

From Drips to ZOObS: The Cosmology of Artist/Inventor Michael Grey¹

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I.

Michael Joaquin Grey's work possesses a conceptual grandeur that draws together the complexity of genetic theory, the prospect of artificial life, and the awesome beauty of nature. His art explores the transitions between various states of energy, matter and meaning. The sculptor highlights the recapitulation of such phenomena in divergent forms and functions, while questioning the processes by which those forms and functions gain scientific or aesthetic significance. His expansive cosmology begins with a drip, which splashes to become a neural network that emulates the development of a jellyfish, and breeds a radially symmetrical bovine with teats comprised of upside-down Balzacs (based on Rodin's 1897-8 sculpture.)²

Grey's work can be explicitly technological, utilizing supercomputers to generate and visualize self-organizing systems, and producing precious works of microscopic precision and great orders-of-magnitude using stereo-lithography. At other times, the things he makes are extremely down-to-earth and tactile, invoking, if not demanding, haptic engagement with them. All these works have been motivated by the artist's desire to directly experience the processes by which nature and culture originate, and become inseparable components of modern identity. "On a certain level, it's really very simple," he says, "I'm just trying to figure out where I come from."³

Due to the increasing conceptual and technical complexity of his sculpture however, Grey progressively felt a greater need to share the underlying experience of world-building in an intuitive way

¹ This article is dedicated to Ronald Jones, Ann Gibson, Alice Aycock, Robert Herbert, and Jonathan Reider, mentors who played a critical role in nurturing my interest in visual culture; and to my friends at the Yale School of Art who accepted me as one their own, and whose work inspired me to leave Wall Street to write about art.

² The strategy of producing an aesthetic cosmology as a framework for art-objects became prevalent in the 1980s, exemplified by Kenny Scharf's philosophy of "Jetsonism" and Keith Haring's image of the "Radiant Child" which pervades his work. The philosopher and poet Rudolph Steiner, whose work has deeply influenced many artists since the early 20th century, and who developed a rich aesthetic cosmology himself, may be an important source for this tendency. The parallel between the cosmologies of Haring and Grey is especially apt, given the democratizing impetus behind Haring's creation of the Pop Shop in April, 1986. See David Sheff, "Keith Haring: An Intimate Conversation," *Rolling Stone* (August 10, 1989): 61.

³ All quotations from Michael Grey, unless otherwise noted, are culled from conversations with the artist between 1988 and 1998, especially a series of interviews undertaken for this article in San Francisco on January 8-9, 1998, and subsequent telephone interviews in March and April, 1998.

that would engage people in creating and manipulating form in space, rather than observing and analyzing it as a *fait accompli* in a fully-determined work of art. This impulse has resulted in the production of objects that extend the boundaries of art and science, cross-pollinating their way into popular consciousness through the “advanced 3-D operating system” of the ZOOB. This innovative, modular modelling set is produced by the company the artist founded, Primordial, LLC. While the ZOOB has many potential applications, and is currently being used as a tool for animation, it is marketed primarily to children as “the total motion toy technology.”⁴

Grey compares his experience of developing the ZOOB and the fable of its primordial origins to the experience of creating the classical laws of physics and biology, in the sense that they both involve the production of structures that order the world. “At a certain point,” he said, “I realized that so many things that I knew, I knew second hand, as given knowledge: like the way DNA works or the principles of quantum physics.” He continued, “Unconsciously, I ended up recapitulating and, as a result, experiencing what it was like - the hubris of it - to create a set of universal laws, to write my own creation myth.” At the same time he wanted to develop a dynamic sculptural medium that would enable people to directly and intuitively explore, experience, and define formal and spatial relations in their own terms.

Grey is careful to point out however, that this open-endedness of the ZOOB complements its unique functionality, allowing users to easily and intuitively model dynamic behavior of multidimensional structures in real-time. By comparison, CAD systems require substantial equipment and practice, and can only *emulate* three-dimensional space as a two-dimensional representation, or output static 3D forms through rapid-prototyping processes. Grey considers the ZOOB a “universal spatial medium” that allows for immediate, hands-on manipulation and transformation of structures *as they evolve through various spatial dimensions*. In this regard, the ZOOB emphasizes the *transitional quality* of form as it slides *between* four characteristic states of organization (primary, secondary, tertiary, and quaternary).⁵

This ethos of transitionality and “between-ness” has been consistent in Grey’s work since the late 1980’s, which he characterized as “sculpture as a preposition, as opposed to more conventional

⁴ *ZOOB Guide*. (San Francisco: Primordial, LLC, 1997): 4. For more information see <http://www.zoob.com>

⁵ Grey explains that a simple molecule, or a ZOOB unit, can be considered a primary structure; a complex molecule, like a DNA double helix, or a locked triangle of ZOOB units can be considered a secondary structure; tertiary structures include the three-dimensional folding of a DNA molecule, and also can be manifested in the linking together of two ZOOB triangles, creating a structure with x,y, and z coordinates; quaternary structures involve communication between two tertiary structures.

conceptions of sculpture as a noun or a verb.” But whereas he found that the sculpture he exhibited in galleries and museums required a great deal of explanation in order for people to comprehend more than just its most superficial appearances, he feels that most people with inquisitive minds intuitively understand the underlying principles of the ZOOB and are able to produce complex structures with it even though they do not fully comprehend the mathematical and geometric sophistication of their creations. As Grey says, “The ZOOB does everything I wanted my art to do, without any wasted metaphor.” What he means is that the ZOOB embodies the dynamic, multidimensional nature of organic systems, rather than representing them or having to describe them.

While developing the ZOOB, Grey sketched out his creation-myth in a 24-frame storyboard. In *Origin of the Primordial ZOOB (Dreams of Causality)*, (1993) he reinterpreted Newtonian physics and classical biology according to his own artistic vision, illustrating the narrative with references to his own sculptural meditations on origins.⁶ The explanation in *Origin* of where ZOOB units come from has been abridged in the *ZOOB Guide* included in every set of toys.⁷

A comparison of *Origins* and the *ZOOB Guide* with Grey’s art objects and their sources offers insight into the genesis of the artist’s creative work as a sculptor and inventor. In order for his visual narrative to make sense, however, one cannot remain overly bound to conventional logic and instrumental reason, but must be able to simultaneously entertain the rigors of evolutionary theory and the whimsy of a fairy tale. For one of the underlying principles of his work is to question the analytic reductionism that characterizes the western, scientific system-of-knowledge, and the prevalence of that episteme in other domains including art.⁸

There is a rich tradition of attempts by artists to either mass-produce affordable works of art for popular consumption, or to place mass-produced objects in artistic contexts for consumption by

⁶ In this regard, Grey’s process bears similarity to many examples of an artist reinterpreting a canonical subject or image, for example, Francis Bacon’s interpretation of Velasquez’s *Pope Innocent X*, 1650, in his *Head Surrounded by Sides of Beef*, 1954.

⁷ Grey first used the storyboard to explain the genesis of his cosmology at the Whitney Museum of American Art in 1993 at a memorial talk for the late Donald Judd. According to the artist, “They all thought I was crazy!” Even at the Prix Ars Electronic symposium in Linz, Austria in June, 1994 (where Grey was awarded a Golden Nica prize in computer graphics for *Jelly Life*, 1991), an international audience of art and technology experts and enthusiasts, including myself, was no less baffled.

⁸ One must, moreover, keep in mind that the artist’s cosmology is a product of “reverse engineering.” In other words, Grey’s working method involving making intuitive leaps, only later figuring out how they fit into the larger progression of the story; and sometimes the “fit” may itself require some artistic license. As a result, the interpretive possibilities of his cosmology are inexhaustible, growing and evolving like a living organism or cultural history.

elite connoisseurs. And like the works that emerged from these historical efforts, the relationship of Grey's sculptural practice to his entrepreneurial enterprise raises some difficult questions: namely, in what sense - if any - is the ZOOB art? Part II will sketch-out some of the connections between Grey's aesthetic cosmology, his sculpture, and the ZOOB; while Part III will return to this question, offering some further reflections on it, and placing the ZOOB in an art historical context.

II.

Using pseudo-scientific nomenclature to play games with the basic laws of Newtonian physics, in the first three frames of the storyboard, *Origins of the Primordial ZOOP*, Grey establishes alternative natural principles as the foundation for his creation myth: 1) Over time, a cube becomes a sphere; 2) Apples fall and oranges rise; and (3) When a cube and a sphere come together, that is the beginning. The spiral in the sphere in the cube in frame 4 symbolizes the originary structural order or primordial soup ("zoop" in Primordial lingo, depicted in frame 5), from which scientists theorize that life emerged.

In the first principle, Grey indicates the cyclical nature of formal development, as structures evolve from cubes to spheres. Whereas the history of architecture and urban planning (like Lego) has been based on the mechanical placement of cubes on a Cartesian grid, the organic, dynamic world of ZOOB allows for the creation of structures that merge the mechanical and the organic, simultaneously inhabiting cartesian and polar coordinates.⁹ At the core of the ZOOB is the "Citroid System." According to the *Guide*, the citroid is a "ball structured with 61-fold symmetry...[that] captures the classic geometries found in nature allowing the articulation of artistic, anatomical, and molecular structures."¹⁰ Utilizing an organic syntax of over 20 different connections, including the ball-and-socket joint, the five ZOOB units (one-upping the four amino acids which are the building blocks of DNA) can be combined, rotated, and reconfigured into an infinite variety of multi-dimensional forms.

In principle two, the causational basis of modern science, as exemplified by the law of gravity, becomes a reversible, two-way street. Apples are an icon for both Judeo-Christian knowledge and for New York City (center of the art-world).¹¹ And apples may indeed fall, like Adam and Eve fell from grace, and like Soho from its monopoly over contemporary art. But oranges - an icon of the spherical

⁹ In this sense, the structural logic of ZOOB is related to the geodesic domes and "Bucky Balls" of mathematician/architect Buckminster Fuller.

¹⁰ *ZOOB Guide*: 4.

¹¹ The apple is also associated with the Judgement of Paris, and therefore the fallen 19th and early 20th century capital of the artworld.

perfection of Grey's Primordial cosmology, and emblematic of his personal origins in sunny Southern California - defy the gravity of Newtonian physics, and rise. This theory recurs in various forms throughout Grey's work, and perhaps represents his own desire to rise above, and liberate, his creativity from the instrumental logic and restrictive demands of the art system.¹²

In 1990 Grey and collaborator Randolph Huff created the sculpture, *Gametes*, which is related to the third structural principle. Inside two one-inch laser-cured resin cubes connected by slender rod, the artists used stereolithography to inscribe a series of cubes in spheres for some twenty-three iterations (a cube in a sphere in a cube in a sphere, and so on twenty three times), resulting in a 3-D, mandala-like structure.¹³ Similarly, the spiral, an organic geometric order found in the nautilus shell, and related to the Fibonacci sequence, signifies the possibility of infinite regression and recapitulation that characterizes the mysteries of life and evolution. In frame 4 the spiral icon has become materialized as the Primordial Zoop, the "chaordic" nature of which (combining elements of both chaos and order) is contained within the ordered geometry of the cube in frame 5. Set below an ambiguous horizon line, this image, like *Gametes*, begs the question of which came first, the cube or the sphere, the chicken or the egg, culture or nature.

Cells 6-11 represent a narrative sequence explained and illustrated in the ZOOB Guide which is closely related to the artist's sculpture *Drip*, 1988-90. As the *Guide* states, "According to the first Cosmic Book, on planet Zooa within Sola City the CITROIDS splash landed. Bubbling in the PRIMORDIAL Zoop, bathed in the MOOZ." Inspired in part by high-speed stroboscopic photographs by Harold Edgerton from the 1930's, such as the nine-part series *Drop Falling into Reservoir of Milk: Showing the formation and segmentation of the spout*, in which the disturbance caused by a drop of milk impacting on a liquid surface was captured as a sequence of frozen instants, Grey's *Drip* is a three-dimensional recapitulation of a single frame, captured in cast hydrocal.¹⁴ Moreover, similarities in Edgerton's sequential photographs and the forms represented in them may also have provided a model for the both the imagery and narrative structure of Grey's storyboard, *Origins*.

¹² For an early theorization of the "art system" that influenced Grey's work, see Jack Burnham, *The Great Western Salt Works: Essays on the Meaning of Post-Formalist Art*. New York: George Braziller, 1974.

¹³ The artist relates this playful examination of orders of magnitude to the film *Powers of Ten* by California architects Charles and Ray Eames. Similarly, Grey's work spans from the microscopic, interior world of *Gametes* to the macroscopic extra-terrestrial world of *My Sputnik*, discussed below.

¹⁴ Grey notes that this experiment was suggested to Edgerton by biologist D'Arcy Wentworth Thompson. Thompson's *On Growth and Form*, and the work of mathematician Rene Thom, were also important influences on Grey's *Drip*.

Edgerton's own statements regarding such images possess a revelatory fervor regarding the aesthetic experience at the conjunction of nature, art, and technology. "In the land of splashes," he wrote, "what the scientist knows as Surface Tension is a *sculptor in liquids*, and fashions from them delicate shapes none the less beautiful because they are too ephemeral for any eye but that of the high-speed camera."¹⁵ Grey seized on the formal sculptural implications that Edgerton himself recognized in his photographs. Then the sculptor further extended the conceptual possibilities the photographs suggested by theorizing the instant of impact as representing a critical, originary moment in the transition of a physical system between varying states of chaos and order, disturbance and equilibrium. Ironically, by capturing the uncapturable quality of phase-changes, Grey has, in essence, given nominative form to a prepositional condition, adding to the tension between these semantic states.

It is this transitional moment during which a drip causes waves to spread out in concentric rings on the previously undifferentiated surface, which Grey interprets as metaphorically recapitulating the "chaordic" quality of the spiral, and similarly the genesis of a neural network. By systematically combining elements of chaos and order in the production and dissemination of information, *Drip* metaphorically makes concrete one of the fundamental mechanisms by which intelligent life emerges. In this regard, the *Drip* and the splash-landing of the citroids on Planet Zooa in frame 5 can be related to the artist's research on artificial life, and works such as *Jelly Lovers* (1991, with Randolph Huff), a 3-D neural network animation that documents morphological and developmental changes in a Medusa-like artificial life form.¹⁶

Mythical cousins of Earth oranges, Grey's citroids reinforce the *Drip's* idea of a system in transition, suggesting moreover the possibility of the reversibility of a system's physical states. For example, a liquid exposed to heat and pressure will become a gas, and when heat and pressure drop, that gas will become a liquid, in both cases retaining its elemental integrity. Similarly Edgerton's photographs of liquids show transitional stages between streams and drops. Oranges are orange on the outside, and orange on the inside, but as the artist has noted, the "orange between orange and orange" (that part of the fruit between the orange-colored skin and the orange-colored meat) is white. This

¹⁵ Harold E. Edgerton and James R. Killian, Jr. *Flash: Seeing the Unseen by Ultra High-Speed Photography*. (Boston: Hale, Cushman & Flint, 1939): 123. My emphasis. Edgerton does not give dates for the images in this book. He perfected stroboscopic photography in 1931, so I presume the images are from between 1931-39.

¹⁶ See Edward A. Shanken, "Life as We Know It and/or Life as It Could Be: Epistemology and the Ontology/Ontogeny of Artificial Life" in *Leonardo Electronic Almanac* 6:2 (March, 1998 Special Issue on Artificial Life, Ken Rinaldo, Guest Ed.) <http://mitpress.mit.edu/e-journals/LEA/ARTICLES/zeddie.html>

condition represents an unstable, intermediate condition; an interstitial phase-change in which an orange is no longer orange, but is in between two stable states of being orange - neither a gas nor a liquid, neither a stream nor a drop.¹⁷ Following this fruity logic, the citroids not only initiate the transitional stage of differentiation in the primordial zoop, but they embody the structural principle through which the inside recapitulates the outside, and vice-versa.

When two citroids get together in the zoop and bathe in the mooz, violins start playing and romance is inevitable. Cell I I shows the two original citroids - Marmalade Luna and Citro Sola - getting to know each other. As her name suggests, Marmalade Luna represents the moon, and her physical appearance in the ZOOB Guide suggests a crescent of orange peel framing her fair “orange between orange” face. Grey thinks of her as the “first cultural meteorite” and in this sense, she is related to the artist’s *My Sputnik*, 1990 a full-scale sculptural replica of the 1957 Soviet satellite. For the artist, *My Sputnik* signified the rupture between classical and non-classical space, “colonizing the language of the macrocosmic,” and giving birth to a dominant cultural myth. Like Brancusi’s polished bronze *Newborn*, 1908, a sculptural icon of creation, Grey’s polished aluminum *My Sputnik* (set on a black velvet blanket) marks the satellite as an icon signifying the birth of space exploration.

My Sputnik can also be seen as calling attention to the Sputnik as an emblem of the Space Race between superpowers, and the concomitant emphasis on science in American educational curricula in the post-war period, during Grey’s formative years. But whereas *My Sputnik* represents the competition for world domination through the possession of technology, the citroid geometry which evolves from Marmalade Luna captures the “classic geometries found in nature,” and is meant to produce a “universal spatial language” that can be used by anyone to create his/her own inventions, a more democratic approach to technology than that of either capitalism or communism.¹⁸ The second citroid, Citro Sola, is named for the sun. Perhaps his splash-landing refers to the return of the Apollo II Lunar Module after the first successful, manned space-mission. The union of the two citroids represents an alchemical conjunction of opposites: the sun and the moon, female and male, Sputnik and Apollo, communism and capitalism. It recapitulates, moreover, earlier sculptures by Grey such as *Gametes* and *Jelly Lovers*, in which he used genetic algorithms to generate quaternary communication between two tertiary neural

¹⁷ A related principle is at work in Alfred Jarry’s theory of pataphysics and Marcel Duchamp’s concept of “inframince.”

¹⁸ Zoob Guide, 4.

networks, the basis of sexual reproduction.

Marmalade Luna rises in frame 12, following Grey's second principle, and in frame 13 becomes an eye-like organ that stretches the Mooz at four corners. This process forms spandrels and a dome-like structure, an ironic comment on the relationship of biological development and architectural form, and evolutionary accounts of artistic styles.¹⁹ Related to the artist's fantastical meditations on morphological theory, the sequence between cells 13-16 visualizes an alternative path of formal development that might produce a bovine that is radially symmetrical like a jellyfish.²⁰

"Morphologically," Grey says, "a jellyfish makes sense; it's a perfect recapitulation of natural principles, like the concentric rings emanating from a drip, but viewed from another dimension." But with regard to the morphology of a bovine, the artist asks, "Why a cow? I'm looking for a way to think about the transition from simple, radial organisms to increasingly complex bilateral ones, to reconcile the jellyfish with the bovine."²¹

The tentacle-like appendages grow down the cube in frames 14-16, making contact with terra firma and forming hooves. A cluster of teats descends from the middle, and the structure begins to twist upward, swirling along its central axis like a Dairy Queen ice-cream cone, recapitulating the spiral and retaining its radial symmetry.²² On the fourth twist, shown in frame 17, Marmalade Luna pops out, like a drop breaking off the spout of a splash of milk in Edgerton's photographs, to become the moon. She leaves behind a seed (zeed) which will become the Body Tree, a reference to the ancient Bodhi Tree revered by Buddhists for 2400 years, which represents the relationships between the visible and invisible worlds and the striving for perfection.

The artist likens this swirled structure to both the Tower of Babel (responsible for the

¹⁹ A further irony may relate to the parallel drawn between the architectural spandrel as an unintended consequence resulting from the need to support a dome and certain formal traits in animals as unintended consequences resulting from a combination of a species' biological needs and therefore unexplainable, in and of themselves, as products of natural selection. See Stephen J. Gould and R.C. Lewontin, "The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme," *Proceedings of the Royal Society of London* (1978) 205: 581-598.

²⁰ Seen from above, a jellyfish is perfectly symmetrical, each point along its extremity mirroring every other point (radial symmetry). In contrast, a cow seen from above is symmetrical only along an axis drawn from its head to its tail (bilateral symmetry). See especially D'Arcy Wentworth Thompson, *On Growth and Form*, 2 vols. London: Cambridge University Press, 1952, c. 1917. Grey acknowledges the importance of Thompson's influence on his work.

²¹ Interview with the artist, March 10, 1998.

²² This may be another ironic comment on architecture, whereby the funky style of California fast-food stores that look like the product they sell (Robert Venturi's "duck") has supplanted the heroic classicism of the Renaissance and Baroque periods.

differentiation of human languages, and the pangea - the Earth before it became differentiated into particular continental plates. *Citrus Sola* rises in frame 18, leaving a citroid stream that runs against gravity, like Grey's sculptures *L-River* and *R-River* (1988-90). Emulating geological time and embodying the male force which simultaneously creates as it destroys, *Citrus Sola* winds his way up the pangenic swirled cone in cells 18-21, carving geographical formations into it. Grey's *Erosion Blocks* (1988-90) were an early precursor to this unified concept of creation and destruction, and also of the production of a fundamental set of organic building blocks, like the first five ZOOB units, from which a universe of possibilities could emerge.

Grey's world reverses the typical cartographic prejudice which designates the northern hemisphere right-side up. Baja California can be seen emerging upside down in frame 19, and the features of Florida, the East Coast, the Pacific Northwest, and Canada become evident in frame 20, also upside down. East and West are also reversed. The Baja and Florida appear next to each other because the cone twists them together; but were it unraveled, they would appear on opposite coasts. The eroded geographic structure vaguely resembles Grey's *E-Microscope* (1990), an interesting juxtaposition of Western technology with the Eastern spirituality represented by the Bodhi Tree. The whole ensemble looks like a bizarre quadruped with Baja as its long-knecked, headless head, howling at the moon. Meanwhile the Bodhi Tree becomes South America. In frame 22, *Sola* completes carving the southern tip of Texas, and flies off to become the sun.

A milk-stool appears under the sun in frame 23, which is a reference to the artist's sculpture *Milk Stool* (1990). Formally mimicking the teats they are ergonomically designed to milk, *Milk Stool* suggests as well a basic and radially symmetrical, structural element - both architectonic and biological. The teats which began forming in frame 15 have now grown miniature bodies, and little heads pop out, like the tip of a penis emerging from the foreskin, an image referring to Grey's sculpture *Udder Vision* (1992). A cast silicone udder with four teats, each a miniature, upside-down reproduction of Rodin's *Monument to Balzac* (1897-8, cast 1954), this image conflates the French poet's supercharged machismo with the mammarian sustenance of a cud-chewing cow. Recall also that milk is the substance of Edgerton's photographic experiments that inspired Grey's *Drip*. Recapitulating the principle that oranges rise, Grey's *Orange Gravity* (1992) is a full-size, orange replica of *Monument to Balzac*. The artist exaggerated the already extreme angle of Rodin's figure, and mounted it upside down from the ceiling

(of course!), to draw a parallel between the sculpture's shape and the shape of California.

As a child, Grey remembers being deeply impressed by Rodin's *Balzac* at the Los Angeles County Museum of Art. Later he learned that Rodin himself had gone to California, and became aware of the artist's originary role in the evolution of modern sculpture. And when Grey happened to glance upside-down at Edward Steichen's photograph *Balzac (The Open Sky)*, 1909, the fate was sealed. But there's more! BALZAC backwards is CAZLAB. Circling the letters "CA" for California and "LA" for Los Angeles, leaves the letters "Z" and "B". The name ZOOB, then, is the amalgam of the "Z" and "B" plus the two "O's" circling "LA" and "CA".²³ Perhaps just a detail, though more likely a harbinger of future work, the "Hootnik" roosts on the Body Tree, coolly observing the action. An onomatopoeic reference to its avian species, and at the same time suggesting a beatnik, the artist describes the Hootnik as "a wise, burnt-out owl."

In the final frame, red, blue, and green light emanate from three teats, shining the colors of the visible spectrum and the technological basis of color television towards Hollywood, the birthplace of media culture. Meanwhile the fourth teat drips Mooz back into the Zoop, which is located near the corner of Wilshire and La Brea Boulevards, the same site as the Los Angeles Country Museum of Art and the La Brea Tar Pits. The shoreline spreads out in the background, mimicking the scalloped background in Edgerton's photographic series *Drop of Milk Splashing on a Plate*, and recapitulating the concentric rings of Grey's *Drip*.

If *Drip* constitutes one sculptural book-end of Grey's creation myth, *Fossil Bed* (1997), illustrated in the ZOOB Guide is the other. Closely related in form to the *Drip*, in *Fossil Bed*, ZOOB units have been captured in cast hydrocal as though fossil remains in the Burgess Shale of Planet Zooa. According to the ZOOB Guide, "Not long ago, cryptic clues from the long lost COSMIC BOOKS led to the discover of the PRIMORDIAL™ Fossil. Rather than representing, like *Drip*, the possibility of life, *Fossil Bed* represents the evidence of the genesis of life into complex entities, the Precambrian ancestors of the modern Zoob.

Drip was created for an art context. *Fossil Bed* serves as an illustration for a mass-marketed children's toy. The relationship of these two works is like the relationship of the Los Angeles County

²³ Grey also points out that ZOOB is an anagram for Zoology, Ontogeny, Ontology, and Botany. For more on the principle of ontogeny and ontology in Grey's work see my "Life As We Know It," op cit. ZOOB is also BOOZ backwards, and Grey has invented an enzymtic character named Mike Zymase who distills BOOZ from ZOObS.

Museum of Art to the La Brea Tar Pits. Adjacent sites representing high and popular culture, these shrines of fine art and dinosaur bones provided formative childhood experiences that inspired the artist's creation myth, and his production of commercial objects informed by a specialized aesthetic discourse.

III.

Grey's ZOOBs can be seen as part of a long-standing tradition of attempts to merge art and science. The ZOOB is also part of a particular 20th century tradition in which artists produce affordable objects for popular markets. The impulse to manufacture consumer products of aesthetic merit (tables, chairs, teapots, and so on) famously characterized the Bauhaus. After the war, European artists associated with Nouvelle Tendance continued this tradition, focusing on the creation not of artful consumer goods, but of affordable art-editions. In 1959 Daniel Spoerri created M-A-T, an anagram for "Multiplication Arts Transformable," with the purpose of making low-cost, variable art-editions. Artists who participated included Joseph Albers, Alexander Calder, Jacob Agam, and Victor Vasarely.²⁴

An early theorist of the social function of artistic multiples and open-ended works, Victor Vasarely wrote in his 1955 *Yellow Manifesto*,

If yesterday the durability of a work resided in the excellence of the materials, in their technical perfection, and in the mastery of the hand, today it rests in the knowledge of a possibility for *re-creation, multiplication, and expansion*. Thus the artifact disappears with the myth of uniqueness and the diffusible work triumphs.²⁵

Art historian Aldo Pellegrini described Vasarely's role for the artist as "a creator of prototypes capable of being enlarged and multiplied," given that 'the value of the prototype does not consist in the rarity of the object, but in the rarity of the quality it represents.'²⁶ The recognition that art is inexorable from and must function in a social context, is clearly stated in the artist's statement that, "My aspiration is a social art. Art is the plastic aspect of the community. Intelligence knows no classes. Culture is not the prerogative of the cultured man."²⁷ Later he wrote that "if the product of art does not go beyond the ranks of the elite 'connoisseur,' then the art will die of suffocation."²⁸

²⁴ Douglas Davis. *Art and the Future: A History/Prophecy of the Collaboration between Science, Technology and Art*. (New York: Praeger, 1973): 55.

²⁵ Aldo Pellegrini, *New Tendencies in Art*. (New York: Crown Publishers, 1966): 166-7.

²⁶ Ibid: 167

²⁷ Ibid: 169.

²⁸ Jack Burnham, *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of This Century*, (New York: George Braziller, 1968): 241.

Vasarely's concepts are especially relevant with regard to Grey's creation of the ZOOB, and its status and function in the world. While Vasarely remains much maligned amongst certain circles as a result of the commercialization of his work, it must be understood that he was part of a movement that sought to eliminate the repressive distinction between high and low culture that characterized formalist art criticism in the 1950's. While Vasarely was an astute businessman, his production of affordable multiples was not a get-rich-quick scheme pandering to simple tastes, but rather a systematically formulated tactic for trying to make art have relevance in a social context. The same is true for Grey. If there is a stigma attached to Vasarely's work, then it can only be a reflection of the desire to perpetuate hierarchical values based on pre-industrial notions of craft and originality, and of keeping "culture the [exclusive] prerogative of the cultured man."

Whether or not one likes Vasarely's images, his theorization of art's role in society made a strong impact on successive generations of artists and movements, including the Groupe de Recherche de l'Art Visuel (GRAV), Kinetic Art, and ZERO, which all strove for greater integration of art and society. His concept of "planetary folklore" (a universal visual alphabet of colors and geometric shapes) parallels Grey's creation myth and "the universal language of the Citroid System." Like Vasarely's idea of the reproducible, expandable prototype and the reconfigurable multiple, so Grey's ZOOBs can be considered prototypes that invoke the creativity of the user to produce a variety of open-ended works, that extend and diffuse the work of the artist in unforeseeable ways.

So are Grey's ZOOBs art? Marcel Duchamp's Readymades questioned the conventional belief that the nature of art was a quality intrinsic to objects of that category, and proposed that the object's context (in a gallery or museum) was a more appropriate determinant of an object's status as art. According to Duchamp, a urinal in a plumber's supply store is a urinal, but when the same object is given a new title, signed, and exhibited in a museum, it can be art.²⁹ And again, it was the social context - in which Duchamp was able to persuade a significant faction of the art-world of the validity of his theory - that determined his success and fame as an artist.

Like the urinal used by Duchamp, Grey's ZOOBs exist in both art and non-art contexts, installed in galleries and museums, and sold as amusements at toy-stores across the US. But whereas Duchamp's *Fountain* was comprised of an object manufactured in and for a context completely isolated

^{1:29} I am grateful to art historian Kristine Stiles for suggesting the comparison between Duchamp's Readymades and Grey's ZOOB.

from the conventional production and consumption of art objects, the ZOOB was designed and manufactured by an internationally recognized artist, deeply infused with his aesthetic cosmology, and bearing close formal and conceptual relationships with his prior artworks. In this sense the ZOOB is more closely connected with conventional notions of art than Duchamp's *Fountain*.

At the same time, to argue that the ZOOB is a "work of art" is to demand an expanded definition of what that category of object can comprise. For while Duchamp succeeded at including mass-produced objects as art in an *art* context, the recognition of the ZOOBs in Little Joey's playroom as art requires that a mass-produced object in a *non-art* context count as art.³⁰ In this regard, Grey challenges the limits that Duchamp imposed on art.

Duchamp sought to push the limits of art by making unexpected juxtapositions of common objects in an art context, thereby giving the objects (and art) a new meaning. His ready-mades succeeded at transforming art from within. Grey's ZOOBs can be interpreted as similarly pushing the limits of art. But instead of trying to transform art from within an art context like Duchamp, it may turn out that ZOOBs are transforming art from without. By placing reconfigurable aesthetic prototypes in a context of mass-produced objects (toys), Grey's work attains direct interaction with its audience, demanding to be manipulated by its owners, a process which contributes to the diffusion and expansion of the artwork.³¹

Such purposeful equivocality and open-endedness with regard to what constitutes "the work," recalls Robert Barry's contribution to "PROSPECT '69" at the Kunsthalle, Dusseldorf. In response to an interview for the exhibition catalog, Barry explained that his piece consisted of "the ideas that people will have from reading this interview." Barry further remarked that, "The piece in its entirety is unknowable because it exists in the minds of so many people."³² As art historian Jack Burnham noted,

³⁰ For more on the cross-over between toys and art, and the idea of "game aesthetics" see Jasia Reichardt, Ed., *Play Orbit*, New York: Studio International, 1969. This British exhibition focused on toys produced by artists that "involve participation in the construction being an object or series of forms that a child makes himself from a series of ready-made elements." See Frank Popper, *Art - Action and Participation* (New York: New York University Press, 1975): 180. As Rachel Eggebeen notes, the difference between Grey's work and theirs [that of the artists in *Play Orbit*] is that he [Grey] decided to mass-produce his art/game so it could be enjoyed outside the walls of the museum." See Rachel Eggebeen, "Touch Me, Talk to Me: Interactive Art and Technology" in Rachel Eggebeen and Lorraine Kodumal, *Interface: Art + Tech in the Bay Area*, exhibiton catalog, (Durham: Duke University Museum of Art, 1998): 21.

³¹ At this writing, the *ZOOBMOBILE*, a white, 1963 milk-truck with a giant red ZOOB on the top, is travelling across the US on a six-month promotional tour. Driven by the two *ZOOB-Dudes*, Ross Freshwater and Tom Mitchell, who give demonstrations at local toy-stores and malls, this endeavor may be considered just another marketing tool of industry. At the same time, it also suggests a performative aspect of the ZOOB as art, further expanding and diffusing the work.

³² Robert Barry, "PROSPECT '69", exhibition catalog statement, (Dusseldorf: Kunsthalle Dusseldorf, 1969): 26.

“Perhaps the future of Conceptual art is tied more to its power for influencing artistic behavior than to any success as a commodity.”³³ The ZOOB manages to be financially successful as a commodity (though its commodification is not based on its status as an art object) while at the same time influencing artistic behavior.

Joseph Beuys’ concept of “social sculpture” also provides a compelling model for considering the ZOOB as art:

SOCIAL SCULPTURE - how we mould and shape
 the world in which we live:

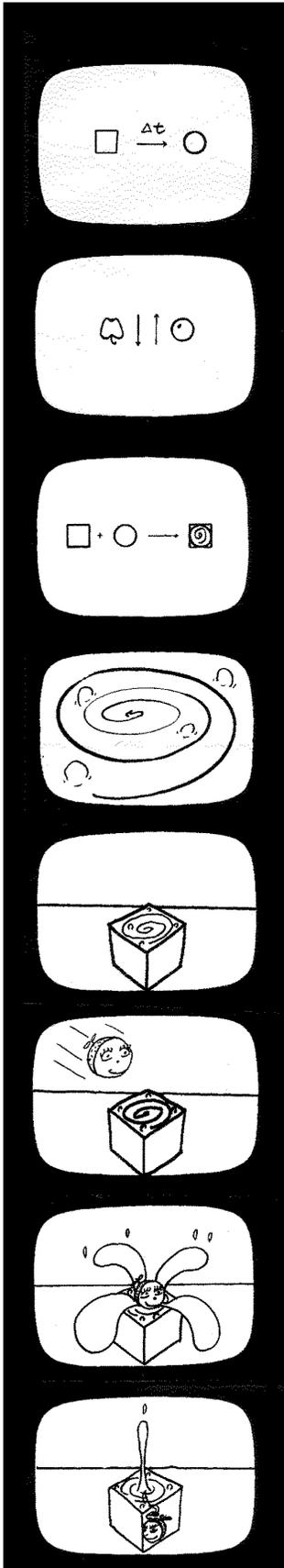
*Sculpture as an
evolutionary process:
everyone an artist.*³⁴

This aspect of Beuys’ artistic ideology, in which the “evolutionary process” in which “everyone” contributes to “shape the world,” is certainly shared by Grey in his goals for the ZOOB.

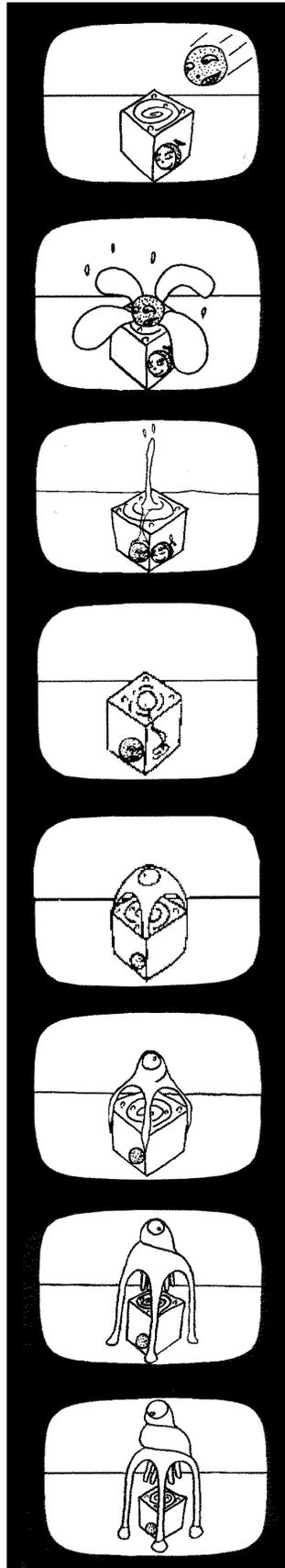
Whether or not the ZOOB comes to be recognized as a work of art, Grey believes that the innovative, congenial, and dynamic nature of his “advanced 3-D operating system” allows expanded creativity. By distilling the properties of art and science, education and play, the artist hopes it will stimulate and challenge developing minds to conceive of formal structure as a preposition, to make abstract connections and associations using a dynamic spatial syntax, and to produce multi-dimensional sculptural forms with both cartesian and polar coordinates. Grey’s creation myth challenges instrumental reason and encourages a ludic approach to art, science, and natural phenomena, drawing parallels between them, suggesting multiple levels of recapitulation, and encouraging young people of all ages to question second-hand knowledge and construct their own cosmologies based on direct experience.

³³ Burnham, op cit: 61.

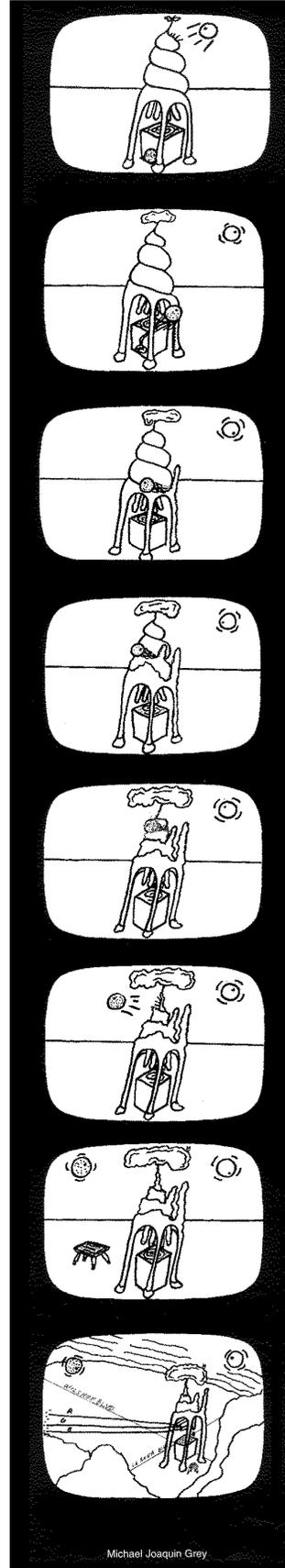
³⁴ Caroline Tisdall, *Joseph Beuys*. (London: Phaidon, 1979): 23.



(Frames 1-8)



(Frames 9-16)

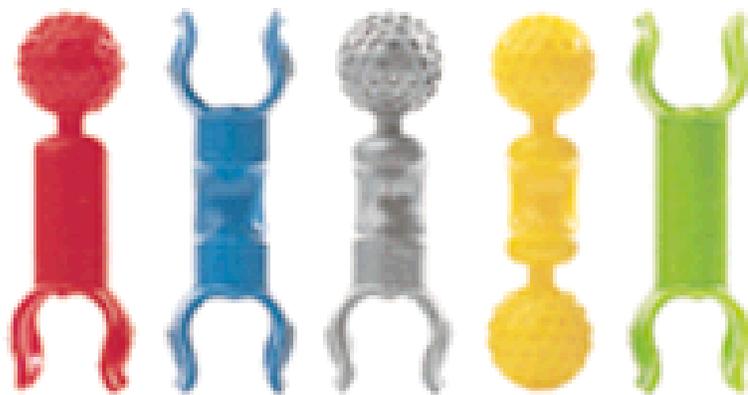


(Frames 17-24)

Origin of the Primordial ZOOP (1993)



ZOOB Evolving



ZOOBs come in five shapes and colors



Marmelaide Luna



Citro Sola