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L Y L A R Y E

B E T W E E N H E R E A N D T H E N

G L E N D O N G A L L E R Y

September 21 to October 29, 1995 · du 21 septembre au 29 octobre 1995

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## MUSINGS ON SPACE AND TIME FOR LYLA RYE

(with apologies to scholars of quantum physics)

*Dimension implies direction, implies measurement, implies the more and the less. Now, all our lines are equally and infinitesimally thick (or high, which you like); consequently, there is nothing in them to lead our minds to the conception of that Dimension. No 'delicate micrometer' - as has been suggested by one too hasty Spaceland critic - would in the least avail us; for we should not know what to measure, nor in what direction. When we see a Line, we see something that is long and bright; brightness, as well as length, is necessary to the existence of a Line; if the brightness vanishes, the Line is extinguished. Hence, all my Flatland friends - when I talk to them about the unrecognized Dimension which is somehow visible in a Line - say, 'Ah, you mean brightness': and when I reply, 'No, I mean a real Dimension,' they at once retort 'Then measure it, or tell us in what direction it extends'; and this silences me, for I can do neither.*

Edwin A. Abbott

I cannot pretend to understand quantum physics, can you? After all, I was trained in a humanistic discipline, Art History, where the distinctions between nature and culture are palpable, at least according to one of the great "father-figures" of the discipline, Erwin Panofsky. He pointed out that the humanists are essentially, historians. That to study the signs and structures of humankind's imprint (or the trail of records) is what separates us from the realm of the senses. While this may sound as though he veers towards "scientific" strategies, he is quite bent on underlining that a scientist, who, of course, deals with records as well, does not deal with them as signs of culture, but rather, as something that helps to advance scientific investigation. The humanist, continues Panofsky, reads Leonardo da Vinci, for example, different from the scientist, in that his art is seen to have "autonomous meaning and lasting value." Time - and space - at least early on in his cogitation, is of no consequence to the humanist.

Of course, if I present this opening argument, I do

so with the full intention of dismantling it. On the surface of it, nothing in my training as an Art Historian prepares me for a discussion about whether or not light is emitted in waves or particles. But the connections between science, and particularly quantum universe theories, and the humanities are closer to me than ever before. One of the points of looking at a world that had been increasingly understood as very real and stable, objective and detached, is that with the development of the theory of quantum physics, arguably one of the most important scientific achievements (along with the theory of relativity), there are alternative ways of observing the universe: nothing is what it seems to be, objectivity is encouraged to live alongside subjectivity, and there is a paradox of measurement.

Panofsky's argument slowly adopts scientific process. He "elevates" the discipline to a "science" of the humanities, and he does so, most convincingly, by introducing to the reader that the "process of investigation . . . begin[s] with observation." Observation is what quantum physics sees as crucial in determining an outcome, but ironically, has everything to do with how physics works in the absence of an observable result. In other words, how do we, as readers of things and ideas in the world, make sense of situations, of objects, of moments, that cannot *simply* be measured, recorded and observed? Can we accept to conduct thought in a state of uncertainty? If Panofsky ever really believed that time stood still, he had better think again.

### Uncertainty

Here is a story of a cat. A fictitious mindgame is Erwin Schrödinger's theory, but very real. It leaves me wondering about states of limbo, so much a part of Lyla Rye's work, so connected to my own sense of the mysteries of the quantum world.

Schrödinger, in 1935, proposed that a cat locked in a steel box with a phial of radioactive substance might be subject to the decay - every hour - of one of the atoms, and that he would be killed by the poison. But maybe not. With equal probability, perhaps none of the atoms would decay and the cat would live. What is fascinating is that we cannot be sure whether the cat is alive or dead. Only when someone looks inside, or until someone *measures* or documents, or transfers to an archival state such a recording or observation, is this experiment able to provide us with a certain outcome. We really have no option - that is, while the cat is penned up - but to imagine the cat in some sort of suspended animation. We cannot posit that there effectively is a dead cat in the box. But neither can we ensure that the cat is alive.

With a dead or alive cat we have different interpretative means of coming to terms with the incompleteness of the exercise. We can make a decision that the cat is dead or that the cat is alive without the power of measuring the accuracy of such an assumption (by actually peering into the box at the end and recording the measurement). This would collapse our position into measurable reality. We would, in the language of quantum physics, measure the position without measuring its momentum. Or, we can, as a second option, choose to measure instead the momentum or causality of the cat. A third option, after the work of Neils Bohr, amounts to accepting the complementarity of the two separate patterns of measurement that conflict, since two distinct properties of a quantum object should never contest one another. Instead, these ideas would constitute complementary aspects of an object's behaviour. Can here *or* there be both here and there?

The peculiarities of the quantum world have been subject to heated debate around such issues as either measuring position and mass of something or its momentum, or measuring precise energy at

a specific moment (space and/or time). Can there really be a position of complementarity of the two systems simultaneously? Can this paradox of quantum theory be resolved? Much to the horror of Einstein, who asked that surely the moon must be real whether we see it or not, Schrödinger tries to demonstrate that nothing is really real until it is observed. He argues that we are left with no option but to accept the state of indeterminacy. It is necessary to hold onto this limbo, even though it is holding onto nothing, because nothing has been observed, nothing has been measured. The record of history is not there. Intrinsic to quantum dynamics are slippages, blurred definitions, and uncertainty.

### **Line**

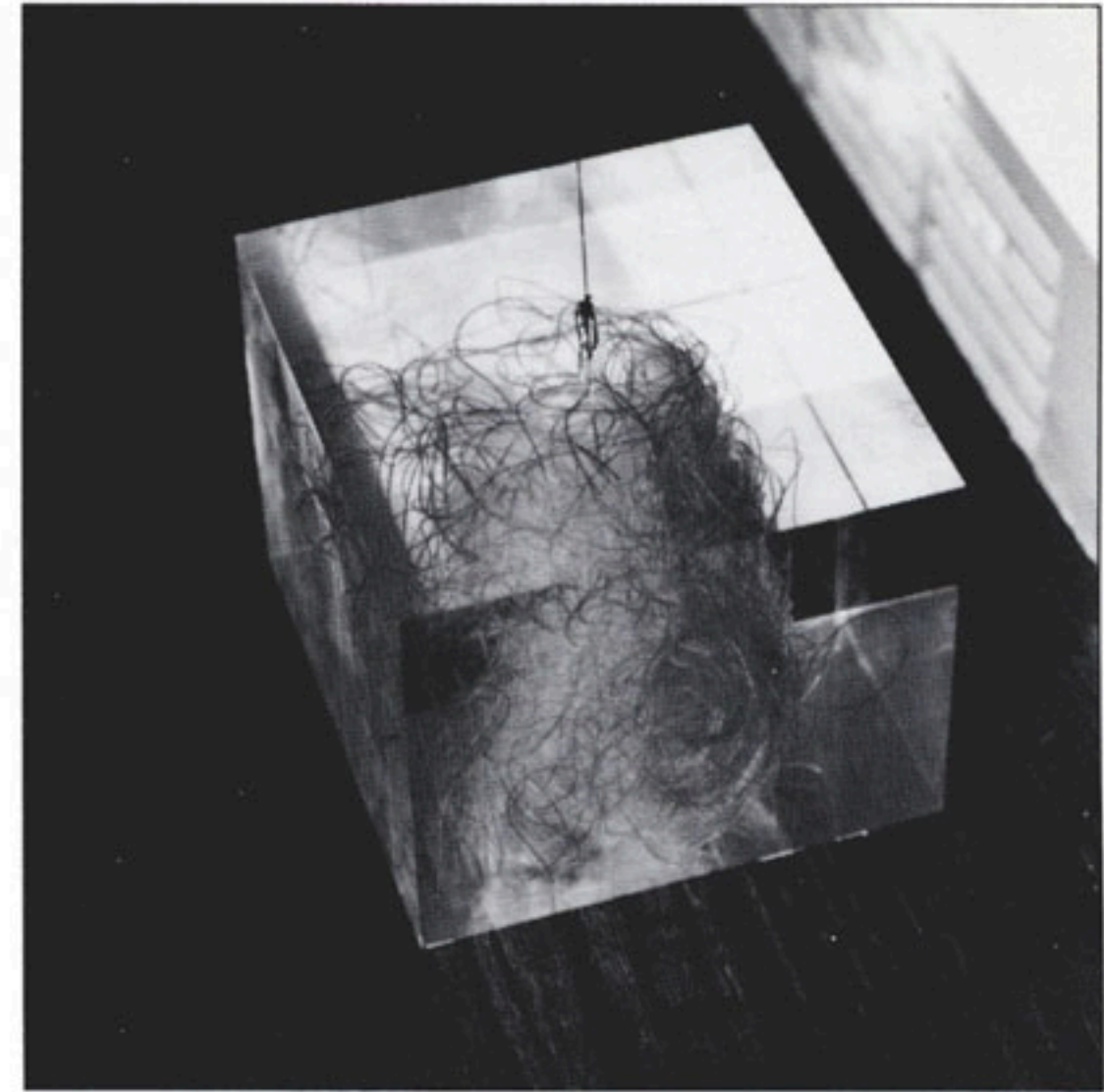
Hold that thought and move to this: apart from theories and structures, aside from the architectonics of the built environment, the world of architecture begins and is bound by explorations of the line. Line is at once a distinctive given, a delineated trace, a sign and site of limits or boundaries, edges or beginnings. It is a computation of big or small, more or less, public and private, freedom and constraint. But more than anything else line is a certainty, a clean division between here and there, inside and outside, up and down.

Through generations of architectural representation, the process that marks space, defends or destroys its boundaries, and creates material form (now a wall, now a threshold, now a room), is defined by orthogonality, not only literally, through the architectural drawing that reveals the creative process, but as well, epistemologically, as orthogonality is established through the linear push from drawing to built form.

Moreover, the line "fertilizes" itself as an "improper" architectural figure that determines a space, a genealogical entity, a wall, an anatomy, something fleshy or anthropomorphic. And

whereas space had always been conceived as stringent and fixed, immobile and undialectical (by Michel Foucault, and later, Ed Soja), and stripped of a sexuality (fertility), it can conceivably be altered, in this interpretation of it, as organic, with a potential for further organicity and change. What was formerly seen as dead space - space that is inalterable, lifeless, objective, sexless, and measured as fact or archive - opens up to a mid-zone, or a place that is not necessarily still or denied organicity, but perhaps not necessarily alive and fecund. Architecture has generally been appreciated not by the space it engulfs, surrounds, rejects, captures or frees, but rather by its formal beauty as a physical structure (as indicated Panofsky, with its own "autonomous meaning and lasting value"). It is in this sense that it is then a "dead" space, objectifying that which it shapes. The lines that determine space then, are at the source of some sort of vast design of architectural demise. Lines create barriers and openings, slice across spatial vacuums and stir up boundaries that had once felt unshakable. Lines that expand in height and width, lines that join to cover expanses of space, lines that record observable or unobservable reality, or not, lines that are enabling devices to help distinguish between this place here and that place there, between the actual and the real worlds, between what we *know* in this world to be so by controlling the behaviour of what we think or imagine our reality to be. Line contributes to disrupting and reconfiguring conceptions of previous, or rather, preconceived, space. It participates in the transformation of material - read, measured - reality. It is capable of transforming itself and all it *delineates* in an ongoing challenge to our knowledge of reality. By providing alterations and subversions of where our reality is located, line is a robust yet subtle agent of change.

Measuring a line's precise location in space, as Lyla Rye does for us, is also to measure its



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uncertain hold on that space and its illusory relationship to time. Where is this space and what or whom can it contain? Lyla's lines lead to a past or to a future, separate out the space in which we stand and the space in which we do not, hold together divisions that are not there. Surely such lines - in a mid-zone - preclude certainty and absoluteness.

### **Certainty**

It is time to come back to Erwin Panofsky, for as he put it, the beginning of any investigation always presupposes an end. In a passage devoted to relativity, he suggests that the humanities is determined by a cultural theory of relativity similar to that of the physicists; and further, that each historical concept is unquestionably based on the notions of space and time. Why raise this point in the context of lines in space, mid-zones and complementarity? In the end, Panofsky quests objectivity and certainty and essentially that tangible world of classical science. Traditional Art History, too, aims

to represent Truth. Finding a mid-zone to aim for destabilizing Truth would be nothing short of anathema to him. Looking for an orderly cosmos of culture, he attempts to ensure that Art Historians, as scientists of historical monuments and documents guarantee regimentation about archives and objects by observing and recording (measuring), certainty will triumph.

### Between the Lines

I'd like to end my piece the way Catherine Ingraham ends hers by referring to Stendhal. She mentions Stendhal's musing on mathematics, and highlights his dilemma with parallel lines: do they, or do they not meet in infinity? He contends that everything is false, or more to the point, that nothing is false, but also, that nothing is true. Clearly, or perhaps unclearly, uncertainty is the answer at the heart of the quantum argument.

While Einstein firmly believed that there is a sharp line to be drawn between all that represents sensory experience and concepts, Bohr's concept of complementarity - a philosophical bridging of subject and object in approaching the world as a unified space - gives us the tools to effectively forego binary oppositions (such as is this false or is this true? Do lines converge in infinity?) and approach space and time anew. Quantum knowledge helps to see how Descartes' binary distinction of the things of the world and I, is just not possible, and the separation of subject and object is forced. Heisenberg concentrated on how objective quantities do not apply to the "wave function" or "probability function" and that reference that a *subjective observer's* actual knowledge of things in the world *counts*.

Art, too, operates between what is actual and what is real. Susan Strehle's term, "actualism" raises questions about this new mid-zone, or mid-fiction which operates in-between. The bond to realism or to anti-realism is broken and this recent literature fits snugly into a zone of mediation

between the two opposites, perhaps, even, a complementarity. From the position between others it is sometimes within, sometimes without, a place of subjectivity or objectivity.

How does this correspond to the actual and real worlds? Reality, suggested Werner Heisenberg, is not real at a subatomic level. Rather, it is active, dynamic, or *actual*. Perhaps we can look at certain forms of art, according to Strehle, that are *active* at ensuring instability, or tilting existing models, as displacing and dislocating narrative conventions of realism. Echoing the quantum theory of the universe after Heisenberg, art of this sort takes as its project the task of renewing interpretation of the material world by creating a new space, and taking place, between here or there, here and there — "Between Here and Then" ?

Shelley Hornstein, August 1995

With thanks to Niall Atkinson for exploring books on quantum theory; to Lyla Rye for helping me to see it; and to Sam Rabinovitch for helping to explain it. All errors of interpretation are uniquely mine.

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