

INTEGRAL HOLOGRAPHY: THE MOTION OF CIRCULAR SPACE

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The 360° integral hologram is an apparition moving in mid-space inside a cylinder. The image moves, not realistically three-dimensional, but something more marvelous—an illusionistic volume of a new kind based on complex interrelationships of space, time, and motion. One of the most fascinating and important of these manipulations, which creates this new kind of image, is the conversion of motion picture film time into the circular space of the integral hologram, or through the fourth dimension of motion.

This new form is created because, in the process of converting film into integram, time is literally converted into space, and motion into volume.

In motion picture film, each rectangular film frame represents an increment of time. If we shine a light bulb through a piece of this film, we see many separate still images, each slightly different. When the laser rerecords each of these frames, turning specific photographic information into specific light wave information, this information is squeezed into a line approximately eight inches high and a tiny fraction of an inch wide. Each of these lines is focused and locked onto a piece of holographic film, and all of the lines are stacked side-by-side in the exact sequence corresponding to the film frames. This recording means of laser light can so accurately refine the image information into the rarer medium of light, that when we shine a light bulb through the developed holographic film at the correct angle, an amazing phenomenon happens: we are able to see what was formerly (approximately) 100 film frames as one single image. In other words, what in motion picture film was 100 separate moments in time, can now be integrated by a complex process of the eye and mind into the perception of one single image in space. In effect, motion has been concentrated in order to create a new space. But motion is only converted into the illusion of volumetric space by this process when the motion picture film contains a specific kind of motion information on it. This information is principally about revolution—the subject must turn around a tiny bit in each film frame. This information could be a dancer's pirouette filmed in very, very slow motion. In my 360° integram, *The Wave*, this information is in part the woman rolling into the ocean. You can simulate the information with your hand. Hold it, palm toward you, and turn it in tiny little movements until the back is toward you. Each tiny angle of the turn would be a film frame. One hundred of these angles would describe the movement around a volume of your hand. Since in the process of making an integral hologram, 100 film frames are converted into the perception of one space, this space will describe a

volume. The mind has converted motion into volume. Further, since a 360° integral hologram is made up of 1,080 film frames converted into hologram “light lines,” the total progression around the cylinder is perceived as the perfectly smooth motion continuum of a curved volumetric space, and the illusion of an omni-directional volume—an image describing depth—is created. The viewer’s mind continually sees around a volume created by means of the manipulation of motion. Since the viewer’s mind is always moving around the illusionistic volume, he/she posits that there is a simultaneous volume on the other side of the circle. Actually the “other side” represents a different set of moments in time *converted* into spatial illusion. If there were a real volumetric “other side” to *The Wave*, the ocean would in reality be a circle, which we know of course it isn’t. Yet this is the illusion in the mind. The viewer is seeing motion while perceiving volume. Motion has not been recorded, but this most intangible of properties has become palpably solid—captured like a spirit inside a capsule of space.

If it seems that I am going from logical explanation to irrational poetry, it is because the process is not a simple one-to-one equation, but a perceptual tongue-twister, a twisting of laws of optics and physics that creates paradoxical image concepts that give the artist a new space for the manipulation of visual and kinetic thought.

Paradox Number One: Because in converting motion picture film into an integral hologram, motion has been stretched out then concentrated, broken up then made continuous, made flat then round, and finally re-made by the viewer’s own motions or by a motor in the integrum, motion has been made relative to many factors, and so the cause or exact sources of motion in an integral hologram become a densely mysterious riddle. Everything seems to move, yet nothing seems to move. In *The Wave*, the motion is complex, yet there seems a changeless constancy. The woman and wave move inevitably to meet, yet never arrive. The space of the integrum moves in stillness around an invisible source . . . “at the still point of the turning world. Neither flesh nor fleshless; Neither from nor towards, at the still point, there the dance is; But neither arrest nor movement.” (T.S. Eliot, “Burnt Norton”)

Paradox Number Two: This mysterious volume not only turns, but also hangs in mid-space, so that our sense of gravity is unearthed. In the physical world, volume is associated with gravity. The sense of the mass of our bodies comes from our sensation of gravity. In the integrum, the perception of volume is dissociated from the property of gravity, and metaphysical ideas can result from this dissociation. In my next integrum, a man and a woman will seem to intertwine in mid-space, creating an external, deathless space-travel, and the materialization of the metaphysical idea of the eternal union of opposite.

Paradox Number Three: Perhaps the most elusive quality of all in the integram is its transparency, its translucency, “neither flesh nor fleshless.” The integram space, as in all holograms, is seen behind a transparent medium—the cylinder around which is wrapped the transparent holographic film. Unlike film, where we look at a shadow on an opaque surface, in a hologram we look *into* a translucent volume in mid-space behind a transparent surface. The cylinder is not the space of the image, but is a medium which acts both as a barrier between the viewer and the space of image, and as the purveyor of the information about the image to the viewer. This dual aspect of the cylindrical holographic film creates an untouchable, invulnerable, timeless world which is simultaneously intense, imminent and direct. This timeless and remote yet clear and immediate world is a space for sacred dance made not in obsolete stone temples but through the materials of contemporary technology. We look *into* this space as magicians and clairvoyants of the past looked *into* the crystal ball and *into* the future, but the magic is the mind’s ability to know, and the future is what is set clearly before us.

The sacred space of the integral hologram is not a *place*, but is the movement of *connection* between the cavity of the circle and the cavity of the mind’s perception. The connection between the light thrown back from the holographic film into the circular space and the light shooting out from the holographic film through the eye to the mind. Above all, this connection of moving light in space creates for me, as a dancer approaching the 1980s, a new possibility for the essence of ecstatic dance of the soul. Isadora Duncan could have prophesied the holographic dance when she wrote: “. . . the body, by force of the soul, can in fact be converted to a luminous fluid. The flesh becomes light and transparent as shown through the X-ray—but with the difference that the human soul is lighter than these rays. When in its divine power it completely possesses the body, it converts the body into a luminous manifestation of the soul . . . speaking out of himself and out of something greater than himself.”

(Isadora Duncan, “The Philosophers Stone of Dance”)