technology forced design to be inert when the path of design should instead be inventive.

> "Hitherto architecture has been judged from four viewpoints: (1) beauty, (2) durability, (3) practicality, and (4) low cost. But these four factors have never altogether coincided in a single work. If a piece of architecture is not beautiful, it is excused on the grounds of being cheap; if not cheap, it is excused for being durable; if not practical it is perhaps beautiful. It would appear, then that the only way to resolve these age-old contradictions is to find one criterion which will do for all. *This criterion, in my opinion, can only be health.*"[2]

Kiesler believed that good design must instead improve the potential of humanity, complementing the wholeness of being. Without the Science of Correalism, Kiesler felt

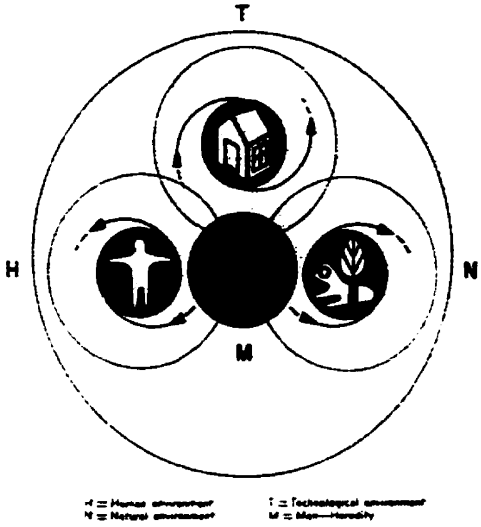
[2] Frederick Kiesler, "On Correalism and Biotechnique," *Architectural Record*, September 1939, 65.

that architecture would continue to produce "disparate, overspecialized, and unevenly distributed products"[3] that were deficient on social consciousness.

Kiesler's study of the sciences culminated with his understanding that the universe is composed of dynamic forces and reactions. He recognized that, at any level of observation, micro or macro, every component has an active relationship with all of the other elements around it. He hypothesized that this is true for both animate and inanimate substances. This larger association is composed of simultaneous integrating and disintegrating forces. Just like the sun's cosmic rays that bombard the earth, so do other objects affect each other. While simultaneously bombarded by the sun, the earth's gravity still holds the moon. In kind, other objects take as they give. Gravitation is an example of integrating forces because it acts magnetically to produce solids. Radiation illustrates disintegrating forces by transforming matter into 'invisible matter.' The potential of these forces is equal. Therefore, these opposing forces would remain static and amount to nothing without a varying influence to create an imbalance. 'Physio-chemical' reactions provide the potential for incongruity in the system. This combination of forces (integrating and disintegrating) and reactions (physio-chemical) cause an inequality that results in the creation of matter. Matter comprises the substance of our visible reality; however, reality is not exclusive to what we perceive visually. In fact, Kiesler felt that matter exists not purely as a solid but its composition is in part invisible. The invisible portion of reality he named 'tenuou-invisible.' Like the objects participating in the dynamic exchange, there is a constant exchange between the visible and tenuou-invisible matter. These relationships between the integrating and disintegrating forces and between the visible and tenuou-invisible matter were more important than any single

[3] Kiesler, "On Correalism and Biotechnique," 60.

object. Kiesler identified this system as *co-reality* and named his study of co-reality the Science of Correalism.



Correalism Diagram: Architectural Record, September 1939.

The concept of co-reality can be clearly understood through reading the text but correalism can not be truly understood without an analysis of the article's accompanying diagram. Indeed, without considering the diagram, one could easily misinterpret Kiesler's intention. A quick impression of it can be misleading, as it appears that man is located at the turbulent center of the tripartite of environments. Roger Held's rare critique of Kiesler's Science of Correalism, which excluded the diagram, encouraged such a misunderstanding. Held wrote, "Kiesler conceived the three environments at extreme positions, at opposite poles one from the other, much like the opposite poles of a magnet, except that Kiesler had three poles instead of two." Held continued his argument saying, "The point at which these environments meet is man."[4]

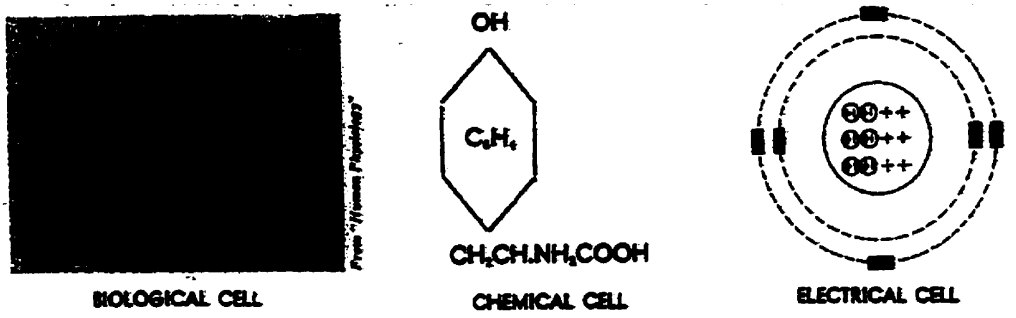
However, there is no indication in Kiesler's representation that he considered all three parts to be equal poles around 'man' (humanity). While the circles were all the same size indicating that none had a realm of influence more significant than the other is

[4] R.L. Held, *Endless Innovations: Frederick Kiesler's Theory and Scenic Design*, (Ann Arbor, Michigan: UMI Research Press, 1977) 77.

not the same as saying that their relative positions were equal. Humanity is located in the middle of the diagram but Held's claim that the environments where equidistant about it is not accurate. In fact, it is revealing to note that there is no point on the diagram where all the environments actually meet. The diagram's representation for humanity is at the true center between the human/animal symbol and that of the natural environment but it does not locate the center between all three environments. The black circle of humanity does simultaneously overlap all three elements and while the technology circle extends into the human/animal and nature environments, the later two never touch. Therefore, a better interpretation of the diagram is that the human/animal and natural environments do hold equal influence upon humanity but technology, a human product, had a different position much closer to man. To examine the model more deeply, it is important to understand that underlying it is an assumption of a thorough understanding of co-reality, that relationships are more important than objects, and that, in response to the technology-centric ideas of the functionalist movement, Kiesler's theory revolves around the creative power of humanity.

The model relates the co-real connection between elements. The composition of circles that Kiesler developed was designed to represent humanity and the environments that influenced it. Positioned around 'man' are three larger circles that represent the three environments that influence all human beings: the human/animal to the left, natural to the right, and technological above. The circle of influence that each environment possesses has a larger diameter than that of man, in line with Kiesler's understanding of the world as composed of the visible and tenuou-invisible but their interior circle, symbolizing visible or physical reality is smaller. The environments' dense, icon-filled centers have

arrows arcing in and out on opposite sides of the circle. These arrows symbolize the integrating and disintegrating forces of co-reality, and the outer circle represents the limit of their influence. The circular environments were conceived as biological cell parts with a nucleus. Simultaneously, Kiesler thought of them as chemical or electrical (battery) cells whose diagrams were illustrations of bonds and forces rather than for physical matter. Kiesler's opposing arrows imply the positive and negative forces of these molecules or cells. Like the rings of Saturn that suggest the reach of the planet's gravity, so do Kiesler's circles imply the influence of the inner substance of his environments.



Cell Representations, from Kiesler's "On Correalism and Biotechnique," *Architectural Record*, 1939.

Had Kiesler used a three-dimensional representation instead, he might have chosen a volume representation similar to the common model of molecular structure. Spheres joined in order to share component elements, dependent upon each other to create a higher order, is very similar to Kiesler's two-dimensional expression. Each piece in his model has its own identity, just like the elements of the periodic chart, but together they form a new whole that is not possible without the complete combination of parts.

The location of each environment has significance. Located at the top center, technology not only shares influence with humanity but also with its peer environments. Like a roof overhead, technology holds the natural and human/animal environments at

bay. The natural and human/animal environments never touch each other, always being buffered from one another by the influence of 'man' and technology. At the same time, while technology shares an equal influence between the nature and human/animal environments, it does not share the magnitude of their influence upon humanity. Technology is buoyed higher above and thus influences humanity less than do the other two environments. Because there is no other thing or creature that can equal human creativity, humanity stands at the privileged center of Kiesler's theory.

The trio of environments is composed around humanity but humanity is not their geometrical center. Kiesler thus created an interesting paradox; humanity is at the true center of 'Nature,' yet it does not center the environments that are nature's constituent parts. Therefore, the diagram represents correalistic interaction but it does not represent balance as Held infers. While a circle also symbolizes 'man', man's circle is smaller and black without an outer circle like that of the environments indicating it is a receiver of influence and a less dynamic part of the model. Even though humanity is the smallest part of the diagram, the resulting conjoined whole is entirely about the human universe. Kiesler conceived of humanity as the nucleus, or heart, of the diagram, for his focus was on defining a humanitarian system. While Kiesler's theory revolves around humanity, there could not be a center or a system without a boundary to exist within. Therefore, the circular boundary of the diagram is also important, and, correalistically it depends on 'man' as its center. Like the wall of a biological cell, 'Nature' acts as a containing wall holding within it the nucleus (humanity) and the other parts necessary for the proliferation of mankind. Nature gives man the gift of the potential to exist. Nature's will determines the realm within which humanity exists, and the enclosing circle of the

?

NOT SO

NOTE: THIS ENTIRE SPECULATION ABOUT THE MEANING OF THE DIAGRAM IS WEAK — SEE GENERAL COMMENT.

model represents this. Will is the connection between humanity and Nature that allows human beings to be at the center, for, of all life, only humanity possesses independent will. Without will, humans could not take the center but would instead be relegated to a position within an environment.

Kiesler's understanding of the natural and human environments was based in biology. "When the biologist speaks of environment, he invariably means the geographical and animal environment."[5] Kiesler converted the geographical into his concept of the natural environment. He was otherwise vague defining the natural environment, but there are clues to his intention. First, the natural environment must not be confused with Nature. Kiesler believed that Nature possessed a type of consciousness and purpose. Nature is the cell wall of the diagram; it gives every subordinate part its ground for competition and limits its ability to influence. In contrast, the natural environment was conceived as physical, composed of things like the earth, climate, and resources. It is sunshine, sand, rain, earthquakes, grains, disease and gold. Kiesler's conception of the human/animal environment is more complex than the primarily physical natural environment because a less tangible aspect complements it. The material portion of the human environment is the existence of other human beings and animal life: the physical requirements of coexisting, sharing place and food. It is the demands of overpopulation, the competition for food, and procreation. Kiesler's human environment goes beyond biological conception because it also incorporates the psychological demands of living in society. One may starve, but there also exists the fear of not having enough food even when there is enough. An individual may be housed sufficiently, but

at what cost? There are psychological implications to that as well. There is a natural drive to procreate, but there are coincident psychological burdens to new dependents as well. Ultimately, both the natural and human/animal environments give immensely to humanity but they concurrently attempt to strip life from it as well. These environments co-relate with man, not with each other; therefore, their positions are symmetrically opposed about man.

Humanity's will to live is its defining characteristic. All of humanity's other characteristics are subordinate, whether they be cognitive, physical, emotional or creative; none are present without life. Thus, the center circle represents human beings, their humanity, and their life all at the same time. Humans possess a body and thus are physical. Humans recognize their own existence, and mere life is transformed into a will to exist. The life giving natural and human environments, at opposite sides, simultaneously attempt to strip humanity of its greatest desire, life. Humanity remains pressed between the natural and human/animal environments, and they push and pull upon him, integrating and disintegrating, but the gap between them remains. The technological environment joins the human/animal and natural environments by pressuring humanity, but as technology is a human product, it serves as well. The side environments do not serve humanity but they do provide it sustenance. They both support and challenge.

'Man' is unlike all other life in the universe because he has the capacity to produce tools that aid him in his battle. Throughout history, when humans have had a need they worked to produce a tool to aid in overcoming that obstacle. When the barrier was conquered, humans then proceeded to refine the process to higher and higher levels

[5] Kiesler, "On Correalism and Biotechnique," 61.

of proficiency. This is the basis of Kiesler's technological environment. Technology is not exclusively positive but being an extension of man, technology bites less. There are many examples of the detriments of technology: technology that is produced purely for economical gain and not in response to a human need, technology that fails in its role as a tool and does not support human health, and destructive technology like nuclear weapons. Technology is closer to man than are the other environments for without man technology has no existence. Technology's repayment for the gift of life is that it helps man hold the other environments at bay. Thus in Kiesler's diagram, while there are two opposing forces, the human and natural environments, humans have produced the technological environment to help them to maintain their separation.

That Kiesler did not represent the environments as three opposing poles and the fact that they have different levels of shared influence with each other is steeped with meaning. This drawing's primary focus is on humanity's ability to live. The gap between the human/animal and natural environments is the gap where man exists. Humans will never truly conquer that which they fight against; the rivals cannot be beaten. Nor should humanity desire to completely overcome them, for the environments are kindred as well. Humanity's goal is to maintain the gap among the opposition and doing so it will continue to live. Human beings endeavor to maintain life all the while dreaming of immortality. Not to struggle would mean certain death, and, more significantly, it would also mean the loss of humanity. Like the Christian father, son, and Holy Ghost the each environment of the trio have their proper place and a certain unity. Only, instead of offering redemption, balance among the environments provides man with life. The Christian trinity is focused on saving man's soul for another life. Kiesler had no need to

WHERE DID HE SAY THAT · ON WHAT BASIS DO YOU STATE THIS?

save the soul, as he believed the soul to be linked to man, perishing along with the body. Therefore, his trinity is naturally more concerned with the human life struggle.

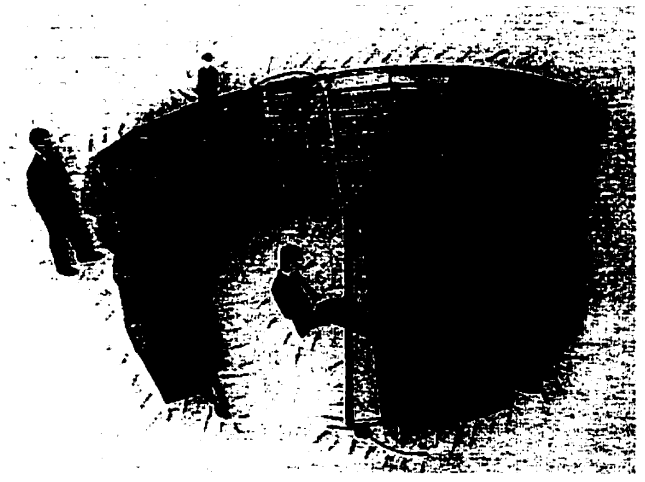
Nietzsche proposed that God had no meaning once creativity became a human act, and in kind Kiesler determined that technology had life simply because it was the creative extension of man. The tool is developed to aid humans against the other environments and while that tool remains useful, that technology has life. Once the tool is surpassed or made obsolete, it no longer sustains life. It follows then that technology could never be at the center of Kiesler's system. Technology was granted life at the hand of man; the center is reserved for the human struggle for life. Human beings labor for life between the forces of the human/animal and natural environments and to give up their struggle would mean the loss of humanity. Technology cannot stand in their place for technology has no life of its own. The human race must instead hold its place with technology's aid. Technology remains closer to man than do the other environments and, at the same time, technology helps man hold them equally at bay. One success of this diagram is that even technology is shown to have a simultaneous push/pull on man as it accomplishes its purpose.

BEHAVIORISM?

Kiesler used the Science of Correalism to develop a design concept called biotechnique. Kiesler believed that biotechnique, a new approach for utilizing technology, could improve man's health. Recognizing that nature was constantly mutating and changing, Kiesler believed that technology must respond to nature and evolve as well. He believed that this approach differed from the functionalist approach to technology because "Functionalism shifts the strain from the technical tool to the human

being; but, here, Biotechnique shifts the strain from the human being to the tool."[6] He believed that by utilizing technology in a way that gave humankind relief from a previously unavoidable burden, technology became biotechnical. Because technology has a co-real existence exchanging forces between man and his environment, technology that is biotechnical improves man's efforts optimally against the other environments. In fact, biotechnical design must be more than reactive to the environments; it must be regenerative to the human body as well.

The test project for biotechnique was a mobile home library. It was designed and built by Kiesler and four students while Kiesler was directing the Laboratory of Design-Correlation at Columbia University. The reason he chose to design a home library was that he believed that most people thought that no improvement was possible. Library shelves had existed for hundreds of years. What could possibly make them better?



Mobile Home Library: Architectural Record. September 1939

Kiesler held that the common library was very demanding upon human health, and a biotechnical design change could lesson the negative impact to which readers were subjected. Kiesler and his students studied the traditional style, evaluating its ability to store books and ease of accessibility. They determined that the use of exclusively stationary, level, flat shelves was both not the best way to design a library and not good for human health. The final library product was not

[6] Kiesler, "On Correalism and Biotechnique," 67.

exactly a resounding success. Kiesler made changes that deviated from standard bookshelf design, but only slightly. The new design is less interesting for its biotechnical claims than it is intriguing because it relied heavily on design techniques that Kiesler developed for use in the theater.

Kiesler was an artist, architect, retail window display designer, graphic designer, and writer at various points in his life, but the profession that spanned his entire life was stage design. His early notoriety was derived from set design, and when he later struggled to establish himself in the United States it was stage design that again paid the bills. Kiesler was extremely good at producing creative stage design. His best sets expanded the world of limited space, provided by the restrictions of stage size, in new ways. His set for the 1923 Eugene O'Neill's production of *Emperor Jones* was one example. That particular set was in continuous motion from start to finish, and the movement was particularly dramatic during the play's climactic chase scene. Kiesler was able to produce a complex system of moving set pieces that began in one position, moved incrementally to appear as a completely different set and then gradually return to the original. This was accomplished in its entirety without ever drawing a curtain immediately in front of the audience.

This idea of movable parts was also integral to the library design. The "mobile library" consisted of about twelve cabinets of shelves that individually rotated on center to reveal another set of shelves on the backside. All of the shelving units together formed not a straight wall but rather scribed an arc that almost closed into a circle around the browser. The frame holding the individual cabinets was designed on wheels, making the whole structure movable. The moving features did not end there as individual shelves

could then be rotated up and down for the user's convenience. Thus the correlative design had rotating walls of shelves and individual shelves that were designed to provide for less movement and therefore less physical stress. The reader could store and access twice as many books without much effort by simply rotating the wall of shelves. The lower shelves were rotated back so that the bookbindings faced up at the reader, making it less taxing physically to both view and reach for the books.

The new design may have been better by ergonomic standards but in other ways the design was not an improvement. The mobile library was developed ignorant of the space that would ultimately contain it. The only room that could hold Kiesler's library would have to be larger than the unit plus allow ample room for the bookshelves to rotate. This defeats the intended improved storage capacity, as a room that large could easily hold the equivalent amount of volumes if the bookshelves were permanently affixed to the walls or even free standing within the room.

The library was very complex in its design and construction but it remained a simple group of bookshelves. On the other hand, Kiesler's theory offered more prolific possibilities than the test could provide. He must have eventually realized this as he spoke less and less of biotechnique, although did not discard his basic idea of correalism as quickly. Until the day he died, Kiesler believed that design must be based upon correalism and correlation. He claimed that his final building, the Shrine of the Book housing the Dead Sea Scrolls in Jerusalem, was designed based on the principles of correalism.

By 1965, correalism had evolved into something far more encompassing than a science of the interaction of man and the environments. He had learned through

experience that the biotechnical approach may address the physical but later recognized that it did not successfully support the emotional and psychological aspects as well. Also, Kiesler no longer believed his earlier optimism of technological revolution leading to eternal life. His staunch position against functionalism did not soften though. He still believed that functionalism's only purpose was to express the essence of technology and it "forgot the human being whose desire is a correlation[7] of known and unknown, a matter of dedication to love and the awareness of inescapable death."[8] Kiesler learned these lessons as he matured through his experiments in art and speculative architectural design.

Kiesler was born into a society that was rich in intellectualism and that had produced a great number of scientific minds. This is where his early embrace of empiricism and its offshoot technology grew from. Vienna was a focal point for the early debate of relativity and the coincidental endorsement of empiricism. Moritz Schlick with his monograph "Space and Time in Contemporary Physics" of 1917 became the first "philosophical interpreter of the theory of relativity."[9] Other intellectuals would gravitate around Schlick in Vienna, and they would become known as the Vienna Circle. The Circle was a loosely formed group, but they held to one common tenet, "philosophy ought to be scientific."[10] Contrary to the philosophy of Immanuel Kant, the Circle believed that there is no need for an epistemological justification of knowledge. Science alone provided the needed grounds: "There was far-reaching agreement about basic

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[7] Correlation is descriptive of two things that have co-real participation.
[8] Frederick Kiesler, "Kiesler by Kiesler," *Architectural Record*, September 1965, 68.
[9] Victor Kraft, *The Vienna Circle: The Origin of Neo-Positivism*, (New York: Greenwood Press, 1969) 3.
[10] Ibid., 15.

views. The outlook was empiricism... which entailed the rejection of apriorism. There can not be synthetic a priori judgements in the Kantian sense. Statements about reality can be valid only on the basis of experience."[11] The Circle's focus upon empiricism placed all of the emphasis upon aposteriori statements, and meaning that could not be identified with the scientific process was irrelevant to any knowledge claim. The Circle felt the argument was tenable based on their better understanding of space and time. Albert Einstein's theories of relativity were attempts to describe inconsistencies in the formulae for motion that had been first recognized by H.A. Lorentz. Einstein worked through the problem recognizing that the observer and his or her location in space and time had an impact on the perception of other motion. Kant's philosophy depended on a fixed space and time and Einstein's relativity theory proved this indefensible.[12] Schlick's monograph on Einstein's theories of space and time then provided the philosophical ground for the Circle's foundation.

The fact that relativity argued the observer could no longer be considered as independent of what was observed had a lure for Kiesler. The relationships that Kiesler described as correlation could not have existed solely with Kant's understanding of space and time. Naming his coined term 'correlation' is somewhat of an homage to relativity. Correlation, relation, relative, and relativity, all the words rely on 'relate' as a base. Kiesler even refers to Einstein on a number of occasions. Even in 1964, Kiesler was bragging that others had absorbed his "Awareness of Time-Space Scale and its Ever-changing Correlation to the object as well as the environment."[13]

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[11] Kraft, *The Vienna Circle*, 15.
[12] Robert Audi, ed., *The Cambridge Dictionary of Philosophy* (United States of America: Cambridge University Press, 1995), s.v. "Vienna Circle," by Thomas Uebel 836.
[13] Kiesler, "Kiesler by Kiesler," 64.

Another influence that appeared in the Science of Correalism and its offshoot correlation were the ideas of the de Stijl and Kiesler's participation with that movement. The de Stijl *Manifesto V* of 1923 called for a renewed unity of the arts, architecture, sculpture, and painting, existing in space and time, the goal being an ultimate unification of them with life. Theo van Doesburg's commentary on the manifesto, *Towards a Collective Building*, called for a set of defined laws that these creative acts must follow. His idea was to combine the laws of the creative act with the established laws of economics, mathematics, and technology, which would lead to a "new plastic unity." Kiesler published a series of Design-Correlation articles in *Architectural Record* in 1937, two years prior to his declaration of the Science of Correalism. These articles focused upon the reintegration of all of the arts within architecture. Kiesler likely thought this way prior to his involvement with de Stijl, but he advocated it more definitively after he parted from the group's company. Kiesler later argued against functionalist principles and declared neo-plasticism dead, but even he could not deny their impact on his own approach to design. De Stijl made it possible for him to argue that his approach was objective and scientific by establishing a precedent. In addition, it concurred with his belief in the integration of the arts, and Piet Mondrian and Theo van Doesburg both based some of their arguments on the work of Albert Einstein.[14] Van Doesburg's incorporation of the theory of relativity may have been less esoteric than Mondrian's, but the ideas were present for Kiesler even in contemporary Vienna.

Kiesler gave substance to his argument with an evaluation of science and then developed a method for action based on some of the ideas of De Stijl, but correalism matured as his work and life progressed. Correalism in the late 1950's and early 1960's

[14] Carel Blotkamp, *Mondrian: The Art of Destruction*, (New York: Harry Abrams Inc., 1995) 148.

was a far more poetic idea than it was scientific. Kiesler transformed the focus of correalism to be descriptive of the co-real force exchange, closer to correlation, rather than continuing to think of it as a science toward an evolving technology. This is not to say that the disciplines of science did not continue to contribute to correalism, but the difference was the emphasis of the discussion. The empirical method of design gave way to sensitivity. Rigid procession toward a product softened, and serendipity was allowed. Kiesler recognized that there was a necessary give and take between idea and material needed for the production of any object, a creative transmutation as he called it, and no general law could determine the outcome. The process was a correlation of life forces between the material fact and idea that were reborn as the object. The scientific pursuit of detail could not accommodate what Kiesler understood to be life forces. Forces that trigger anguish, despair, concordance, and harmony and are caused by "will-particles", much like Gottfried Wilhelm Leibniz's monads. The major difference was that for Kiesler humans had an intuitive understanding of the forces of will-particles and for Leibniz only God had such awareness. It is humanity's imagination, its creative will to produce art, that taps into this unknowable resonance of links, links that connect everything in the universe, links that are in infinite and in perpetual exchange, a "continuous flow of inborn life forces."[15]

Human existence is co-real; people are the will-particles between past and future. While existing in the minute infinity between past and future, humanity fights simultaneously to establish its preponderance over the environments, including technology. Science may drive toward the goal of eternal life for humanity, but it is man's creativity, the ability to produce art that reflects the true infinite of the universe.

[15] Frederick Kiesler, *Inside the Endless House*, (New York: Simon and Schuster, 1964) 145.

Art is the hinge holding the whole system together. "It [art] is the link between the Known and the Unknown. It grows out of an inborn instinct, unites with intellect, and creates the directives for a man-made world."[16] Art is equated with desire; art is immortality.

From Kiesler's correalism diagram the true significance flows. Technology is not humanity's savior. Creative technology, biotechnique, is better than unenlightened functionalist technology, but technology is still one of the environments. Technology will always have qualities both supportive of and competing with humans. Humanity will always exist while supervising the equilibrium, holding a place in the abject space among them. But, humans being mortal, time and space will always contain human existence. Technology can add no more. Art provides the ability to live a heightened existence. It makes it possible to live more than an abject reality but instead live a dynamic, sensuous life of continuity. This is the understanding that Kiesler tried to apply to his designs for painting, sculpture, and, most importantly, architecture. Kiesler attempted to produce items that were transgressions of reality. His aim was to generate work that slowed down the endless the continuity of forces and thus give humanity a taste of infinite life.

[16] Kiesler, *Endless House*, 134.

Ritual in Art

Frederick Kiesler's scientific theory was not developed to simply provide a clearer understanding of the universe. His desire was to be proactive, and the Science of Correalism was germinated as a tool to inform better architectural design. Architecture must respond to the needs of humanity, the most important of which was to place humanity appropriately within the universe. Doing this would require the intervention of art.

Kiesler recognized that it was impossible to ignore the importance of science and technology, but he felt they provided for only one dimension of a multidimensional existence and were inadequate as the foundation of architectural design. Technology, even Kiesler's evolving biotechnique, could not alone ensure anything more than efficiency. Art, in turn, could resolve that which technology could not: humanity's connection with the universe. He believed that the awareness of the artist accessed the true character of the universe. Unfortunately, art has suffered a diminishing over time and was less and less able to meet his lofty expectations. Kiesler therefore proposed a rekindling of old principles. He pleaded for the reintroduction of ritual. "Ritual plays in art the same role that blood plays in the human body. Diminish its content, and the body bleeds white. Diminish the ritual in art, and it dies of anemia."[1]

Kiesler's idea of ritual was not the equivalent of a sacred rite. What he meant by ritual was the process of producing art. He sustained that the act of producing art should be responsive rather than determined, beginning with an idea and a direction, but the act should embrace the serendipity within the process. As Kiesler saw the creative act, first

the artist senses the harmony of the universe with his or her innate sense of truth. Then as the artist develops the work, the act of making should enlighten the project with discoveries that the artist must be open to. The product only finishes becoming after it has welcomed all chance encounters. The process of making is the ritual act and that which is found, the serendipity, is where the idea transcends into true art.

Few artists of his time aimed to make art that was receptive in that way. The most obvious exception to this was the work of the surrealists. Their method of random juxtaposition and espousal of dream imagery were in tune with Kiesler's own thinking. In fact, their desire to produce "surreal" events was analogous to his aspiration to bring the theatrical experience to life. The idea of a surreal happening was the fusion of art and life. Kiesler also demanded the merger of art and life feeling this was essential for saving both art and humanity from isolation.

Kiesler's own art was not based on a theory of form, color, or medium. His art was not a political tool commenting on the state of society nor did he believe that his art was a product of a scientific process, the result containing a truth that was absolute. Kiesler did believe that his art revealed truths that science could not uncover and those truths were key to a correal existence. He believed that his process, his ritual, attacked the misguided efforts of others. "The reborn body of art, robbed of its warm embrace, chilled in its nakedness, cooled by the sweat of its brows, desperately needs a new cape, lest it freeze to death."[2] Kiesler's galaxial and environmental art as well as his endless architecture were his winter clothes for art that desperately needed warmth.

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[1] Frederick Kiesler. *Inside the Endless House.* 61.
[2] Ibid. 256.

"Man's humanity depends on nothing less than his ability to come to terms with the infinite in terms of the finite, precisely through his symbols, whether totems or magnificent churches."[3] Kiesler worked with the finite, seeking to understand the infinite, and doing so he developed iconography to represent his discoveries. The galaxial pieces were the manifestation of this system. Kiesler's early galaxies were assemblies of multiple two-dimensional pieces and later as his work became increasingly sculptural, he called them environmental. The galaxies were composed of from up to twenty parts that, when displayed, comprised a single work. The various fragments were hung either directly on a wall or projected off at various distances. The galaxial elements were not installed haphazardly, but instead the dimensions between each part were meticulously determined by a formula only Kiesler knew. He would argue that the formula was derived from intuition as intuition tapped into knowledge of the universe. Kiesler intended galaxial art to be composed as the planets and the stars appear in the sky, and through the similarity it would heighten human awareness. Kiesler also meant the galaxial method to be disruptive of contemporary display techniques, where art was framed and hung isolated on a wall. He believed that the traditional method prevented any potential for a correlative interaction between art, humanity, and the universe. The galaxial technique was his attempt to break such finite restrictions. In 1956, Kiesler wrote the following about his early galaxies: "To extend these art forms in space, beyond their customary limits, is indeed changing their constitution and might rightly be called a revolution against the state of art today."[4] The system represented in the diagram for the Science of Correalism demonstrated the same interaction that bound the galaxial parts

[3] Alberto Perez-Gómez. *Architecture and the Crisis of Modern Science.* 323.
[4] Kiesler, *Endless House*, 19.

together. Each element of a galaxial work was intended to have an integrating and disintegrating relationship with every other part of the work, creating a connection or bond across a separating distance.

Kiesler argued that the scientist would never be able to fully uncover the truths of the universe and that knowledge was essential. It was art and its creator, not the pursuit of science, that held the knowledge to resolve humanity's connection with the universe.

> It is the poet, the artist, who senses the inner drive and workings of nature.... The poet's feelings go deeper, wider, faster and farther than any of the electromagnoscopes which man constructs to poke into the secrets of nature.... He [the artist] has become aware of the forces which hold planets, suns and star dust in set relations to one another so that, even when orbiting they do not lose their family relationships.[5]

It did not matter to Kiesler that contemporary physicists had developed formulas to explain the phenomena of forces, because historically there had always been a new theory, more accurate, to replace the previous one. He speculated that this cycle would continue indefinitely. He felt that, instead it was the artist's poetic expression that could show the true world outright. The poetic act was a surrendering to the "inner drive and workings of nature."[6] Through capitulation, the artist can represent what the scientist cannot see with determined eyes. This poetic resonance is directed simultaneously on two opposing paths, both outward and inward. This sense of the co-real gives the artist a clear picture of both the infinitesimal as well as the boundless expanse.

Feeling that he also had this vision, Kiesler was confidant practicing his galaxial art. A Kiesler galaxy was intended to express an idea on a group of painted planes rather than one while still maintaining a gravitational strength that bound the parts as a single work. His desire was "to break through the borders of the finite, the prison of the frame,

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[5] Kiesler, *Endless House*, 20.
[6] Ibid., 18,19.

and to express a sense of correlation."[7] The power of the galaxial works was in the implied or intrinsic connections: The place where correlation was the most obvious. Unlike the traditional triptych held together by a physical hinge, Kiesler's bond is co-real like that which holds both molecules and galaxies of stars together.

> When I made the first "galaxial" portrait of *The Russian Student* in 1913, my psyche, feelings and vision seemed to demand I express what appeared to me the quality of the "Russian Student's" life by drawing his head on one panel and a headless body on another, coordinating the tension of space. I felt, through this concept vivid in my body, mind, and environment, a phenomenon of a three dimensional work, in continuity-time continuum, in the past present and future.[8]

All of Kiesler's original galaxial works have apparently been lost, with Kiesler's descriptions and sketches as the only verification that they ever did exist. These first galaxies had a peculiar correspondence: all of the heads were detached from the bodies. *The Russian Student* (c, 1908-10) and *The Jeweler* (c, 1908-10) were two of the four galaxial portraits that Kiesler produced prior to World War I. Kiesler clearly stated that the head and the body of The *Russian Student* were painted on separate panels, and it seems that *The Jeweler* shared that trait from his sketches. Why he chose this to be the norm for his early galaxies, he does not say. It is possible that his effort was a metaphor for the separation of mind and body, that their natures are different, or it could be as simple as that the correal bond between head and body is so strong conceptually that an observer

Sketched reproductions of the early painted galaxies, drawn by Kiesler.

[7] Kiesler, *Endless House*, 20.
[8] Vienna: Museum Moderner Kunst. *Frederick Kiesler: Architekt, Maler, Bildhauer, 1890-1965*, exhibition catalog. 1988, 9; Quoted in Goodman, Cynthia. "The Art of Revolutionary Display Technique."in Lisa Phillips. *Frederick Kiesler*, 77.

would naturally recreate the bond between them. Kiesler never elaborates on the act, but it is certainly important, as the iconography would be repeated in later work.

The next galaxy (c, 1917) would be created at the end of the war. Kiesler wrote in his book *Inside the Endless House* that he had been working for the press corps when he heard a rumor that the armistice would soon be signed.

> I therefore quit going to the office and started to build a large 'galaxy' of paintings out of gray cardboard-about twenty pieces, irregular in size and covered with white tracing paper. I nailed them to the wall at different intervals from each other and painted in *grisaille* a vast field of human bodies whose proportions grew larger and larger the higher up they were placed.[9]

The subject of this work, while still utilizing the human body, is no longer an individual. Unfortunately, Kiesler's description is again all that remains of the work, so there is no way to know if he continued to draw headless bodies. This work is significant primarily because Kiesler used it as an example for his first argument in the book. There, Kiesler relates a discussion that he had with his wife, Steffi. The purpose of this was to explain how he had become aware of the possibilities of his new galaxial form of expression. The dialogue begins with Kiesler explaining his discoveries while making galaxies and progressed to explain how the understanding he gained from that process would ultimately fuel his theory of *The Endless House*. It must be significant then that the origin he chose was this twenty-piece grisaille. Apparently, his intention in painting that twenty-piece grisaille was to reveal the inner working of nature.

Beyond those two works and a group of studies for a galaxy in 1928-9, Kiesler would not utilize this form of expression again until later in his life. His most prolific period of galaxial exploration would begin in the late 1940's and would continue until his death. This resurgence of the technique would take three different paths. The first would be to produce galaxies that portrayed personalities, primarily those of friends and close associates. The second path would be descriptive of and act as explorations for *The*

[9]Kiesler, *Endless House*, 20.

Endless House. The third would be his exploration into the sculpture that he would eventually identify as environmental sculpture.

Kiesler's created many portrait galaxies representing significant creative figures from the world around him. His subjects included: Jean Arp, Marcel Duchamp, Merce Cunningham, E.E. Cummings, Henri Laugier, and André Breton. Many of these portraits are not as obviously galaxial as the twenty-piece grisaille composition or even as he described *The Russian Student*. Some of the portrait works, including the Arp, Cunningham, Laugier, and two of Breton, were actually composed on single panels. Although Kiesler himself defined a galaxy as composed of more than three parts and most likely less than twenty,[10] Lisa Phillips who organized the first American retrospective of Kiesler's work at the Whitney Museum (1989) grouped them as galaxial portraits for the accompanying publication.

Neither of the portraits of André Breton easily conforms to Kiesler's early designs for galaxial art. In fact, the first (1949) is purely representational. The second (1949), however, is a rapidly drawn outline with a profile resembling Breton's, and the head is filled with random surrealist imagery rather than more conventional anatomic parts. This second portrait might be understood as the galaxy of surrealism that was bound by Breton. It also could have been Kiesler's attempt at an automatic drawing where each random part was the equivalent of the multiple pieces that would normally compose a galaxy. In any case, even though it was not a body with detached head or a multiple part

Portrait of André Breton, 1949

[10] Kiesler did not rule out that more than twenty was possible but to create a larger, more complex piece would require a greater inner magnetism to hold the work together.

work, the "surrealist" portrait is easier to understand as a galaxy or proto-galaxy than the representational portrait of Breton is.

The portrait of Jean Arp (1947) was composed in a way that was much more like the earlier galaxies. The depiction is still presented on one surface, but the manner in which it is arranged distinguished it from the Breton portraits. Here again is the head in profile but additionally the work includes Arp's hands holding pieces from one of Arp's woodcut reliefs, one lower leg, and both of his feet. The head is the most elaborately drafted element and is drawn detached from the other parts. This is what likens it to the earlier galaxies. It is drawn on one plane, but the composition ignores that detail. Instead of drawing the head on a separate plane, Kiesler simply detached it. Like the multiple part galaxies, this work remains dependent on the invisible correlation between head, body parts, and the woodcuts.

Jean Arp. 1947

The portraits often appear hastily completed, yet Kiesler exhibited them as complete works. One result of this was that his ever-present detractors frequently criticized him for poor technique. The Arp representation was a very basic pencil on paper drawing. Line quality and shading were not labored over. In particular, he took the time to add shading only on the face. This was an anomaly as none of the portrait galaxies that follow, even the representational Breton galaxy, would include the same detail. Aside from the shading on Arp's face, the remainder is drafted like the Breton

galaxies, and there is little detail beyond an outline. Technique was not important to Kiesler; he intended all of the meaning to be nested within the composition.

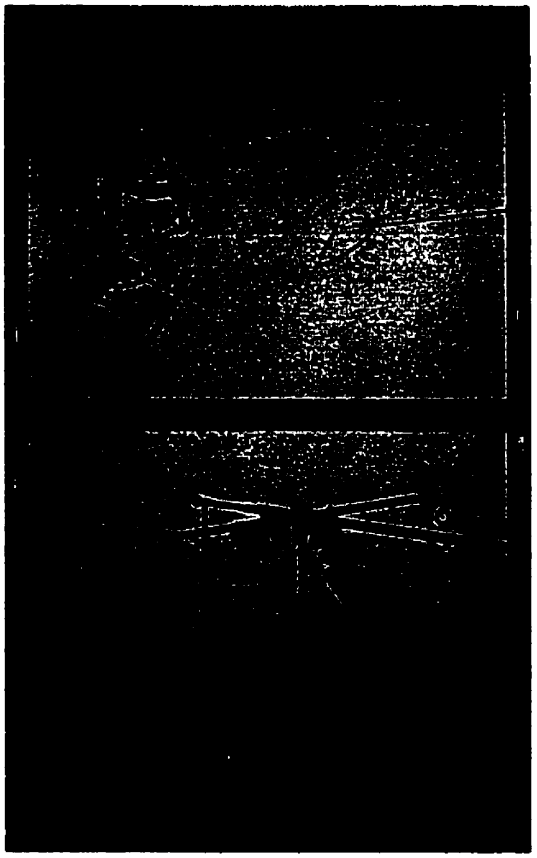
Where one of the Breton portraits was representational, the second was a play at surrealism, and the Arp was a return to the galaxy of severed head and body, the most intriguing portrait is that of Marcel Duchamp. Frederick Kiesler and Marcel Duchamp held a particular affinity for each other that was born from admiration of each other's thinking. Long before the two were friends, Kiesler wrote an article about Duchamp's *The Large Glass* or *The Bride Stripped Bare by her Bachelors, Even* (1915-23) as an installment for his short lived series, titled "Design-Correlation," published in *Architectural Record* (1937). Kiesler's review of the painting was the first to be published in the United States.[11] Kiesler had the opportunity to see the piece while visiting Kathleen Dreier's residence, the work's sponsor, who had it remounted there after Duchamp restored the glass after a shipping mishap. Kiesler was instantly enamored, writing a glowing review of the piece. Duchamp responded to his praise in turn. It is not clear what Duchamp liked in particular of Kiesler's writing, but he professed that Kiesler understood *The Large Glass* well. Duchamp was also apparently impressed with his photographic representation in the article. Duchamp was in the midst of working out the details of his *Boîte-en-valise* (1941), a miniature portable museum of his work, and was having difficulty deciding how to successfully reproduce *The Large Glass* at the much smaller scale. Kiesler had, for the frontispiece of his article, reproduced the lower portion of *The Large Glass* on transparent cellophane. Duchamp would later enlist Kiesler's photographer, Berenice Abbott, to take a full-face photograph so that he could use the same solution. If for no other reason than this, Duchamp sent a letter of praise and a copy of his notes on *The Large Glass*, titled *The Green Box* (1934).[12] The two

[11] Jennifer Gough-Cooper and Jaques Caumont, "Frederick Kiesler and *The Bride Stripped Bare...*," in *Frederick Kiesler: 1890-1965*, p 62.
[12] Calvin Tomkins. *Duchamp: A Biography*. p 316

would become good friends with Duchamp actually renting a room at the Kiesler's residence for a while.

The portrait galaxy that Kiesler drew of Duchamp (1947) was conceptually the most expressive, even though it was simply composed of pencil on paper. When considering Duchamp for a galaxy, Kiesler considered what parts of Duchamp's thinking could be successfully brought into a galaxial work. The portrait could express a combination of Kiesler and Duchamp thinking. The resulting work was sympathetic to the concepts that Duchamp utilized for separating the planes in *The Large Glass.*

The Large Glass, "is a double glass, 109 1/4 inches high and 69 1/4 inches long, painted in oil and divided horizontally into two identical parts by a double lead wire."[13] The upper glass represents the bride and it is her domain; the bottom glass is the realm of the bachelors. Duchamp determined the division between panels to be a 'delay'. The border acted as a transgression, a space that extended and stretched the moment between the bride and her suitors. It also acted as both horizon and bridal garment.[14] To Duchamp, it was a hinge between the representational spaces where irony became possible. The separation was the mirror that forced the observer to look at their reflection and recognize their



The Large Glass or *The Bride Stripped Bare by Her Bachelors, Even.* Marcel Duchamp (1923).

[13] Octavio Paz. *Marcel Duchamp: Appearance Stripped Bare.* p. 35
[14] Ibid.

voyeuristic act. The distance between forced a look both into an infinity within Duchamp and out into the endlessness of the universe. Duchamp is not complete without the space between, nor is any human. It is the infinity between the panels that joins them while creating a dialogue that informs. This border was not unlike the visual distance between Kiesler's galaxial panels and their correal relationships. In Kiesler's Duchamp galaxy, as in *The Large Glass*, there is an exchange between the portrait's panels like that like the upper and lower glass that act as a bond, superceding their divided condition. *The Large Glass* is different than Kiesler's unframed detached works, but the result was analogous: the parts are conceptually joined.

Duchamp's work achieved other qualities that Kiesler appreciated. Kiesler was ever consumed with creating a work that expanded conceptually beyond the two-dimensional representational surface, and he recognized Duchamp's work as success. "The work was surface-and-space at one time," said Kiesler. *The Large Glass* is "an X-ray painting of space."[15] Kiesler's poetic recognition of Duchamp's method of division was only possible because of his own desire to create a space of meaning between elements. He made a spectacular conceptual leap considering the quality that Duchamp achieved by painting on glass, and he recognized the multiplicity of forces that Duchamp masterfully crafted.

> Normally one looks through a translucent plate of glass from one area into another, but in painting an opaque picture (like this) one also accentuates the space division optically. The painting then seems suspended in midair negating the actual transparency of the glass. It floats. It is in a state of eternal readiness for action, motion, and radiation. While dividing the plate glass into areas of transparency and non-transparency, a spatial balance is created between stability and mobility. By way of such apparent contradiction the designer has based his conception on nature's law of simultaneous gravitation and flight.[16]

He was also in awe of Duchamp's ability to negate the barriers even within his work. Where Kiesler's method was to avoid all framing, Duchamp formed a frame at each object's outline. Duchamp's borders did not act as the frame that Kiesler despised but

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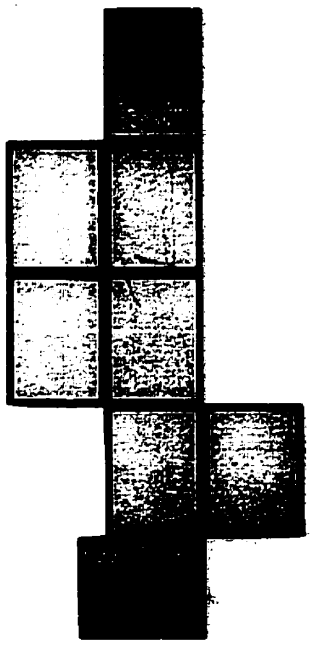
[15] Kiesler. "Design-Correlation" *Architectural Record.* (May 1937), 54.
[16] Ibid. 55.

instead they acted much like the barriers between the glass planes. To Kiesler, the emphasis of the division made the boundary infinitely rich.

> Areas between the boundaries are here, not brush-stroked but once and a million times tamponed[17] to give a vibrant mass of luminous densities, transparent, lucidly shivering with its tender layers of color-coverings.[18]

Kiesler's creation of the Duchamp galaxy meant that Kiesler could explore the connections between the panels in a harmonious way.



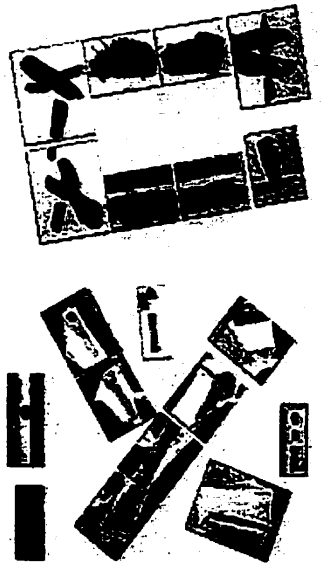
Marcel Duchamp.
eight parts: seven parts, 1947.

Kiesler seriously considered how his galaxial portrait for Duchamp would take form. The quality of the drawing is faint, so much so that the line work barely appears in photographic reproductions. The portrait was sketchily drawn, and while it resembles Duchamp, the title is essential for the comprehension of that image. Duchamp is drawn with a delicacy that mimics the translucent quality of *The Large Glass*. Similar to the line weight, the distance that Kiesler chose for the separation of the eight panels of this work was almost nonexistent. Infra-thin, the infinitesimal/conceptual spaces between, like the intangible distance from the front to the backside of a piece of paper, was a concept of Duchamp's. Kiesler may have been acknowledging this when he chose to place each panel, abutting the next, in a manner unlike to his other multiple panel works. True to his belief that frames were

[17] Tamponed is apparently a coined derivative of the English word tampon, which is most commonly recognized as a soft material used to absorb menstrual blood. Kiesler is using the word to mean saturated, but his choice of terminology was intentionally sympathetic to the intention of the work. By Duchamp's own words, we know that *The Large Glass* contained many references to sexual bodily fluids.
[18] Frederick Kiesler. "Design-Correlation" *Architectural Record.* (May 1937) 57.

destructive to the continuity of a piece of art, Kiesler mounted the panels unframed. [19] Finally, Kiesler had a little fun playing with the surrealist fondness for creating irony with the title of a work. Like the rich wordplay of many surrealist identities, the title, *Marcel Duchamp, eight parts: seven parts*, is clearly an intended contradiction. The work consists of eight panels but only seven of them are drawn upon.

Kiesler discontinued creating portrait galaxies shortly after the Duchamp portrait, subsequently dividing his galaxial efforts in two parallel directions. One path was a continuation of the wall-mounted multiple panel exploration, and the second was a direct invasion of space through sculpture. Along with the new directions, Kiesler changed media. Rather than working with the revocable marks of pencil, he produced works with ink, charcoal, and pastel, and, for his sculptures, clay, metal, and wood. These irretractable materials forced Kiesler away from delicate works and encouraged him to create art that was as bold as his words and actions. The depth implied by the weight of his new materials may also have aided Kiesler's ability to break through the surface and realize a new understanding of space.

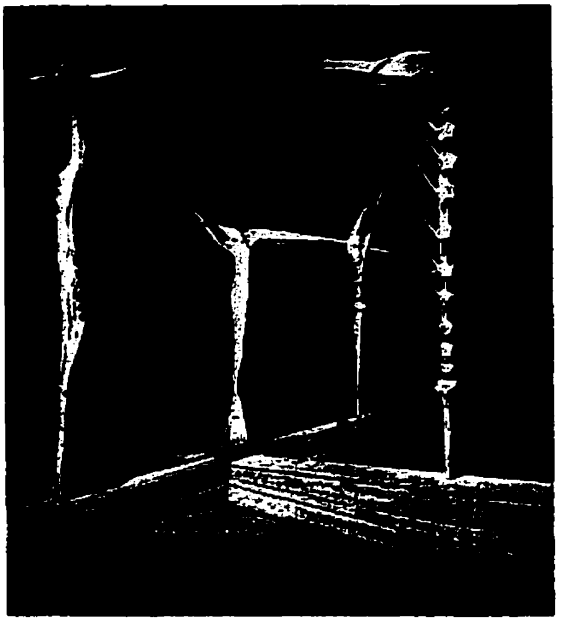


Galaxy, in 19 parts, 1951.

One of the earlier examples of his further galaxy work is a nineteen-part galaxy completed in 1951. The instrument was india ink on paper. The presentation covered a surface area of roughly nine by fifteen feet. The elements were grouped into two clusters, one formed of eight parts and the other of eleven. The content of the group at first appears to be abstract, but a thorough investigation of Kiesler's contemporaneous work reveals otherwise. This galaxy is not abstract but is instead an

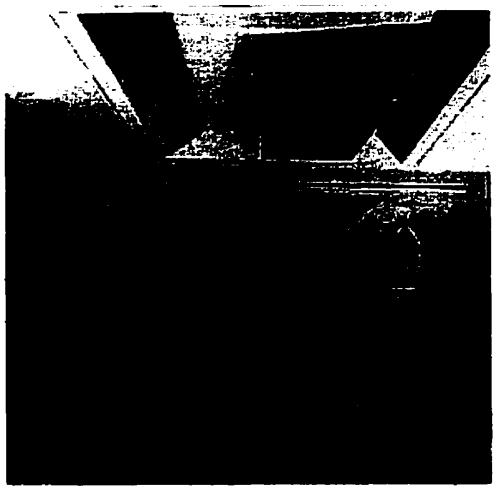
[19] This is a reproduction from the Whitney Museum retrospective, presenting all of the panels framed with darkly stained wood on each of the panels. The catalog for the 1996 Centre Georges Pompidou exhibit shows the same work mounted on a backboard with a stand. This presentation is still dubious, but it is more sensitive than the Whitney Museum's. The Pompidou reproduction shows even less of the drawn image, or it would have been presented here.

exploration to accompany and inform one of his sculptures. The group of eight panels, which at first appears to contain surrealist imagery, actually utilizes symbols that are clearly derived from Kiesler's stage set turned sculpture from the opera *Le Pauvre Matelot* (1948). Upon completion of the opera, Kiesler remade the base of a portion of the set and exhibited it as his first sculptural galaxy. The significance of the relationship between painted galaxy and sculptural galaxy is that Kiesler recognized that exploration of one informed the other. The sculpture was produced first, but he found it necessary to resolve additional issues by ritualistically executing a painted galaxy with similar imagery. The painting conceptually correlated to the sculpture creating a greater understanding for Kiesler through their interaction.



Galaxy, 1948-51.

The next step in galaxy development was the *Horse Galaxy* of 1954. The expression seemingly drew from cubist work. The various panels held recognizable horse body parts but the moment of the painting seems to have many manifestations. The geometrical style of the early cubist painting is absent, but the *Horse Galaxy* follows the idea of multiple viewpoints. The galaxy appears to be an exploration of time similar to Duchamp's *Nude Descending a Staircase*. The *Nude* was an investigation of the moment through delay and the *Horse* is a similar exploration. The horse is presented in one moment but viewed from multiple perspectives. As before, the painting explores a subject that was the focus of work in another forum. This time the painted galaxy resembled work in architecture. The *Horse Galaxy* dramatically deviates from the previous flat panel galaxies in that one of the seven large paintings is positioned over the



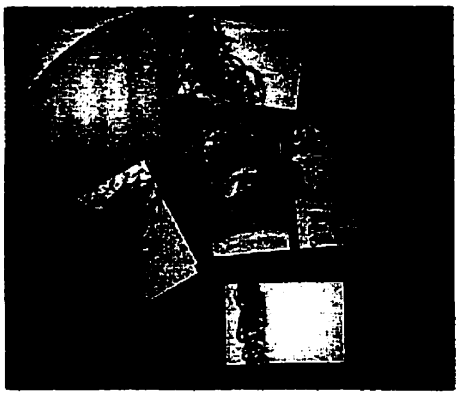
Horse Galaxy, 1954.

floor like a bench and another is hung above parallel to the ceiling. While there is no obvious record of a horse house, Kiesler had produced designs for a tooth house, a dolphin/sea shell grotto, a stage set wrapped by lips, and a theatre that looked conspicuously like a brain. These unlikely building forms show the result of his involvement with the surrealists, whose embrace of the fantastic would allow such an exploration. The other galaxies had drawings at various distances from the surface of the wall, but this is the first that begins to wrap around and define three-dimensional space.

In the last few years of his life, Kiesler directed the galaxial exploration down one final path. The last galaxy pieces were visual studies for *The Endless House* design. The imagery contained in these works is clearly derived from or acts as a generator for the forms of *The Endless House*, for they display the very familiar egg like shape that defined the early house design. The meaning of the other elements in the galaxies is less obvious.

Galaxy F, 1960.

In *Galaxy F* (1960), thick black lines meander between panels, acting as a connecting element from, reinforced by the use of painted wood to physically join the disparate parts.



Galaxy H, 1961.

Another galaxy from the same time, *Galaxy H* (1961), also relied upon line work for a visual correlation. Rather than a thick, bold line, this time the line swirled about like a large pile of loose yarn appearing in all five panels of the galaxy. This composition also utilized wood connectors, breaking from Kiesler's previous practice. Until this point, his art had been a simple replacement of the parts in his correalism diagram. The galaxies replaced the nucleus centers of the diagram with painted panels and relied upon correlation to join them all into a complete whole. The necessity of physical connections may have reflected a correction of his theory.

As the painted galaxial exploration seemed to reach its limit, Kiesler extracted the language of the work and moved directly into three-dimensions. The symbols contained in his later galaxies would reappear in his architectural and sculptural studies. For example, when designing *The Shrine of the Book* in Jerusalem (1965), he sketched his grand design using the same looping line that visually connected the five-panel *Galaxy F* of 1961. The galaxy sculpture that Kiesler created for Phillip Johnson (1952) is another example of this shift in emphasis. Here,

Galaxy, for Phillip Johnson House, 1952

connection is the focus of the work, radically shifting the focus away from the nucleus. Where once the space between was the battleground of integrating verses disintegrating forces, it is now a place for static, solid forms. This work is a culmination of his explorations from the *Le Pauvre Matelot* galaxy to the wood connected galaxies, and the results here firmly show the limit of the galaxial concept.

Kiesler's last years were a time of frustration for his architectural endeavors, but they were also a time when his sculpture flourished. The success that he found with sculpture would not have been possible without his established beliefs and his long pursuit of galaxial painting. Alongside his lifelong conviction that each human life must correlate with the environments of the universe, he also sustained that daily connections were facilitated by the practice of the ritual act embedded in the creation of art.

> My 'Vessel of Fire' is an endless sculpture because it was born from the laws of continuity. For that reason, it has given birth to a content of its own, neither premeditated nor superimposed by me. Within the environment of nature and man, it has created its own environment of being.[20]

Vessel of Fire(The cup of Prometheus), 1956-9, 1964.

The isolation and disenchantment of technology and functionalism could be dissolved by this power art possessed. He brought to life such work by embracing the life within a work. The *Vessel of Fire* (1956-9, 1964) actually began as a model for *The Endless House*, but Kiesler's inexperience with clay created a new and unintended direction for the model. The form cracked during the firing stage, revealing to him the true nature of the work. From that point

[20] Kiesler. *Endless House*, 28.

forward he endeavored to enhance that which the process revealed. By doing this, he aimed to capture the nature of the space-time continuity and claimed that the work revealed this to each observer. "The content [of a galaxial/environmental sculpture] seems to have... the embrace of space-a verification of being alive....There is nothing I can add to that. You have to see it for yourself."[21] This was what Kiesler desperately wanted to bring to architecture. This was the antithesis of the deadened functionalist architecture; instead, it was a prescription for living.

[21] Kiesler. *Endless House*, 28.

The Endless House

The magazine *Art in America* published Kiesler's most comprehensive comments on the Endless House shortly after his death. Written by Kiesler, the article "Notes on Architecture as Sculpture" (1966) is a critical assessment of architecture and its adornment. The article concludes with Kiesler's prescription for architecture's problems by presenting the Endless House. *Art in America*, while proud that they were publishing Kiesler's last words, still found it necessary to add a prefix to the title. "The Future," *Art in America* declared. Kiesler would have found this addition absurd. The Endless House was meant to reinforce the continuity of time. To Kiesler the past, present, and future could not be distinguished; they were all the same. Continuity was one of the most important themes for the house, and it was the motivation for most of its elements and surrounding form. Kiesler believed that the truth in human existence could only be accessed through awareness of, "the once was, the now is, [and] the will be."[1] The idea of the endless was Kiesler's means for a true existence, and the Endless House provided a spiritual place for humankind to live that life. The path to truth included recognition of the internal infinities of the micro scale, the external infinite of the universe, and the continuity in between. A person needed to be aware of all of life's continuities and the Endless House created an environment for living in harmony with them.

The purpose of "Notes on Architecture as Sculpture" was to identify architecture's few successes, point out its very common failures, and finally to re-explain the need for the Endless House. Kiesler's examples of accomplishment were Le Corbusier's Ronchamp and Frank Lloyd Wright's Guggenheim, but he clearly noted that

these were successful for revering death and for housing art respectively. Kiesler could find no example that proposed a new understanding of life, especially everyday life. It was his goal to produce a design that addressed this perceived lack. For a residential design to be successful, he felt that all types of people must be considered with all of the varying aspects of their life. Kiesler understood the extreme diversity of people to be representative of infinity and by extension the time-space continuity. He desired to capture the essence of the continuity and to install it into the lives of those diverse beings. Kiesler's primary design concern was to represent movement in space. specifically the movement of the eye, through which he believed an individual could perceive the truth. He felt that continuity embodied the characteristics of infinity, therefore. he necessarily relied upon curvilinear surfaces and structure for his design. A curve could draw the eye along endlessly where the flat surface drew ones eye to its end embodying the finite. The necessity of piers and flat walls to support those surfaces further disrupted continuity. He claimed the functionalist use of support piers in combination with flat walls disrupted whatever little time-space recognition that a two dimensional horizontal surface could exhibit.

> With regard to architecture the laws of continuity mean a space concept whose end returns to meet its beginning. Structurally the post and lintel construction of architecture has therefore become totally invalid; instead continuity through shell construction is the means to create the breathing indoor spaces of life.[2]

Ronchamp and the Guggenheim were examples of great architecture because they were both designed with dominant curved elements that freed the structures of time-space disruption. Following his own directives, Kiesler's Endless House was meant to

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[1] Kiesler. *Endless House* 374.
[2] Kiesler. "Notes on Architecture as Sculpture." 64.

counteract "the cube-prison tradition," and "to liberate space into galaxies of disclosed spaces for living." Kiesler described the house as an "expression of a flow of life-forces, intensified to a point of intrinsic expansion."[3]

The Endless House was to utilize his personally designed shell construction that he felt promulgated a new life and avoided reinforcing the old habits of living. Functional building that addressed utilitarian ideals with its manifestation, rectilinear construction, was by his judgement finite. Building does not become architecture until it rises above the limited scope of provision for human need, he claimed, which was typically the functionalist focus. Architecture must also enhance life by providing a new understanding for living. Kiesler believed that his idea of shell construction accomplished this. Rectilinear construction would suffice for building but fell short as architecture. Shell construction may have been excessive for the finite world of building but it was necessary for the endless realm of architecture. Kiesler called this "making the superfluous necessary." Since man lived in an infinite world, architecture must acknowledge that truth.

Kiesler defined architecture as having four points: vision, structural concept, evolving functional necessity, and recognition of humanity's place in the unknown (the universe), and he applied these four points to the Endless House. Vision may have been what *Art in America* mistook for the future, but the notions were not equivalent for Kiesler. Vision was the need to go beyond the previous. The structural concept for the Endless House was continuous tension expressed through shell construction. The evolution of functional necessity was an appeal to not repeat the past simply because it was successful before, and thus it represented his response to functionalism. Architecture

[3] Ibid. 65.

should always be evolving to a new level just as biotechnique expressed the evolution of technology. Humanity's place in the universe was to be resolved through Kiesler's space concept "where all ends meet continuously." Like the shell construction that had no ends, so did space need to flow endlessly. Using these concepts, he aspired to create an indoor space the breathed of infinity.

While the design for the Endless House was flowing, Kiesler insisted that just because it was not based on the Cartesian grid did not mean that it was amorphous. He argued that the design was based on "scale of living" rather than on building code. The grid was inappropriate for his design. Kiesler believed that the Endless House could provoke meditation and inner exploration rather than simply reminding one of endless social responsibilities as traditional revival architecture did. In fact, all standards were to be avoided. In an effort to invite poetry back into living that movements like functionalism had eliminated, there were to be no pre-manufactured windows and doors nor any traditional kitchens or bathrooms. Incorporating the ritual of art into the construction phase, rather than simply adorning the house with art later, was also meant to infuse poetry into the lives of the inhabitants. Kiesler's poetic was to be a transgression of the boundary between the known and the unknown. Kiesler said that the Endless House "will give us an awareness of belonging to a space center and of the ever-present cosmic forces which feed us continuously, nourish us physically, emotionally and spiritually, without end."[4] The Endless House was to act as technology did in correalism; the house was give man a place to receive the nourishment of the environments while

[4] Kiesler. "Notes..." 68.

allowing man to remain at the center. The Endless House was to Kiesler, "the last refuge for man as man."[5]

Kiesler's theory of correalism is easy to recognize in his galaxy products. Correalism is the formula. Replace specific values in place of the elements and the result is a galaxial piece. The environments and man were gravitational points in the diagram of the theory; artistic objects replaced them in the galaxies. It was an act similar to exchanging the x and y of a simple algebraic equation with real numbers and then attempting a solution. While the galaxies can be understood as a visualization of correalism, comprehending Kiesler's architectural designs require more diligence. The architectural formula is more akin to calculus than algebra. In calculus the formulas attempt to model the infinitesimal. The irony of calculus is that to understand objects and distances that become increasingly smaller one must recognize and define the infinite. The Endless House was meant to be analogous. As people live their individual lives, they should become aware of the infinite. Kiesler labored to awaken a connection with infinity both at the microscopic and macroscopic levels. He meant to teach people calculus even if life appeared to be based in basic algebra. The galaxies provided the foundation for this awareness, but the Endless House was his attempt at differentiation. Therefore, understanding Kiesler's architecture requires a great deal of patience. His concept of endlessness was woven into the very fabric of the work and is not, like in the galaxies, a simple surface application.

The Endless House evolved from its inception in 1950 until Kiesler's death in 1966. The form had essentially three apparitions. The first of these was ovoid in form and became visible to the public in 1950 at the Kootz Gallery in New York City. As

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[5] Kiesler. "Notes..." 66.

Kiesler's concept for the house matured, his design moved away from its initial similarity to an egg. The second house design surfaced around 1959. This model still retained the earlier shape, but this version begins a transition. This model has a similar but distorted structure with a rougher skin and large cutouts. The third and final version was disclosed both at New York City's Museum of Modern Art (MOMA) in 1960 and then at the Leo Castilli Gallery in January 1961. Arthur Drexler of MOMA provided funding for this generation of model and working drawings. Drexler's intended to build a scale replica of Kiesler's house in the museum gardens. The exhibit never transpired due to museum expansion, but the appropriation that Drexler awarded to Kiesler did provoke this new version. This final version, while still composed of completely curved surfaces, no longer resembled an egg, and for the first time the Endless House had its own particular form.

The Endless House was not the first time that Kiesler had exhibited an architectural design that could be called egg-shaped. The model for the Endless Theater, shown with the *International Theater Exhibit* in New York 1926, was also an ovoid. An image of the theater was then re-presented as part of a montage that accompanied the publication of Kiesler's *Manifesto of Correalism* in *L'Architecture d'Aujourd'hui* (1949).

Model for the Endless Theater, Presented by Kiesler for the *International Theater Exhibit.*, NY (1926).

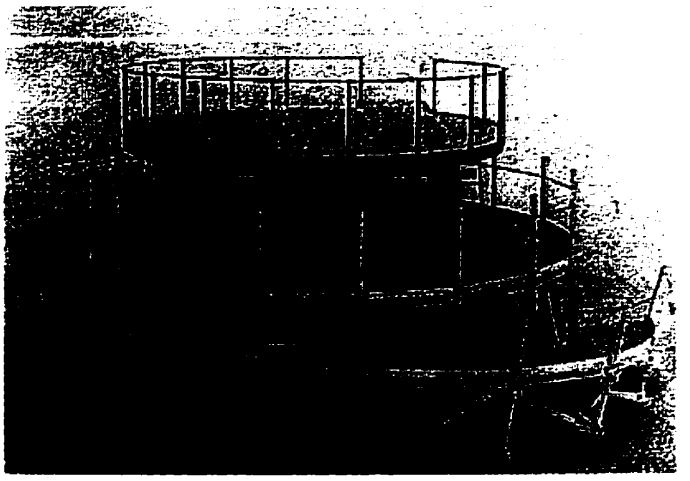
Kiesler was initially attached enough to stamp the form of the theater on to the first house design, twenty-three years later.

The Endless Theater was an effort by Kiesler to dissolve the traditional theater, which he described as the peep-show box with an assembly room attached.[6] He felt that there was no possibility for a natural relationship between actor, stage, and spectator in that environment because the stage made it impossible to utilize space. He felt that actors primarily acted at the proscenium instead of using the depth of the stage almost as if it was an embarrassment to do so. Even if an actor did use the entire front-to-back dimension, most of the audience could not perceive the extent of the stage because poor sight lines prevented it. Few people in the audience could see the full depth of the stage so, the action often appeared two-dimensional. Kiesler felt that it was the role of film to provide a two-dimensional image and that theater needed to be a better example of human existence. His observations first resulted in a stage design that had an extreme rake from front-to-back. Kiesler felt that this simple move created space that could be perceived as 'cubic' rather than flat. This solution was only a patch though and did not yield the 'organic cohesion' Kiesler sought. This was the reason Kiesler produced the Space Stage.

The Space Stage, Constructed for the International Exhibition of New Theater Techniques, Vienna, (1924).

[6] Kiesler. "The Debacle of Modern Theater," 63.

The diagram for correalism presented the environments as cells with nuclei, and the Endless Theater was composed similarly. The nucleus of the theater, although not visibly present in the theater design, was called the Space Stage.



Model of the 1924 Space Stage, reconstruction (1986).
Collection of Dieter Bogner

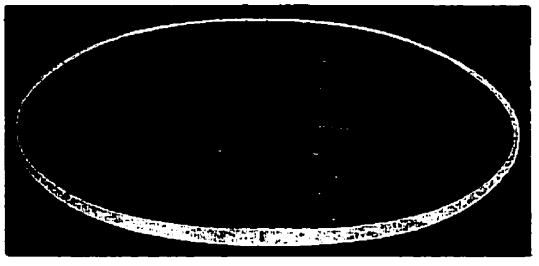
The Space Stage was intended to be the space where theater action exemplified the continuity of life. This was to be achieved through the presentation of actors in three-dimensional motion. The Space Stage was designed and built to house performances for the *International Exhibition of New Theater Techniques* in Vienna 1924. In plan, the Space Stage was a circle surrounded by a spiral. The circular center was the primary acting platform. The Space Stage itself was comprised of three major parts. They were a central, circular elevated stage, a circular lower level that surrounded the upper level like a ring, and an outside half spiral ramp that brought participants up from the floor to the lower of the two stages. Ladders then allowed actors to progress to the upper stage.

Kiesler felt that the only way for the spectator to truly experience the space of the actor was through motion. "There is only one space-element: motion."[7] The Space Stage focussed exclusively on motion as it featured movement in all conceivable directions of the compass as well as from nadir to zenith. The stage was intended to provide for theatrical movement that could be expressive of a fourth dimension, time. Kiesler felt it

important to live a life that reflected Einstein's Special Theory of Relativity, which established that there is neither absolute time nor absolute rest in the universe. The stage's independence from a proscenium forced exposed entries and exits and the exaggerated three dimensionality of the acting surface compelled the audience to regard the time related fourth dimension through visible motion. This was to be a small illustration of the space-time continuum.

Only holding two productions during its installation, criticism was based on less than a thorough demonstration. Detractors of the stage cited the difficulty of seeing and hearing the actors at some locations during the productions. There were reviews that were complementary. A dance production was performed that offered a wider range of movement across the various planes of the stage than the drama production and this yielded a positive response.[8]

Maintaining the expression of space-time to be a paramount, Kiesler designed the Endless Theater around his concept for the Space Stage. The Space Stage was designed to show continuity, but the Endless Theater was meant to provide a theater for living continuity. To design the theater, Kiesler first attempted an amplification of his design of the space stage. The initial design of the Endless Theater was essentially an extrapolation of the Space Stage with a continuous shell enclosure added. He compared the space of the stage with a sphere regarding the volume that the actors engaged while performing on it. He wanted the enclosure



Plan for the Endless Theater, Kiesler (1923-25).

[7] Kiesler. "Debacle of the Modern Theatre," 71.
[8] Held. *Endless Innovations*, 29.

for the theater to reflect the dynamic stage and personify the polydimensional qualities within. The necessary size of a sphere that could engross the planned interior width and length would have been absurd, so Kiesler foreshortened the height of the sphere forming an ovoid.

While the Space Stage in plan was a circle surrounded by a spiral, the theater in plan was a multiple system of helicoidal paths negotiating around a circular center. The Endless Theater's circular center represented structural support and vertical transportation. There were two diametrically offset, disjointed circles surrounding the theater's core that acted as centers for the spiraling ramps that filled the interior space. This complex system of walkways was based conceptually on the simple half spiral found in the Space Stage. The half spiral was multiplied ad infinitum within the Endless Theater. The spirals of the Endless Theater acted as a complex series of transportation routes for everyone within, encouraging the participants to live the continuity that the Space Stage could only show. The Space Stage was developed independently from the surrounding structure and never demanded its own enclosure. The magnificent scale of the Endless Theater was designed to make life the theater experience. "Kiesler imagined that a kind of metropolis-symphony would be staged in the Endless Theater."[9] The creation of an envelope to contain the enormous complex of spirals, circles, and vertical axis was a problem the Space Stage design never confronted. Functional right angle architecture would have been overly stifling for the planned continuous movement that the walls of the theater would contain. The ambience of the curved forms would instantly become finite within such a rectilinear box. Instead, the building needed to be expressive of the endless world contained inside. Kiesler believed that an endless surface was the

only solution. The horizontal perimeter form Kiesler chose was a concentric circle similar to the forms it contained, but a form for the vertical section was less obvious. Kiesler chose the curve of an ellipse, and thus the egg allusion resulted.

The translation from theater to house was a conversion from a theater of continuity to a life in harmony with the endless.

> *we should learn to live not only on the floor*
> *but* with *the floor (outdoors we are*
> *comrades of the earth)*
> *we've been living with walls only*
> *and doors flapping open, banging like bats' wings*
> *on the ceiling we hang lamps,*
> *on the walls we nail pictures*
> *set windows in, the nostrils and eyes of our rooms,*
> *on the floors we stack chairs and tables,*
> *the basement has the excrement from the*
> *digestion of our house-life,*
> *the attic is the graveyard of*
> *grandmother's childhood*
> *she was always so sweet to me*
> *perhaps we should incorporate*
> *the attic into the Endless*
> *there should be something done*
> *to keep tradition alive*
> *of course*[10]

Frederick Kiesler intended the Endless House to be a redefinition of living that simultaneously looked back and forward. The Endless House had its place in the continuity of time as well as its position between the infinitesimal and infinity. It was a return to a human connection with nature while it simultaneously celebrated what humanity had achieved. The house was sentimental without unnecessary applications. The early form was a response to the hard pragmatism of the functionalists that Kiesler called standardized and stillborn. Functionalist architecture had little to do with the "functionalism of living," wrote Kiesler, claiming that the functionalist architect "does

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[9] Barbara Lesak. "In Quest of Ideal Theater," published in Safran, p. 30.
[10] Kiesler. *Endless House*, 272.

violence to the freedom and self-realization of the basic functions of living man."[11] The modern architects based their buildings upon floor plans that not only detached man from the world but then the resulting building accomplished little more than to project vertically from the ground. Kiesler believed this to be an unnatural approach. "If God had begun the creation of man with a footprint, probably a monster, all heels and toes, would have grown up from it, not a man."[12] Instead, man grows from a cell and Kiesler's house was designed as if it also grew from a cell.

> Built around the nucleus of man's life the Endless House began as an egg.
>
> > A big wave rolled over the land from the sea and flooded all the concrete columns and colonnades and they collapsed like sand, disintegrating like bubbles. And the people were without roofs. Without roofs over their heads, they had almost lost their minds. But unexpectedly the big wave set a magic eggshell ashore. And it rolled. The fire couldn't catch it, and on the flood it swam. No beam, no column made its structure, yet a roof and a wall and a floor were all there. In a day.[13]

Kiesler dreamed that the egg had been divinely given. He accepted the images of his dream as poetry while accepting the Surrealist's confirmation of their validity. He also attached their interest in magic into his thinking, saying that, "Science and Art, Myth and Magic are mutually interdependent [...] Without the belief in the magic powers of creation both civilization and culture are unthinkable. Magic is the mother of invention. And every invention is a tool for increased power of the human being."[14] Other examples of surreal architecture that Kiesler developed were the Tooth House, the dolphin shaped Grotto for Meditation (with one study series replacing the dolphin with a seashell), and the studies for Paris Endless. Of all of these examples, the distinguished one that he felt strongly enough to pursue was the egg-shaped Endless House.

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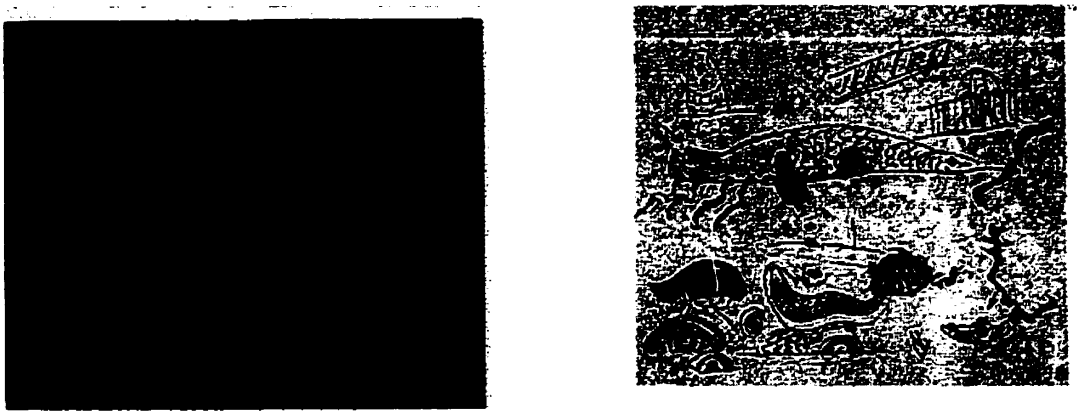
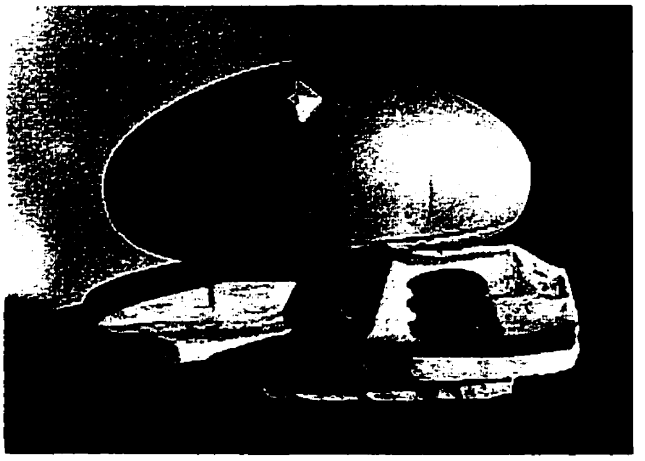
[11] Kiesler. "Pseudo Functionalism in Modern Architecture," 735, 737
[12] Kiesler. *Endless House*, 381.
[13] Ibid., 173.
[14] Maria Bottera. *Frederick Kiesler*,. 195



Conceptual drawings for *Grotto of Meditation*, Kiesler (1963).

The 1950's Endless House, the most ovoid of his houses, was designed to be many things for a better existence, but even Kiesler recognized some of its shortcomings. The largest of the problems was the issue of scale. The Endless Theater and the early Endless House were miniature versions of the universe as containers for endless space. "*The term outer space is wrong, misleading. There is no outer space as far as the universe is concerned-it is all part and parcel of the same composition.*"[15] The form of the Endless Theater was developed to hold 10.000 participants. Kiesler first thought of the Endless House as a building to house a multitude of people but later realized that this was problematic. Kiesler primarily exhibited small



Model for the Endless House, Kiesler (1950).

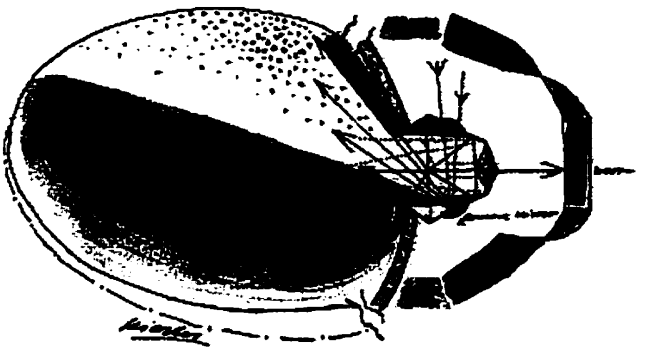
[15] Kiesler., *Endless House*, 404.

models, and the public recognized them to be and judged them as a single family home designs. This was one reason that Kiesler would later rethink the form.

Kiesler recognized another issue of scale as he worked with sculptor David Hare to prepare a larger model for exhibit at the Kootz Gallery. Kiesler was actually sharing Hare's invitation for the show. Hare wanted to design a stair and asked Kiesler to produce an accompanying building. Kiesler claimed that the only building that mattered was the Endless House and that he would happily exhibit it if Hare wanted to design an appropriate staircase for it. Hare agreed but was concerned about the size of the model. Kiesler's version was only about nine inches wide, twelve inches long, and eight inches high and that was not nearly large enough for the inclusion of Hare's work. The two worked together to produce a model roughly five times larger and were shocked by the fact that the larger version had lost the character of the original. Kiesler explained this as a symptom of the organic nature of the design. "The Endless House, you see, isn't like a square house that is square anyway, no matter how long or how high...Here the calculation of the inclinations of every part must be exact, otherwise the co-ordination of the whole doesn't work."[16] They chose not to exhibit the larger model and every later generation of the house moved further and further from the original ovoid.

Another challenge of the Endless House was its interior design, which would fluctuate wildly over time. His struggle to resolve this problem is evident in his repeated attempt to understand it through galaxy creation. Here again is his effort to bring ritual into the process in order to develop a better understanding. Kiesler ritualistically performed the galaxy production hoping to access the universal truth that would inform his decision.

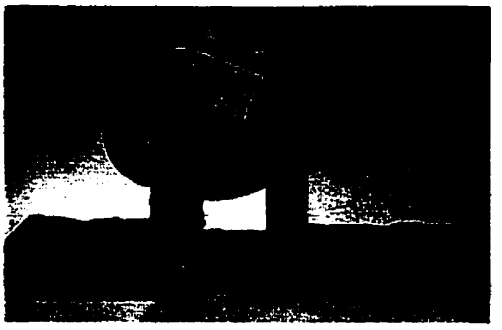
There was one interesting element that was included in that first Endless House that disappeared in the later versions. This was the Kiesler designed Color Clock. Kiesler intended the Endless House to be a vehicle that would take its inhabitants to a new understanding of the universe. He professed that time was a significant element of this new understanding and yet how a person's awareness of time would be enlightened is not obvious when you look at the models of the house. The one element that clearly confronted the issue of time was the house's specially designed clock. Planned to function as a window, the clock offered no exterior view as reflecting mirrors obscured it. The device was not for viewing the physical world surrounding the house but rather to harmonize the inhabitant with the more subtle time of the universe. The clock was a combination of prismatic glass and mirrors that would accept light from the sun, divide it into spectral colors, and then reflect it throughout the room. There can be little doubt that if this idea were successful it would allow the inhabitant to gauge the time of day based on the color of light in the room. "Instead of depending solely on a mechanical clock, splintering his life into minute particles of time, he becomes aware of the continuity of time and of his own dynamic integration with natural forces."[17]



Study for the *Color Clock*, designed for the *Endless House*. Kiesler (1950).

[16] Creighton. "Kiesler's Pursuit of an Idea," 115.
[17] Kiesler, "Endless House and Its Psychological Lighting," 122.

Kiesler's device would essentially bring the sundial into the shadowy recesses of the home. The clock's ability to convey time exemplified Kiesler's definition of vision in that it would not be merely enhancing the time-keeping object of antiquity. The significance of Kiesler's clock is his attempt to reconnect man with the universal understanding of old. Just as he proclaimed that ritual needed to be returned to art, so did he desire a reclamation of the cyclical time of the ancients. The time of mechanical clocks was the time of the functionalists. It was and is utilitarian. As poet Octavio Paz described it, linear time is "a permanent movement forward"[18] with an end goal of perfection. The miniscule divisions of time created by the mechanical clock mark a negation of the previous moment. The moment before is history, and the next moment, the future, offers something better, just as Christianity promises perfection beyond this life. The mechanical clock demanded a revolution. Its movements are a reminder that just as time does not cease, neither does it rest. Kiesler's Color Clock aimed at returning humanity to a recognition of the medieval understanding of revolution, the revolution of the sun around the earth. Unlike linear time that is irreversible, Kiesler's colors would return day after day. They would repeat their patterns, only varying in duration as affected by season. Humanity could again feel in harmony with the movement of the

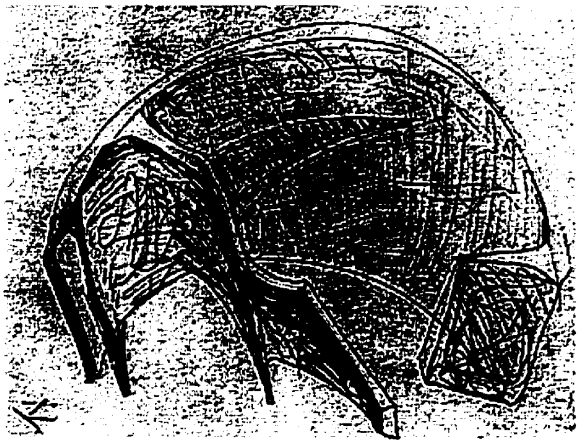


Model for the Endless House, Kiesler (1959).

[18] Octavio Paz, *Children of the Mire*. 30

heavens and the ritual and continuity of life.

The form of the 1959 Endless House did not deviate significantly from the one exhibited at the Kootz Gallery. It retained a recognizable ovoid shape. However, this structure was compressed at one of the long ends of the egg, the skin had a very coarse texture, and the exterior had extremely large cutouts. They may have been intended as windows, but combined they removed around one third of the exterior surface. Thus they may also have acted as viewable access into the model interior. This gesture unmistakably affected the enclosed feeling of the earlier egg, which had no obvious windows. This also allowed a first glimpse into the heart of the Endless, something that was only shown previously in drawings, and demonstrated that the interior was as organic as the exterior. Space divisions or walls and other undulations that grew organically out of the exterior surface. This was further elaborated in accompanying sketches. Finally, this house was scaled as a single family dwelling, as the anonymous exterior shows signs of materials, particularly in the foundation, as well as stairs.



Study for the Endless House. Kiesler (1959.)

A final version of the Endless House was developed for Arthur Drexler and the MOMA (1960). This is the "man-built cosmos" that Kiesler would include in his book, Inside the Endless House, and this is the house that would gather the most attention. This final model would never be mistaken for an egg. It is best described using the language

of Greg Lynn in his recent essays about blob forms.[19] In Kiesler's last house, the once centralized ovoid has given way to a grouping of connected pods, each with its own massing center. Similar in appearance to Kiesler's last house, blob architecture occurs

Model for the Endless House, Kiesler (1960).

when two or more centralized masses, modeled in a computer are covered with a single surface. The result of the process is a computer simulation not unlike the form of the final Endless House. The primary difference between Kiesler's work and Lynn's blob concept is that Kiesler's was decentralizing a form derived from the previous simple egg shape and Lynn was describing an assemblage, a newly formed singularity, with a resonance of the former complexity.

Even though the forms evolved from opposite directions, Kiesler's from simplicity and Lynn's from complexity, both results can be considered points on the continuity between multiple and whole. Thus, with or without realizing it, Kiesler had moved away from a single endless body toward a more complicated conglomeration of endless bodies. While this move was consistent with Kiesler's philosophy he did not

[19] Greg Lynn. *Folds, bodies, and blobs.*

acknowledge the move, continuing to speak of the Endless House as a single continuum when it no longer appeared to be that. The house better resembles Lynn's meta-ball description: "a single surface whose contours result from the interaction and assemblage of the multiple internal fields that define it."[20] Applying this reading to Kiesler's model, it would seem that the model was composed of a series of endless spaces that were defined by the functions of habitation (eating, sleeping, relaxing) and the connections between were created by their mutual interaction. The final model thus reflects Kiesler's philosophy better than do the other versions of the house. This final model was more in tune with his model for correalism and his galaxies. In those cases there was a central gravitational mass that attracted and repelled. Here Kiesler's idea of "functions of living" provided the density around which a gravitation force is formed. The endlessness of time, motion, and interaction are all implied. Then the system is given a skin, and the result is far closer to what Kiesler's words spoke of than were the previous incarnations of the house.

Ultimately, despite the progress that Kiesler made in manifesting his ideas, the Endless House was a failure. It failed because it cut itself off from the universe; it failed because it was impractical for human living, and it failed because it could never really be built. Maria Bottera wrote that the Endless House suffered "the impossibility of circumscribing in space and time a shell to enclose the whole of man's life while projecting it outward, into the cosmic space on which it depends."[21] In some ways, Bottera was wrong. The Endless House definitely manifested a notion of continuity of space and time. But because the system was essentially closed, any physical connection

[20] Lynn. *Folds...* p165
[21] Maria Bottero. *Frederick Kiesler*, 168.

with the external cosmic space would have been tenuous at best. Having based his design realizations on the continuity of the roaming eye, he paradoxically provided visual access to the outside universe reluctantly. He only opened up windows after giving in to repetitive criticism. The house design was meant to be harmonious with the universe, but it is impossible to recognize any harmony when the gesture of the house turns away from the universe. The Endless House was designed to mimic and exemplify the principles of infinity, but failed in that it only looked internally for the expression.

In addition, the only connections to the physical universe, the universe of human use, were symbolic. A fire pit and running water were intended to depict universal elements, and the Color Clock brought light from beyond, but those symbols remained contained within. Despite his work with Hare on the stair, human access, entry and exit, were also never successfully resolved.

There were a number of situations that gave Kiesler hope to see his project constructed. The first was Arthur Drexler and the Museum of Modern Art. After the museum chose to expand rather than build the Endless House, there was still one final offer to erect it. Drexler proposed to build it on the roof of the addition once it was completed. This did not satisfy Kiesler because it meant a three year delay and he felt that the project had to be built immediately. Douglas Owen of Montreal teased Kiesler in 1959 with an invitation to submit a preliminary plan for a multiple residence Endless House, but he wanted the work done for free. Others who solicited Kiesler and then did not follow through were Herbert Mayer in 1960 and Mary Sisler in 1961,

The Endless House clearly derived inspiration from the galaxial artwork and to some extent the environmental sculpture, but it lost their nature. These works acted as

mini molecules or solar systems with gravitational elements holding them together. Yet they inherently provided a connection to more, to infinity. Kiesler recognized that they could not work if the distances were not right or there were too many parts. Either situation would disrupt the stability, jettisoning parts metaphorically off into space or creating an implosion, but in any case - equilibrium, expansion, or contraction - the universe within which the work existed is always recognizable. This may be the largest failure of the house; it never acknowledges a physical connection to the universe and to the infinity that Kiesler so desperately wanted to provide.

HOW CAN ONE DO THAT?

Conclusion

As the next century approaches, there is a natural tendency to reflect on the closing one. The past century boasted the greatest advancement of any, as machine age gave birth to technological revolution and in turn spawned the current information revolution. These revolutions have unequivocally improved life for a large percentage of the earth's population. Their reverberations still produce improvements to the quality of life almost daily, but with every benefit there are costs that to some extent are not predictable or quantifiable.

The historical practice of building known today as architecture was one of the revolutionary victims. From the beginning of civilization, the people who have orchestrated the construction of buildings were given the task of producing a structure that defined human existence of that time. Architects were given the task of providing the image for religious function, power, and wealth. To create a building that reflected a belief system and ruling authority simultaneously was to wield a mighty influence. Whether the final result would be considered a success by historical standards or not, contemporary qualities of belief and authority were woven into the built object.

The cathedrals of the renaissance are examples of this integration. Those who had the opportunity to direct their building had a relatively clear aim: to honor their own belief system. Scale, layout, and ornament all depended on the values of religion, and by nature these were to be grand structures so that a community could demonstrate to both the deity and neighboring communities that its faith was the strongest. This did not insure a successful piece of architecture, but it did clarify the path and the language. The

building was intended for believers who knew the rules and would therefore recognize the symbols.

This clarity no longer exists: a similar accomplishment would not be possible today. There is no clear path to redemption as there was in the past. Scientific advance and technological improvements have almost completely replaced mystical belief in divine salvation, and, for many, the only hope for eternal life rests with technology. Unfortunately, scientific discovery does not foster a spiritual belief system instead, it has eroded traditional faith by promoting objectivity. Architecture has struggled to create a system of symbols for the world where analogy and metaphor are considered meaningless children's babble and scientific observation provides the truth. This is the context in which Kiesler worked.

Kiesler's proclaimed opposition to the functionalists sets up a natural point of comparison. In general, those who called themselves functionalists focused on the possibilities of technology and mechanization. Theo van Doesburg said that architecture should develop out of function.[22] Mies van der Rohe believed the "revitalization of the building art can only come from construction and not by means of arbitrarily assembled motifs."[23] Following a similar path, many of Kiesler's contemporaries accepted technology as a guide, building higher, wider, deeper, and further than ever before. Building became independent of context and location as technology could now supercede almost any obstacle. Building no longer depended on found materials but on commercially manufactured ones instead. Human hands no longer placed many of those

[22] Theo van Doesburg, "Towards a Plastic Architecture," reprinted in Conrad, *Programs and Manifestos*, 78.
[23] Ludwig Mies van der Rohe, "[With Infinite Slowness Arises the Great Form]," reprinted in Ockman, *Architecture Culture*, 164.

materials, and the resulting product naturally reflected this absence of touch. Detached from its historical relationship with humanity, architecture lost its once mighty power.

The process seemed so enchanting that it is difficult to imagine ignoring its lure. Kiesler tried. His idea was to embrace what was positive and temper that with a reinvigorated belief system. He tried to delineate a method for living and building that redefined the role of architect, returning the profession to its former position of spiritual power. In his ideal world, the architect would again dictate the path of building, steering it away from the control of efficiency back to the artist. The beauty of his argument was that he found his justification within technology. He embraced the fact that science seemed to never uncover the truth, that new discoveries would continually open up bigger and bigger worlds; therefore his attached himself to the ideas of endlessness and infinity. This was his mysticism. Infinity was seemingly beyond the scope of contemporary technology, and it appeared as if it always would be. Octavio Paz believes that poetry can break the constriction of technology upon life. George Steiner proposes that God does exist, though recognized in a less traditional way, and he postulates hope in that belief. Kiesler placed his faith in infinity, and he attempted to create a language of symbols that everyone could recognize and understand. His desire was not to create religious ornaments; he wanted to promote something that was as alive and inspiring as the universe. The galaxy art works were the result of this desire. They aspired to capture the essence of the universe through the process of their creation and to mimic it in the final realization. His endless architecture was intended to be organic in order to simultaneously house this art (he aimed to return art to the people) and to express his recognized universal truths to the inhabitants.

He believed that he had created a complete system. Yet his architecture remained as detached from humanity as the work of the functionalists. The functionalists failed primarily because of their dehumanizing attachment to technology, but Kiesler's failure was that he denied the tradition of architecture to an almost equal extent. His desire was noble, but he removed himself so dramatically from the common understanding of architecture that few could understand when he spoke.

This highlights a fundamental flaw in his premise. He believed that the Endless House would be understandable without interpretation. Even the functionalists, as much as they claimed to deny tradition, still built utilizing a recognizable motif. Post and lintel construction, a method that Kiesler despised but a form that existed at least as far back as ancient Greece, was the mainstay of their architecture. This made them instantly more appealing to the populace. Even Greg Lynn's computer designed meta-ball architecture, similar in form to Kiesler's, will probably be actualized. The lure of his is that it is completely based on advancement, denying any belief other that science. So, Kiesler's failure is double edged. He did ~~not achieve his new~~ way of living, nor did his building ever expand beyond models. Lynn's ideology, devoid of all subjective belief, will ultimately be built, while ~~Kiesler's will~~ remain an unbuilt fantasy.

THE LINK TO LYNN IS WORK AND SEEKS AT AN AFTER THOUGHT.

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