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**KEY CONCEPTS OF HOLOPOETRY**

Eduardo Kac

Experimental poetry followed many directions in several countries in the twentieth century. Each new direction attempted to address the historical, cultural, and often political needs of its own time. Between 1978 and 1982 I worked with countless experimental poetic styles, trying to develop my own direction. I explored traditional versification, recitation, body-based performance, visual poetry, graffiti, collage, typography, color, object-poems, sound, and a number of other possibilities. As a result of this relentless experimentation, I felt on the one hand that the printed page imprisoned the word within its two-dimensional surface, thus creating specific limits to poetic expression. On the other hand, I realized that the construction of solid three-dimensional objects gave the word a permanence and a physical presence that contradicted the dynamics of language. I was looking for a poetic language that would be malleable, fluid, and elastic. It was clear that I had to work with a new medium, beyond the page and the object -- a new medium that would still allow for the private experience of reading a poem. My conclusion was that the solution might lie somewhere between the two-dimensional surface and the three-dimensional volume -- in thin air. I envisioned in my mind's eye a poetic form that would exist beyond the page without being embodied on tangible objects. A poetic form that would be flexible, buoyant, and oscillatory as the thought process itself, and that could give new communicative power to the word. As I projected with great enthusiasm in my mind's eye what such a poetry would be like, I also thought that this dream was unachievable since it founded the principles of this new syntax in new media that -- at least for me, at the moment -- did not exist yet. My goals seemed, at first, anything but within reach. Holography was on my mind. I had read about it, but could not quite visualize what a hologram was like -- until I saw one. The experience of seeing a hologram for the first time early in 1983 was intense. I immediately recognized in this new medium the immaterial and kinetic solution to the poetic problem I had developed. I spent the next couple of years making the first holopoems and developing the theory of holopoetry. This work resulted in the first international exhibition of holopoems, in 1985, at the Museum of Image and Sound, in São Paulo. From the start the breaking down of the immaterial space of holography, as well as the development of non-linear temporal systems, have been the basis of my holographic syntax. My objective has always been not to use holography for its obvious three-dimensional qualities. I asked myself: what would be the difference between a sculpture of letters and a hologram of this sculpture? The difference was not significant. I immediately realized that holography was much more complex than the touted "illusion of three-dimensional space." This new medium has an incredible power not only to create an immaterial visual poetic experience, but to manipulate temporal systems, and to store information in ways that can be carefully controlled to generate fascinating new perceptual experiences. That is what I was after, and that is what I have been exploring since then. I must make it clear that I do not consider holographic poems those holograms that record or reproduce verbal material already successfully realized in other form or media. It is important to explore the unique qualities of the holographic medium itself and to develop a truly genuine "holographic writing." In order to clarify some of the unique aspects of my holopoetry, and also to help delineate some of the new compositional elements I have developed since 1983, I will discuss in what follows some of the key concepts of holopoetry. This will also work as a glossary of sorts, which can be used as a reference in the reading of my other texts as well as in the discussion of the holopoems themselves.

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**ANIMATION**

Animation in holopoetry refers to the fact that the words employed in a piece are set in motion. This is usually produced on a computer and then transferred to the hologram, although purely holographic animations are also used occasionally. Computer animations are created specially for the syntax of the holopoem. This involves a complex pre-visualization experience. Computer animations that are created for video or film do not work well in a hologram. This is due to the differences between the monoscopic surface of screen-based animations and the stereoscopic space of the hologram. A holographic animation must be created taking into account the stereoscopic perception of the viewer.

**BEHAVIOR**

In visual poems created for print, letters and words can be said to have a specific position on the page. These letters and words are arranged into a unified visual composition. In holopoetry, letters and words cannot be said to have a specific position or composition. Instead, they exhibit a particular kind of behavior. Something happens to letters and words as they are read by the viewer. Active behavior replaces static structure.

**BINOCULAR READING**I call binocular reading the process according to which some holopoems present different letters and words to each eye simultaneously. This feature is unique to holopoetry, and transforms the reading process in an intense experience. Normally, when looking at objects around us, we perceive two different points of view of the very same object. Binocular reading takes place when we read one word or letter with the left eye and at the same time a completely different word or letter with the right eye. Many holopoems –– Amalgam, for example –– rely on this principle for their syntactic and semantic efficiency.

**COLOR**

In holopoetry color is not fixed. It is relative. One viewer can see a letter in one color and immediately see it change into another. Two readers looking at the same word could see it in different colors simultaneously. While many holographers are disturbed by this uncontrollable behavior, I find it perfectly appropriate to stress the ungraspable nature of meaning. The oscillatory nature of color in my holopoems moves away from traditional symbolism and from the use of color as a structuring visual element. The chromatic system of each holopoem is created within certain parameters, which I specify. The creation of viewing zones and the behavior of color in a holopoem are intrinsically related, since form and relative position of viewing zones affect the diffraction of light.

**DIGITAL HOLOPOEMS**

Computer holopoems, or digital holopoems, are holopoems created from digital data, instead of physical letters made of metal, wood, and other materials. My first digital holopoem (Quando?, When?) was created between 1987 and 1988. Since 1989, all of my holopoems have been created with computers. If a holopoem is not made with the aid of a computer, I call it 'optical holopoem.'

**DISCONTINUOUS SPACE**

Discontinuous space is created in a holopoem when the homogeneity of the three-dimensional volumetric space of the hologram is broken down into discrete spaces that may or may not overlap in space, or time.

**DISCONTINUOUS SYNTAX**

The holopoem organized in a discontinuous space takes advantage of the logic and topology of this new poetic space. It presents the verbal material with a syntax of actual, perceptually real leaps and oscillations.

**EMPTY SPACE**

Quite literally, in holopoetry 'empty space' refers to the fact that the poem is read in an immaterial and empty space, visually located between the recording medium (holographic film) and the viewer –– and not on the surface of the page. This implies that holopoetry does not operate within the logic of traditional visual poetry inherited from Mallarmé, according to which the white on the page represents silence and the black type represents sound. Holopoetry undermines the subjugation of written language to phonetic systems and affirms the verbal experience based on the possible appearance or disappearance of graphemes within empty spaces. The white on the page which represented silence is removed and what remains is empty space, an absence of (printing) support which has no primary symbolic value. The vacuous gaps between words and letters do not represent positively absence of sound, because the photonic inscriptions don't stand essentially for its presence. We are in the domain of spatiotemporal writing, four-dimensional writing, if we wish, where spatial gaps don't point to anything except for the potential presence of graphemes. The voids are not to be "seen", unlike the white on the page. They are a quite literal interplay of absence and presence.

**FLUID SIGN**

A fluid sign is essentially a verbal sign that changes its overall visual configuration in time, therefore escaping the constancy of meaning a printed sign would have. Fluid signs are time-reversible, which means that the transformations can flow from pole to pole as the beholder wishes, and they can also become smaller compositional units in much larger texts, where each fluid sign will be connected to other fluid signs through discontinuous syntaxes. Fluid signs can also operate metamorphoses between a word and an abstract shape, or between a word and a scene or object. When this happens, both poles reciprocally alter each others' meanings. A transfiguration takes place and it produces in-between meanings that are dynamic and as important in holopoetry as the meanings produced momentarily at the poles. Fluid signs create a new kind of verbal unit, in which a sign is not either one thing or another thing. A fluid sign is perceptually relative. For two or more viewers reading together from distinct perspectives it can be different things at one time; for a non-stationary reader it can reverse itself and change uninterruptedly between as many poles as featured in the text. The holopoem Souvenir D'Andromeda is an example of this.

**HOLOPOEM**

A holographic poem, or holopoem, is a poem conceived, made and displayed holographically. This means, first of all, that such a poem is organized in an immaterial three-dimensional space, with complex non-linear temporal characteristics, and that even as the reader or viewer observes it, it changes and gives rise to new meanings. Thus as the viewer reads the poem he or she constantly modifies the text. As distinguished from traditional visual poetry, it seeks to express dynamically the discontinuity of thought; in other words, the perception of a holopoem takes place neither linearly nor simultaneously but rather through fragments seen at random by the observer, depending on the observer's position relative to the poem. Perception in space of colors, volumes, degrees of transparency, changes in form, relative positions of letters and words, animation, and the appearance and disappearance of forms is inseparable from the syntactic and semantic perception of the text.

**HOLOPOETRY**

Holopoetry is the word I coined in 1983 to name the new poetics I then introduced. By virtue of necessity, holopoetry can only be fully experienced via the creation of experimental works with the medium of holography. Today holopoems are stored on film. In the future, however, digital holopoems will be stored optically on discs. The exact storage media will change. That is not what defines a holopoem. Holopoetry is defined by unstable spaces, immateriality, four-dimensionality, interactivity, movement, relative perception, and related concepts.

**HYPERPOEM**

A hyperpoem is a digital interactive poem based on a system (hypertext) that branches out as the reader makes choices along the way. Hyperpoems promote a disengagement of the textual distribution characteristic of print. The node – and not the syllable – from which links irradiate is the new unit of measurement. The writer now defines the work as crisscrossing axes of combination. The reader has to make selections in a way that is similar, albeit not identical, to the way the writer has. The reader is now presented not with one narrowed-down selection of words in strings or in graphic layouts, but with an electronic field that is a complex network with no final form. In each node the poet will deploy text or add sound and moving images to it. In the future, when holography becomes digital, holographic hyperpoems will become possible.

**IMMATERIALITY**

In holopoetry, immateriality refers to the fact that the verbal material is organized in a space made of diffracted light, and not on any tangible or concrete form, such as the printed page. This new space, defined by photons, has no mass or tangible expression.

**INTERACTIVITY**

A holopoem is interactive in the sense that the natural movement of the viewer in front of the holopoem is enough to change what he or she reads. Every new movement reveals new reading possibilities, including the appearance or disappearance of verbal forms. In the future, when digital holograms become scriptable, it will even be possible to modify or add to the elements in the holographic text.

**NON-LINEARITY**

Holopoems are not organized with a beginning, middle, and end, as a poem in verse commonly is. Neither are holopoems printed on a page, with its suggested reading from left to right and top to bottom, or its opposite, the simultaneous ideogram. Discontinuous holopoems are read in leaps. Sequential holopoems are based on the principle of temporal reversal.

**PARALLAX**

An apparent change in the direction of an object, caused by a change in observational position that provides a new line of sight. Many holopoems explore parallax semantically. For example: in Omen, the word eyes spins inside a cloud of smoke. As the viewer moves from left to right and vice versa, the word appears and disappear, suggesting multiple readings.

**PERCEPTUAL SYNTAX**

If visual poetry developed a visual syntax –– based on the rejection of traditional syntax and on the elaborate visual treatment of the words on the page, holopoetry develops a perceptual syntax –– based on the rejection of the static syntax of print and on the development of complex and dynamic spaciotemporal verbal systems. A holopoem calls for non-linear perceptual responses to the words, which are experienced in time –– and not for the simultaneity of gestalts.

**PSEUDOSCOPY**

The opposite of 'orthoscopy', or the correct optical representation of a holographic image. Under certain conditions, a hologram can be made to reverse its image in space and time. A concave object is perceived as a convex pseudoscopic image. An object that rotates to the right is seen rotating to the left. Objects that appear in front of other objects are seen behind these objects in the pseudoscopic image. Objects that are seen behind the holographic plate float freely in pseudoscopic space in front of the plate. This feature is unique to holography and has been explored in holopoetry since the beginning. The first holopoem, Holo/Olho, from 1983, is based on this principle, and so is Chaos, and Wordsl 2.

**SEMANTIC INTERPOLATION**

In certain works, as the viewer moves relative to the holopoem, he or she perceives that each graphic line that renders the visual configuration of each letter starts to actually move in three-dimensional space. The viewer then perceives that as the lines and points go under an actual topological transformation, they slowly start to reconfigure a different letter. In Astray in Deimos, what was read as an adjective is becoming a noun, for example. I call this semantic interpolation. If the viewer happens to move in the opposite direction, the noun is transformed into the adjective. The shifting of grammatical forms occurs not through syntactical dislocations in a stanza, but through a typographic metamorphosis that takes place outside syntax. The meanings of in-between configurations can not be substituted by a verbal description, or by a synonym. Neither can it be replaced by a specific word, as gray suggests a specific intermediary position or a meaning between black and white. In holopoetry transient clusters of letters or ephemeral shapes that lay between a word and an image aim to dynamically stretch the poetic imagination and suggest meanings, ideas and feelings that are not possible to convey by traditional means.

**TEXTUAL INSTABILITY**

By textual instability I mean precisely that condition according to which a holographic text does not preserve a single visual structure in time as it is read by the viewer, producing different and transitory verbal configurations in response to the beholder's perceptual exploration.

**TIME-REVERSIBILITY**

Time-reversibility takes place in holopoems, such as Zephyr, which are made so as to be read from any temporal pole with equal semantic efficiency. This means, for example, that if one starts reading an animated holopoem from right to left (or top to bottom, or back to front), this holopoem can also be read from left to right (or bottom to top, or front to back). The time vector of the piece is reversible.

**TRANSITIONAL DISCONTINUITY**

In most holopoems, discontinuity is explored via leaps and gaps between the verbal material. In some cases, as in "Shema" (1989), letters are embedded in color fields that operate verbal discontinuity via visual transitions of colors. I call this 'transitional discontinuity.'

**VIEWING ZONE(S)**

A viewing zone is a non-physical zone, located in front of the hologram, through which the reader can actually see the words in the poem. When I create a holopoem, it is part of my writing process to decide how wide, tall and deep the viewing zones will be. I also decide the shape and relative position of these viewing zones. I can decide how many will there be and what gaps might there be between them. I can combine multiple viewing zones and edit them in many ways. I can decide on a number of viewing-zone parameters, which I use to create the unique quality of each work. The reader never sees a visual representation of these viewing zones. They are invisible. Viewing zones can be rendered sequentially and discontinuously, which helps create the space and the syntax of each holopoem.

Suggested Further Reading: Kac, Eduardo. **Holopoetry: Essays, Manifestoes, Critical and Theoretical Writings; 1983-1995** (New Media Editions: Lexington, 1995).