



SHAPE JOURNAL

HOLISTIC MATERIALISM ADDENDUM

THE ROOTS OF DIALECTICAL MATERIALISM BY ERNST MAYR / THE ORIGINS OF DIALECTICAL MATERIALISM BY J. SCHOFIELD
DIALECTICS FIXED AND VARIABLE / EXAMPLES OF HOLISTIC MATERIALISM: THEORY OF EMERGENCES AND THE DOUBLE SLIT

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Edward Burtynsky's photography certainly has an element of holistic materialism, revealing the interconnectedness of vast complex systems, both human and natural, and indeed, the very interpenetration of these opposing forces.

Holistic Materialism Addendum

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What is Holistic Materialism?

(Addendum)

Preface

by

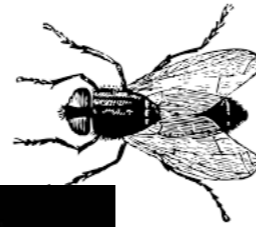
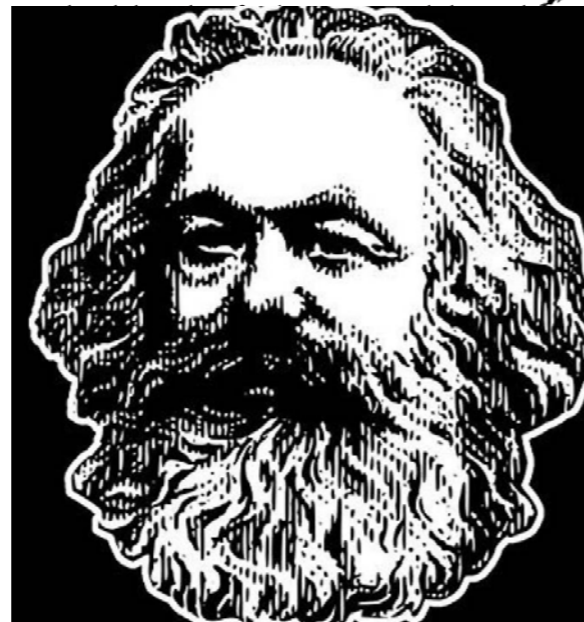
Mick Schofield

Welcome to Special Issue 67 of SHAPE Journal, this is an addendum to the original two part series entitled *Holistic Materialism* published last year.

The original series constituted a set of loosely related papers by Marxist theorist Jim Schofield concerning his philosophy of science, and his application of Holism and Dialectical Materialism to the sciences, especially particle physics. This has been a historical and epistemological project as much as it has been a philosophical and scientific one. In order to understand the mistakes and impasses we are presented with in science today, it is imperative to go back and have some understanding of how knowledge and philosophy have evolved over human history.

But what exactly is Holistic Materialism? *Holism* is a word that means different things to different people, a seemingly vague term that is often abused and misused - 'holistic medicine' for example covers all sorts of pseudoscientific nonsense no empirical researcher would care to be associated with. However Holism as a philosophical concept refers to something quite specific, and for Jim Schofield it is encapsulated in its opposition to the Pluralist position (not to be confused with pluralism), which sees all entities and laws as separable - capable of being isolated and studied in isolation - but more importantly, that this separability will somehow unlock the truth of how things in reality work. Essentially

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Jim Schofield's work is a unique critique of the hidden assumptions which underpin all science.

This is not the first time the term Holistic Materialism has been used, however. We see it linked to biology and 19th century naturalists in the writing of Ernst Mayr.

"The discovery of the similarity between dialectical materialism and the thinking of the naturalists is not new. Several authors have called attention to it, particularly Allen... He starts quite rightly: "The process of natural selection is as dialectical a process one could find in nature." Allen thought that the dialectic viewpoint of the naturalists had been lost between 1890 and 1950... Allen asserts that the "holistic materialism" of the naturalists had failed to incorporate two important dialectical views. First "the notion that the internal change within a system is the result specifically of the interaction of opposing forces or tendencies within the system itself."

The Roots of Dialectical Materialism (Mayr, 1997)

In the work of Schofield we see this kind of holist view of natural systems but very much informed by the dialectics of Karl Marx. It is not enough to see the interconnected-ness of things but realise how natural dominances emerge, to the point of seeming universal, and also how these dominances can come crashing down

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as their internal contradictions finally play out. It is in these crucial events that we see the Emergence of the wholly new. In these papers we see how Pluralist science prohibits access to this fundamental feature of reality, and that while those 19th naturalists may have hinted at the way forward, holist science is something new.

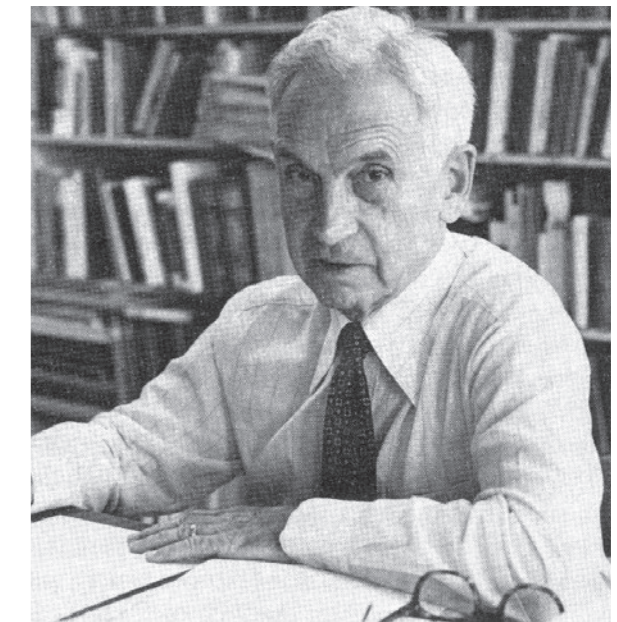
In this additional set of papers we address Mayr's contribution directly, including his full paper *The Roots of Dialectical Materialism* as part of this publication.

Jim Schofield's initial conspectus (also included here) is critical of Mayr's positioning of early Naturalists as instrumental in the development of Marxist theory, but also acknowledges Mayr's work as potentially very valuable to the further development of Marxism, philosophically, and in aiding the difficult progression towards a holistic scientific method.

The World Socialist Web Site, published by the International Committee of the Fourth International, certainly considered Mayr's work important to Marxism, publishing a detailed obituary of this great thinker upon his death in 2005. In this piece Walter Gilberti writes:

"Mayr's life-long interest in the fundamental questions that continue to animate the biological sciences, combined with his exceptional longevity as a working and thinking scientist, engendered in him a profound appreciation of its history. In particular, he stressed the importance of a study of

MAYR



the history of scientific concepts (natural selection, e.g.). He wrote: "Preoccupation with this sort of conceptual history of science is sometimes belittled as a hobby of retired scientists. Such an attitude ignores the manifold contributions which this branch of scholarship makes" (1982). He stated further: "One can take almost any advance, either in evolutionary biology or in systematics, and show that it did not depend as much on discoveries as on the introduction of new concepts.... Those are not far wrong who insist that the progress of science consists principally in the progress of scientific concepts" (1982)."

This is certainly similar to Schofield's view and the approach taken by this retired scientist, also trying to better understand how science works, and how it fails to work, through theory. Scientific Concepts are vital here, as Mayr suggests. However objective one's data may seem to be, it is only through the frame of key concepts that interpretation and understanding begin.

Holistic Materialism is just such a concept - a frame for understanding our scientific findings by adopting the much wider view that is necessary, in such a complex and interconnected world.





The Roots of Dialectical Materialism

by

Ernst Mayr

In the 1960s the American historian of biology Mark Adams came to St. Petersburg in order to interview Zavadsky. In the course of their discussion Zavadsky asked: "Do you know Ernst Mayr?"

Adams: "Yes, very well."

Zavadsky: "Is he a Marxist?"

Adams: "He is not, so far as I know."

Zavadsky: "This is very curious because his writings are pure dialectical materialism."

I have been as puzzled about this comment as Zavadsky was about my writings. What I was puzzled about was, which of my ideas or concepts were considered by Zavadsky to be so close to those of the dialectical materialists. I have been wondering about this for the past 30 years and I think I have gradually come close to an answer. In this I have been helped by a number of publications, particularly those of Engels (1), Levins and Lewontin (2), and Loren Graham (3, 4). I eventually discovered that I had at least six beliefs more of less shared by most dialectical materialists (See below). I particularly benefited from the Selsam-Martel Reader, which provides lengthy excerpts from the writings of Engels and other Marxist theoreticians.

In order to understand dialectical materialism, one must study its history. It was developed by Engels and Marx, but mostly by Engels, by accepting the historical approach of Hegel but rejecting Hegel's essentialism and physicalism. Indeed Engels states this quite concretely when he says, "we comprehended the concepts in our heads once more materialistically—as images of real things instead of regarding the real things as images of this or that stage of development of the absolute concept." (1). In spite of his historical approach Hegel's thinking was in most respects strongly Cartesian (physicalist) and this was the part rejected by Marx and Engels. How evolutionary their thinking was they probably did not fully realize until they read Darwin's Origin. This is

why Marx wrote such an enthusiastic letter to Engels "... this is the book which contains the basis in natural history for our view." There was a second point in the natural history literature that greatly impressed Engels. It was the strongly empirical approach. Engels criticizes Hegel for his explanation of the laws of dialectics, his "mistake lies in the fact that these laws are foisted on nature and history as laws of thought, and not deduced from them." Incidentally, as L. Graham has pointed out to me, Engels never used the combination dialectical materialism, but rather "modern" or "new" materialism. At the time when Engels and Marx developed their concepts of dialectical materialism Cartesianism was dominant in philosophy but it was not acceptable to Marx and Engels. Hence, their need to develop their dialectical materialism, in part as a result of their own thinking and in part based on the analogous thinking of the contemporary naturalists.

Darwin is traditionally cited as the source of such evolutionary thinking, as particularly well presented by Allen (5). However, such thinking was widespread among naturalists, at least as far back as the early 19th century. For the last 200 years one could distinguish two groups of biologists. One consisted of the experimentalists, usually driven by "physics envy", who more or less adhered to the Cartesian ideals. The other, the naturalists, who had an understanding of the historical and holistic aspects of living nature, but were often also vitalists (6). Darwin's thinking that appealed so much to the dialectical materialists, was actually rather widespread among 19th century naturalists.

When I scrutinized the literature on dialectical materialism, particularly the work of Levins and Lewontin (2), of Loren Graham (3, 4), of Selsam and Martel (7) and others, I encountered a long list of principles of dialectical materialism with which I, since my youth, had been familiar as principles of natural

history. Let me here enumerate six of them.

- 1). The universe is in state of perpetual evolution. This, of course, had been an axiom for every naturalist at least as far back as Darwin but as a general thought going back to the age of Buffon.
- 2). Inevitably all phenomena in the inanimate as well as the living world have a historical component.
- 3). Typological thinking (essentialism) fails to appreciate the variability of all natural phenomena including the frequency of pluralism and the widespread occurrence of heterogeneity.
- 4). All processes and phenomena including the components of natural systems are interconnected and act in many situations as wholes. Such holism or organicism has been supported by naturalists since the middle of the 19th century.
- 5). Reductionism, therefore, is a misleading approach because it fails to represent the ordered cohesion of interacting phenomena, particularly of parts of larger systems. Feeling this way about reductionism I have for many years called attention to the frequency of epistatic interactions among genes and to the general cohesion of the genotype. Dialectical materialism emphasizes that there is a hierarchy of levels of organization, at each of which a different set of dialectical processes may be at work. This is the reason why reduction is often so unsuccessful.
- 6). The importance of quality. The qualitative approach, for instance, is the only meaningful way to deal with uniqueness.

It is not known how many, perhaps most, of these principles were arrived at independently by natural history and dialectical materialism. This much, however, can be easily demonstrated that the acceptance of this kind of thinking by naturalists goes way back into the 19th century. And it is highly probable that it had an impact on the development of dialectical materialistic thought.

The discovery of the similarity between dialectical materialism and the thinking of the naturalists is not new. Several authors have called attention to it, particularly Allen (5). He starts quite rightly: "The process of natural selection is as dialectical a process one could find in nature." Allen thought that the dialectic viewpoint of the naturalists had been lost between 1890 and 1950, but actually he investigated only experimental genetics where this was indeed true. Zavatsky's comment on my

dialectical thinking was based to a large part on my 1942 book, but other evolutionists of this period were equally dialectic.

Allen asserts that the "holistic materialism" of the naturalists had failed to incorporate two important dialectical views. First "the notion that the internal change within a system is the result specifically of the interaction of opposing forces or tendencies within the system itself." Actually the evolutionary, behavioral, and ecological literature is full of discussions of such interactions. Competition is a typical example so is any instance of so-called struggle for existence, all coevolution, so-called arms races, etc. Again and again it was stated by authors that any given phenotype was the compromise between opposing selection pressures. Territory systems and social hierarchies are the result of the interaction of opposing forces. Neither can I see any validity in a second distinction of dialectic materialism versus the views of the naturalists, that "quantitative changes lead to qualitative changes." In all of his examples all of his supposedly quantitative changes are already qualitative. A chromosomal inversion is a qualitative change and so is any mutation that results in a new isolating mechanism. In other words, I fail to see any thinking among the holistic naturalists that is not compatible with dialectical materialism.

The next question we ought to ask is, "Are there any principles of dialectics not shared by the naturalists?" For instance, do naturalists support Engels's famous three laws of dialectics:

- (1) "The law of the transformation of quantity into quality and vice versa."
- (2) "The law of the interpenetration of opposites."
- (3) "The law of the negation of the negation."

Engels's principle of negation has been referred to also as the principle of contradiction. The word contradiction is liable to be somewhat misleading. Opposites sometimes can be constructive. The best phenotype very often is a balance of several opposing selection pressures. This has often been pointed out by Darwinians. Translated into modern dialectical terms, these three laws express the following thoughts.

The first law is simply seen as a principle of non-reductionism.

The second law is considered as an explanation for the presence of energy in nature, that is for its intrinsic



nature and not as something bestowed from the outside (e. g., by God).

The third law, negation of the negation is a somewhat curious wording of the assertion of continuous change in nature, e. g., no entity remains constant but is gradually replaced by another.

It is quite obvious that the naturalists would entirely agree.

Would Engels have supported all the views held by modern Marxists? The case of Lysenko clearly demonstrates that Engels would not have done so. Actually Lysenko's pseudo-science had nothing to do with dialectic materialism. That he had so much government support was due to his political influence and the scientific ignorance of Stalin and Khrushchev. It would be a mistake to hold Lysenko's ideas as a black mark against dialectic materialism.

Another component of modern Marxist thinking which I have trouble to derive from dialectical materialism is the opposition of some leading Marxist biologists to adaptationist thinking. I feel that this opposition is based on the erroneous notion that adaptation is a teleological process. According to Levins and Lewontin, "organisms adapt to a changing external world." But this does not correctly describe the process of becoming adapted. What actually happens is that each member of a population is somewhat differently adapted to the environment of the moment. Those that are most optimally adapted will have the best chance not to be eliminated by natural selection. I cannot see that there is any conflict between this statement and the principles of dialectical materialism. This statement certainly is not in any way an expression of Cartesianism because Descartes would have never allowed such an extent of variation in a population. The word adaptation, of course, is somewhat ambiguous because it describes both a process and the result of this process. This is why most modern evolutionists say that the end of the process is not adaptation but adaptedness. There is no foresight in this process, no teleological component, it is not something organisms do. It is simply a description of the daily observed process of the elimination of the less-well adapted individuals.

If I understand it correctly, but I may well be mistaken, some Marxists are also in opposition to the Darwinian principle of the uniqueness of the individual. No two

individuals are the same, no two individuals have the same genotype, no two individuals have exactly the same propensities. This is an almost inevitable consequence of the rejection of essentialism. It is this property of populations which makes natural selection possible. By a curious misunderstanding of this principle, a misunderstanding not shared by J. B. S. Haldane, this principle is decried by many Marxists, seemingly including Levins and Lewontin, as being in conflict with the principle of equality.

In opposition to this way of thinking I hold that genetic uniqueness and civic equality are two entirely different things. Haldane, who came to the same conclusion, insisted, therefore, that in order to provide equal opportunities as far as possible to individuals with highly diverse abilities, it was necessary to provide diverse opportunities (8). To insist that all individuals are identical would be a falling back to classical essentialism. Haldane for one clearly saw that human heterogeneity was not in any conflict whatsoever with dialectical materialism. Indeed, Engels also consistently emphasized the ubiquity of heterogeneity.

It would seem legitimate to claim that dialectical materialism in its opposition to Cartesianism, reductionism, essentialism, and other aspects of physicalist thinking has not inhibited anywhere the advance of biological thought and where such inhibition is seemingly found, it is due to incorrect Marxist interpretations that are actually not part of the principles of dialectical materialism.

To repeat what I have said already above and what so startled Zavadsky, what is amazing is the similarity in the thinking of naturalists and dialectical materialists. The so-called dialectical world view is by and large also the world view of the naturalists, as opposed to that of the physicalists. Naturalists have always been opposed to reductionism and to the other physicalist interpretations of the Cartesians. I would not be surprised to learn that Engels got this world view in part from reading the writings of Darwin and of other naturalists.

Dialectical materialism was for Engels and Marx a general philosophy of nature. It was achieved primarily by an elimination of physicalism and Cartesianism. Would that be a philosophy of science that fully accounts for the autonomous characteristics of biology? The viewpoint I have presented in my recent book "This is Biology"

is that it is necessary to develop the characteristics and principles of the various "provincial" sciences, such as physics and biology, in order to construct eventually a comprehensive Philosophy of Nature, which does equal justice to all sciences (6).

I am deeply indebted to Professor L. Graham for many suggestions for improvements of my original draft.

Literature

1. Engels F. *The Dialectics of Nature*. 1888.
2. Levins R., Lewontin R. C. *The Dialectical Biologist*. Cambridge, 1985.
3. Graham L. *Science and Philosophy in the Soviet Union*. N.-Y., 1972.
4. Graham L. *Science in Russia and the Soviet Union: A Short History*. Cambridge, 1993.
5. Allen G. *The Several Faces of Darwin: Materialism in Nineteenth and Twentieth Century Evolutionary Theory // Evolution from Molecules to Man*. Cambridge, 1983. P. 81-103. ; Allen G. *History as science and science as history. // Evolution and History*. N.-Y., 1989.
6. For a modern evaluation of vitalism see: Mayr E. *This is Biology*. Cambridge, 1997.
7. *Reader in Marxist Philosophy*. N.-Y., 1963.
8. Haldane J. B. S. *Human Evolution: Past and Future // Genetics, Paleontology and Evolution*. Princeton, 1949. P. 405-418.

The Origin of Dialectical Materialism within the History of Human Thinking

by

Jim Schofield

This short paper has two distinct purposes.

First, it deals, in an introductory way, with the Dialectical Materialism of the great biologist Ernst Mayr.

Secondly, it introduces the reader in a fairly simple way into the version of Dialectical Materialism favoured by its originator, Karl Marx, along with its current developments undertaken by the writer of this paper.

A prestigious German biologist, Mayr had felt it necessary to dissociate himself from the claim that the origin of his philosophical Stance in Biology could have been derived directly from Dialectical Materialism (the Philosophy of Marxism as originally established and developed by Karl Marx, along with his long-time collaborator Friedrich Engels).

His broad agreements with Dialectical Materialism were certainly energetically confirmed by him, but, nevertheless, he claimed that such a stance had, in his case, solely been a consequence of the position and experience of the majority of Naturalists, and he even suggests, incorrectly, that Marx and Engels probably got their own stance from the Naturalists, rather than the other way around.

But this dispute, if you can call it that, was initiated by Mayr himself in his paper "Roots of Dialectical Materialism", which is also included in this issue of SHAPE Journal in its entirety, firstly, because of its undoubted quality in revealing his reasons for supporting Dialectical Materialism, but, in addition, to also allow readers to appreciate his exceptional grasp and valid description of that stance.

But, it crucially has also to be pointed-out, that his introduction to "Marxism-as-such" was via a professed Marxist of the Stalinist years in the Soviet Union, as some of his other sources clearly reveal.

Though Zavadsky, the Russian who recognised Mayr's unwitting agreements with Dialectical Materialism, and who also by his explanations, revealed that he, at least, hadn't had his stance compromised by the then political leadership in his country - the Stalinist Leaders of the then Soviet Union! But, both Levins' and Lewontin's works, which Mayr also read, were by no means unaffected by the distortions of Dialectical Materialism imposed by the current regime controlling the Soviet Union.

Zavadsky had mentioned his conclusions to a visiting academic from the USA, who was a friend of Mayr's and later told him about it! But, what this did reveal is how separating-out a significant aspect of a comprehensive and integrated philosophical stance, such as that of Marx, into a seemingly stand-alone position will certainly change its nature from when taken along with other vital, consistent and ultimately essential aspects of an overall integrated stance,

However, apart from correcting that mistake, the exact equivalence of the stance of most Naturalists, with the form of Dialectical Materialism, as subscribed to by Marx, turns out to certainly not be the case, overall.

The historical trajectories of their separate histories, crises and resolutions were both very diverse from each other, and involved very different Realms of valid application.





Clearly, the original Naturalists' Holism would have been much closer to The Buddha's than that of Marx, and that whole line of development, with the Natural Living World as its focus, had a very different history and primary concerns to Marxism which began with Marx's initial philosophical Studies of the Ancient Greek Intellectual Revolution.

Marx's trajectory was always influenced (via Hegel) by Greek philosophy and its fundamental limitations, its consequent distortions of Formal Reasoning as well as its distortions of Science. For, it was unavoidably via the intrinsic Principle of Plurality, and the revolutionary changes it had initially instituted within Mathematics, but also consequently-and-falsely assumed to be generally applicable in those areas too.

Marx, had the whole western tradition to contend with, and had to find a way out of the many impasses built into western philosophical Thought, from that revolution, and by that Principle, and indeed it required a re-finding of Holism, but by very different means to the "Naturalism" that The Buddha had depended upon, and then both intuitively and experientially developed by reference to that ever-present Natural Living World.

Indeed, in the West, it took a further 2,300 years before the Plurality of literally all Western Thought was challenged by Hegel, finding Holism in Human Thinking, as applied to Dichotomous Pairs of contradictory concepts - for that Principle alone allowed him to introduce Qualitative Changes (prohibited by Plurality) into a Developing Reality.

And, he achieved many things, by means of seeing apparently direct opposites as legitimate possible outcomes of similar real world processes.

His resulting system of studying the way things changed qualitatively was the Dialectics which informed Marx and his method.

Hegel was an idealist, however, considering *ideas* as the drivers of Reality, he didn't study Reality, the social or natural world for answers, but instead searched for them solely within resolutions of abstract Dichotomous Ideas.

To finally re-establish Dialectics in Concrete Reality, it took Karl Marx to transfer this philosophy wholesale into Reality, in a NEW Approach which went on to be called Dialectical Materialism.

The Naturalists (as early Biologists) had recognised qualitative change as an essential feature of describing The Living Natural World! While Marx's purpose was to rescue literally all the Intellectual Disciplines from the cul de sac of Plurality, where most of them still reside now (including much of Biology).

POSTSCRIPT:

Though certainly an excellent thinker, Mayr was a Biologist, and this coloured his view of Holistic Materialism. In contrast this writer has always taken an interdisciplinary approach to studying Reality - holistic you might say - teaching many different subjects, designing tailor-made software to aid sophisticated researches across the whole range of disciplines (from Engineering to Dance), yet it still took him the rest of his working life to apply Dialectical Materialism effectively, and for the first time, to his own original specialism Sub Atomic Physics - with revolutionary results!

Dialectics: Fixed and Variable

The Profundity of Qualitative Change and the importance of

David Harvey's Lectures on Marx's Capital

by

Jim Schofield

I have spent a considerable amount of time, over recent years, effectively condemning the Principle of Plurality outright, in spite of it being the most significant achievement of the Greek Intellectual Revolution, and I necessarily did that not only to criticise its inherent weaknesses, but to also in addition simultaneously *applaud* its major contribution to Human Thought and Reasoning that it had historically delivered.

Both certainly had to be done!

For all developments in understanding can never be purely absolute and positive: Reality does not ever deliver Absolute Truth, but only aspects or parts of it, which unavoidably alight upon the easiest simplifications, which always have damagingly negative side effects too.

It is also an admission of the unavoidable inadequacies of Human Thinking. We were, not so long ago as we acknowledge, at a similar level in Thinking to most other advanced mammals. We have only very recently begun to try and understand the Reality in which we find ourselves.

Yet, the seemingly obvious alternative to Plurality- the Principle of Holism, defined at about the same time, historically, by The Buddha in India, certainly delivered no easy, superior or one-for-one replacement to Plurality - which seemed to be necessary for all analysis.

Indeed, Holism's complexity and ambiguity has subsequently defeated the Buddha's disciples ever since, in attempting to deliver a coherent, useable and developable

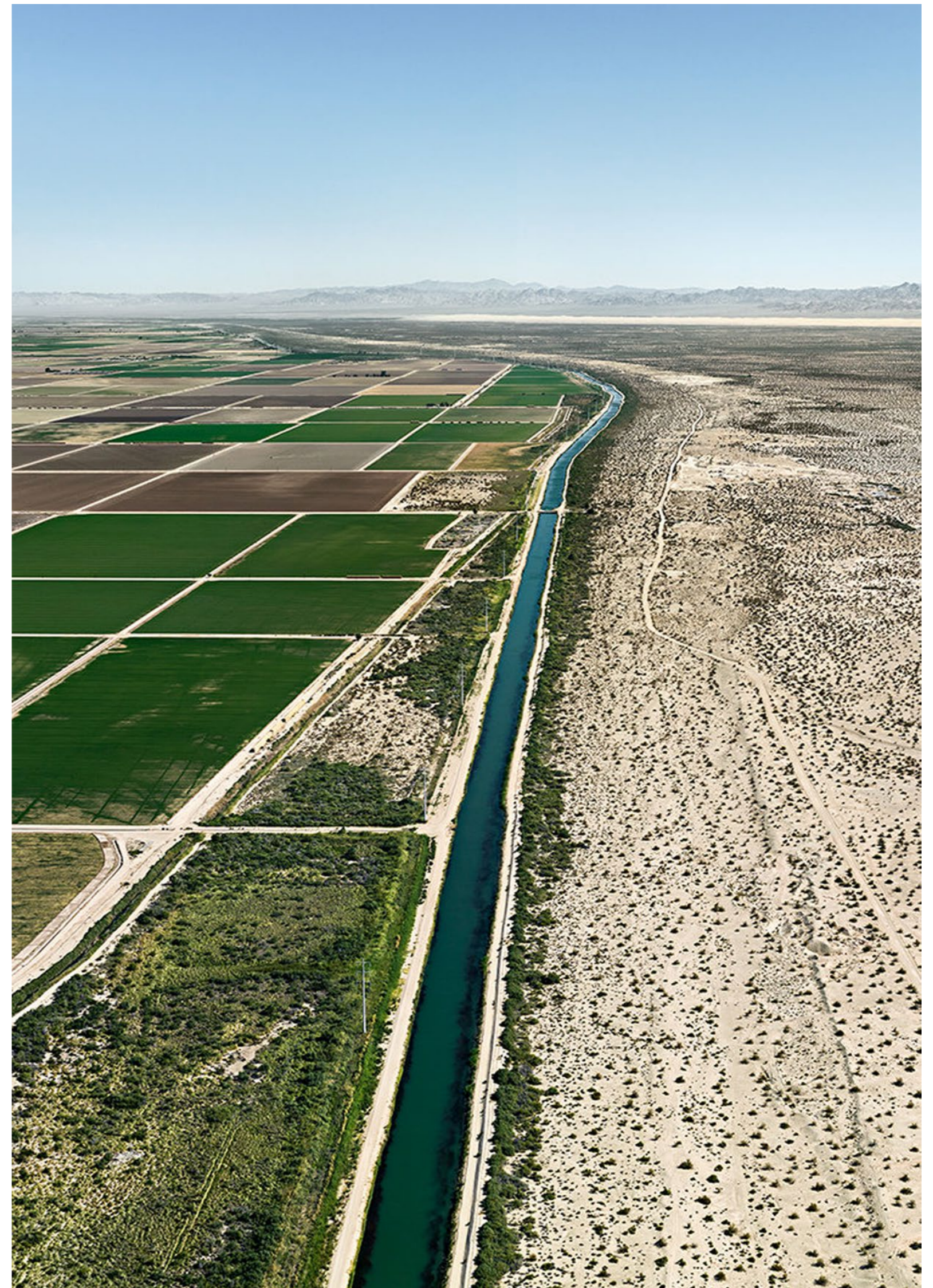
alternative, in spite of its undoubted wondrous moments of real Wisdom. [You can see why both of these partial solutions arose at the same time, as they are actually two sides of the same dichotomous coin]

This is Holism's strength and its weakness: for no holistic system has yet ever been easily extracted from it, as a reliable basis for Explaining the World causally - not least because it so frequently could clearly turn many situations into something quite different qualitatively, or even into their direct opposites! It always seemed impossible to pin-down.

And, most important of all, in putting Qualitative Change at the heart of all Development, it made the explanation of the consequent Emerging-New, wholly impossible to derive directly from its prior and clearly producing circumstances. How could scientists test hypotheses if situations were intrinsically unpredictable?

The seeming impossibility of there being a useable System of Reasoning, tended to divert its profound use to creative artists of various kinds, who, in individual Works-of-Art, could deliver profound Moments of Holistic Revelation only!

Yet, in spite of Plurality, which considered all entities and processes as ontologically fixed, the Greeks intellectual achievements remarkably included the invention of Mathematics, which as exclusively the study of Pure Forms alone, and therefore could indeed legitimately make that assumption. But, when they also illegitimately extended that supposition to both General Reasoning



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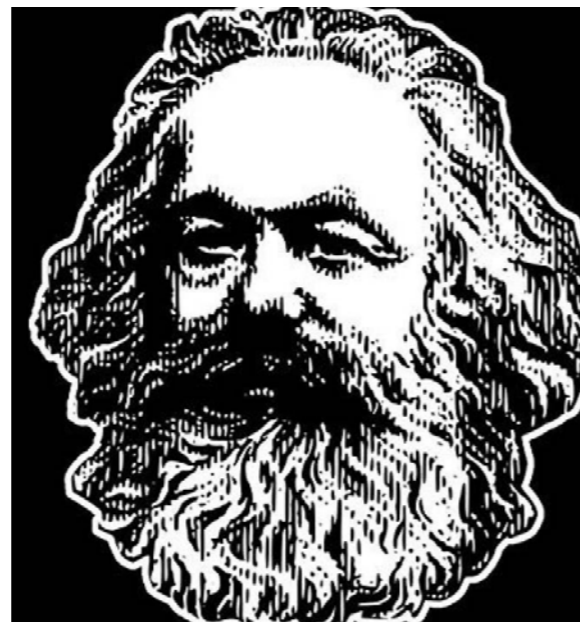
and all the Sciences, though generally undoubtedly incorrect, it did indeed reflect the apparent constancy of most things - most of the time - the everywhere evidently temporary, yet long-lasting Stabilities of Reality, not only allowed Plurality to deliver a reasonable approximation, but also it could be actually guaranteed artificially, by both greatly simplifying situations, and also holding things still (as in scientific experiments and all human technologies).

Plurality very successfully enabled Technology, but certainly NOT Science, or, most important of all, actual Developmental Reasoning! And, therefore, it was actually wholly incapable of explaining significant Developments, both in an Evolving World, and even in Creative Thinking necessary for explaining such changes!

Nothing is ever fixed forever - things which will be taken-as-fixed, will always, at some point, cease to be so, as a consequence of natural-but-crucial qualitative developments. But despite this profound difficulty, the Holist approach, in full flower, explains far more than any Pluralistic accounts ever could.

In this lecture Harvey analyses what he terms *Fixed* and *Varying* Capital, via Marx's Explanation of Capital as Value-in-Motion, a process totally impossible to address pluralistically, but only with real and transforming Qualitative Changes throughout, with categories actually even changing into their opposites, with such happening repeatedly, and therefore being incapable of either Description or Explanation by the still dominant Pluralist Stance in both Reasoning and Science.

MARX



Two millenia passed before Hegel systematically tackled Dichotomous Pairs of contradictory concepts, with his attempt to include Qualitative Change into Formal Reasoning, via Dialectics.

Though, effectively it was not Hegel, but a member of his Young Hegelians, Karl Marx, who first extended Dialectics into the study of Reality, within a vastly recast Dialectical version of Materialism, which he urgently attempted to apply to the current Capitalist Economic System, finally with a significant measure of success in his major work *Das Kapital*.

We see this in many of the changes occurring within Capitalism's current trajectory, as it regularly metamorphosizes to climb-out of its very regular downturns, recessions and even total slumps, by converting literally everything into monetary values, as the only measure, then inflating that value by competition on the Stock Exchange - they then corral it into their hands as the only ones who can afford it. In the current period, it gets ever more desperate, and the cause of the last recession in 2008, is simply repeated, once again, just as before, but with new ever more rightward, authoritarian and protectionist political directions, hopefully to cope with the next completely inevitable crisis. Only dialectically and holistically can you explain this current contradictory alliance between globalist neoliberal economics and far right nationalist populism.

Now, implicitly-embedded in that work (*Das Kapital*) were the required definitions and Methodology of A New Stance, but he was actually developing it, as he simultaneously attempted to use it, throughout that excellent achievement.

But, both Capitalism and our World itself, are running out of possibilities. Climate Change and ever increasing pollution are heading things towards an existential Crisis, and Capitalism is running out of alternatives to perpetuate itself, as it is fast becoming a deteriorating situation! Only through attempting to understand these vast systems holistically, and materially, do we stand any chance of avoiding disaster.

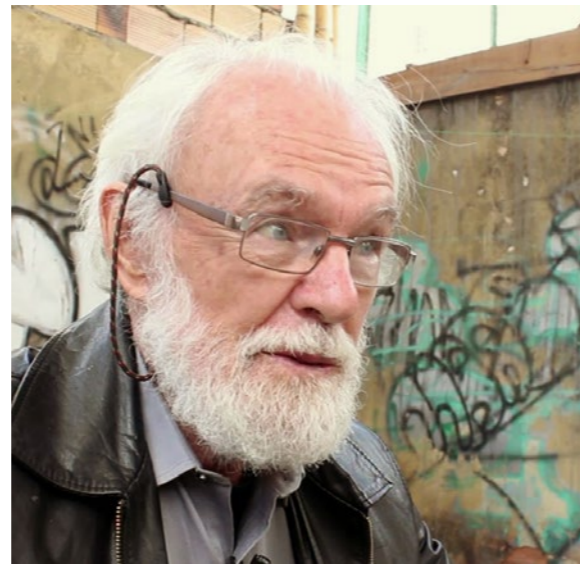
But this burgeoning method was never overtly spelled-out formally, nor could it be, before Marx's untimely death prevented his doing so.

And, it is only now that this necessary contribution has been achieved by Professor David Harvey in his series of lectures and YouTube videos.

The whole series is remarkable: but his fourth Lecture upon Volume II of *Das Kapital* is truly magnificent!

But be prepared for contention...

HARVEY







Examples of Holistic Materialism:

I - The Theory of Emergences

As the consensus approach in both Logic and Science, for over two millennia, increasingly and inevitably encountered insurmountable difficulties, the mismatch with the World became increasingly divergent from Reality-as-is. Its scope became increasingly limited to the Reality we made for ourselves - via Technology - limited in its applicability to only rigidly stabilized-and-maintained situations. The absolutely Crucial Dynamics of Real Qualitative and Natural Change consequently became totally impossible to explain! The outcomes could certainly be described formally, but the causing explanations were absent.

Indeed in Science, NO experiment was considered to be of value, unless it was exclusively restricted to a "single relation only", and a steadfastly qualitatively-maintained situation, delivered throughout. And, absolutely all Reasoning, including that used throughout Science was also restricted to that of pluralistic Formal Logic alone - forbidding contradiction and hamstrung by fixed ontologies.

Now, despite this restricting all study to more-or-less stable situations, the necessity for stability actually drove Technology very well. Technology began to mediate our entire view of Reality, even construct the Reality we were studying. BUT it was useless for revealing the actually naturally existing qualitative relations and changes in Explanatory Science.

While all Reasoning-in-general was restricted to phenomena wherein nothing changed qualitatively! Real revealing Reasoning was replaced by a small subset in which no qualitative developments ever took place: it

was merely the reasoning of Games, with fixed rules, so it couldn't be generally be legitimately used - it was always restricted to use in different, separate areas, in which nothing changed qualitatively, but only ever quantitatively.

Human Thinking in general was severely restricted. The Real World, and Really Existing Societies of People, that actually qualitatively developed over time, could never be addressed and explained "rationally"! The only changes considered were those implemented by people, but as to what resulted from those changes could not be explained concretely. All qualitative changes were therefore restricted to Human Thinking - where else? You can imagine the difficulties of Historians: who had innumerable and often dramatic changes to explain, without any objective means of achieving or delivering them.

Now, this certainly didn't mean that people didn't have problems to solve, but that they were severely restricted from doing so! Zeno of Elea, very soon after the Greek Intellectual Revolution, found whole series of contradictions when using Formal Reasoning upon problems in Movement, which he described in his book, Paradoxes, concerning what became known as Dichotomous Pairs of contradictory concepts! But he was largely ignored until the German Idealist Philosopher Hegel began to address many of these with his revolutionary changes in Dialectics - the beginnings of a solution seemed possible - a Logic of Change!

Karl Marx realised that Hegel's Dialectics needed to be transferred wholesale into Concrete Reality, and developed there to enable a real assault upon actual

Qualitative Change in Reality itself! He termed the new stance, Dialectical Materialism: and its mission was to address and explain all Qualitative Changes. But the problems were significant! Plurality could only ever deal with Quantitative Changes - changes in amount! But, now, somehow, changes in the nature of things to become "something else" - with different properties, had to be effectively addressed!

Plurality also failed with genuinely multi-factor situations, and all sort of tricks were invented to circumvent this profound methodological limitation. All natural situations are the combined result of a mutually affecting nexus of many simultaneous factors - which themselves are NOT fixed (as in Plurality), but were always effectable-by and affecting-of others.

Most revealingly of all, these combined effects could many times be maintained as apparently *constant* -overall, due to a combined balance-of-opposites, always effectively adjusting for variations, to return it to that balance; EXCEPT in certain special situations, in which that balance was finally and irretrievably LOST, resulting in an overall dissociation back into one of the separated individual factors, which ONLY THEN could, along with some new partners gradually come together in a wholly NEW overall balance, with NEW properties!

The properties before and after the Change would seem (and in an important sense actually be) wholly unrelated, for they were indeed from a very different mutually affecting mix, and consequent Balanced Stability. The unexplained qualitative change, would then be revealed by a dynamic changing succession of two Different Balanced Stabilities, caused by the total dissolution of

one, and a very different successful association of another as a result.

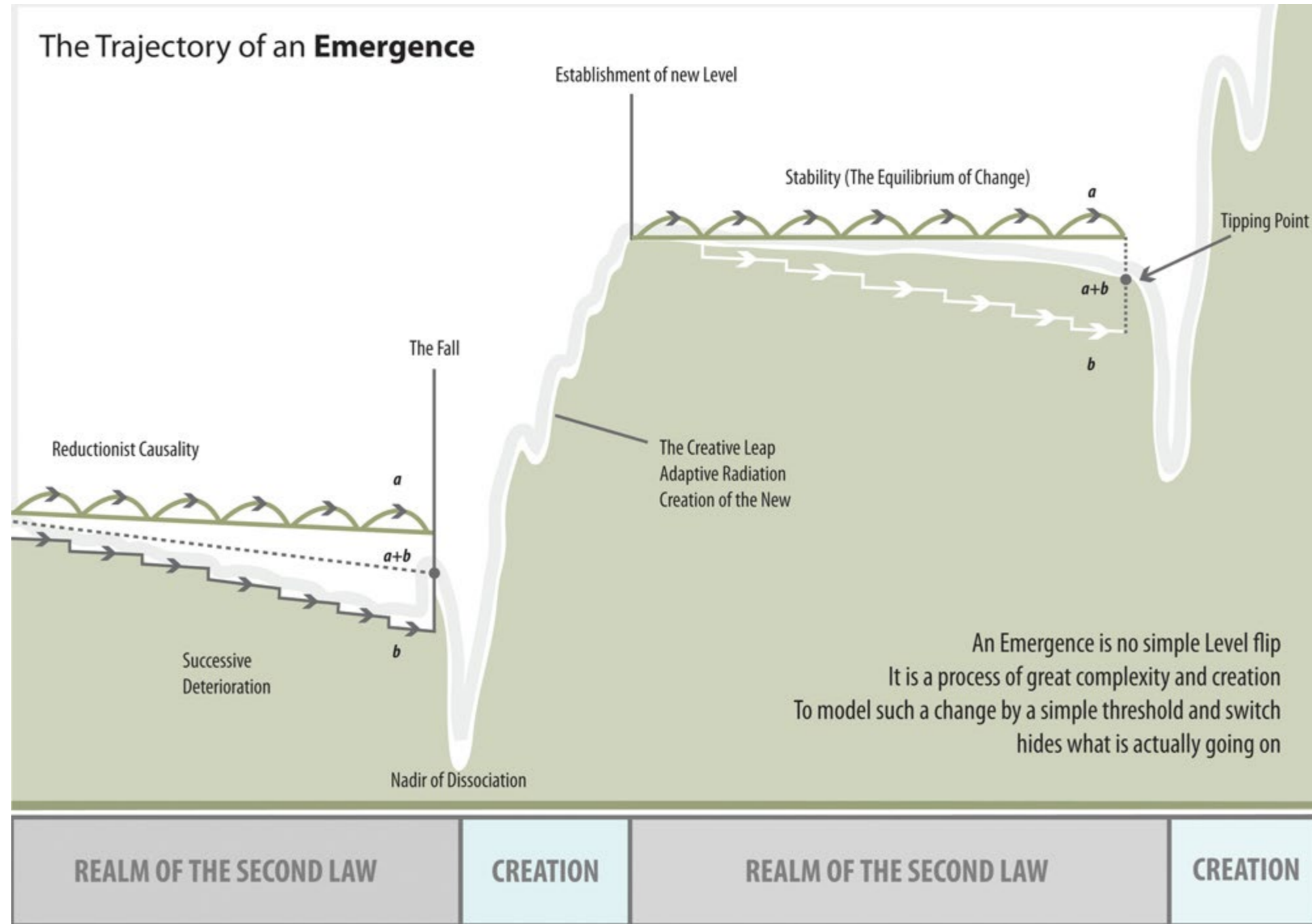
Now, such changes, in most circumstances, are either too quick or too slow to be easily observable, and the established methods for performing experiments also can never address such situations. But, as Marx was aware, the situations of Qualitative Changes in Social Revolutions are literally always at a studiable tempo, and as long as a holist stance was employed in such an investigation, the whole trajectory, from prior Balanced Stability, via a series of resolved Crises until one caused a complete dissociation into separate factors.

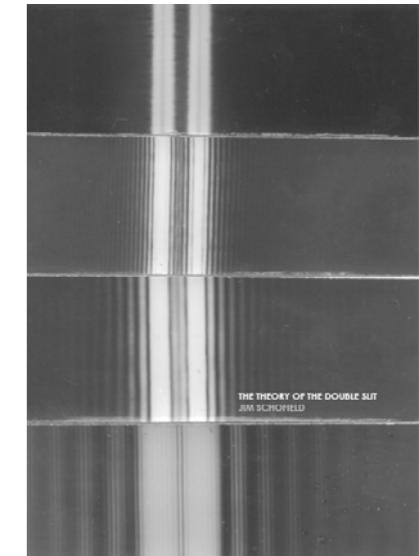
For then again via a very different series of (this time) usually-resolved Crises, until a situation would finally be arrived at, wherein a wholly new Balanced Stability could be achieved.

This at a Society Level is termed a Revolution, but at lower levels is instead said to be an Emergent Interlude! The accompanying diagram (overleaf) was devised by this theorist to illustrate the common form of such an Event. Now, very clearly, the New Holist Approach to Qualitative Changes opens the door to a wholly new and difficult way of engaging in Explanations, at literally all levels. And just as with Pluralist Methods and consequent Techniques, Mankind will find a collection of ways of investigating Reality and of Reasoning, which will, over time, deliver a New Intellectual Realm, capable of achieving things currently inconceivable.

Please read *The Theory of Emergences* (2010) by Jim Schofield for more on this new Marxist theory.

The Trajectory of an Emergence





Examples of Holistic Materialism:

II - The Double Slit Experiments

As a physicist I have long been at odds with the dominance in Sub Atomic Physics for The Copenhagen Interpretation of Quantum Theory, and its role in the abandonment of Physical Explanations, to be replaced by Pluralist Eternal Natural Laws, but also always wholly embodied in pure mathematical formulae.

Indeed, it was this that propelled me along a lifelong path to find an alternative to this aberration: and I found the very first step in a surprising place. The clue was in a book by V.I. Lenin entitled *Materialism and Empirion Criticism*, which was a critique of the positivist philosophical stance adopted within their discipline, by the leading physicists of the time, Henri Poincaré and Ernst Mach. Lenin trounced the physicists philosophically, but he wasn't a physicist himself, so no physicist took any notice of his intervention in the field. But his critique was sound, and I expected the job to be taken up by scientists to complete the job, but it never was.

Thereafter, the position of the Positivists morphed over time into the Copenhagen Stance of Heisenberg and Bohr - this stance went on to completely dominate the field.

Their version crystallised around the perplexing set of results that were regularly received from the Double Slit Experiments. For, these experiments seemed to demonstrate Electrons sometimes acting like *Particles*, while at other times acting as if they were *Waves* of electromagnetic radiation.

(Can anyone spot the dialectic yet?)

Nothing in the way that these experiments were regarded could explain that anomaly! Yet, I could easily construct a theoretical scenario which could explain everything.

The trouble was that my explanation for Wave / Particle duality required a Substrate - a medium within which the experiments were performed, and no discernable Substrate was detected (not only there, but also Everywhere throughout Space - NO Substrate had been found)

So I decided upon a dialectical Thought Experiment to resolve the contradiction - in this experiment there was a Universal Substrate, that was both real and material, but which was currently undetectable by the usual means. I carried through with my Thought Experiment, and all the anomalies of these experiments vanished: absolutely everything observed was now explicable!

"But there is NO Substrate!" was the cry! "The Michelson/Morley Experiments proved that long ago!"

Yes, that was indeed the current consensus position. But could an undetectable Universal Substrate actually exist? And what might explain Pair Productions and Pair Annihilations in the vacuum otherwise totally Empty Space? Could a mutually-orbiting pair of particles of the same size but opposite charges be *undetectable*?

Well, the Pair Productions and Annihilations certainly involve an Electron and a Positron (seemingly both occurring IN and OUT of *Nothing* - something which had always bothered me as a materialist) Could they orbit one another and consequently be undetectable: for

we could call the result: *A Photon!* And, such a particle has been observed, in the Tevatron at Fermilab, and even named as the Positronium.

But it was unstable there!

I decided to investigate how large numbers of these dual particles, in otherwise Empty Space, would actually "react" with one another: and my consequent researches were very revealing! I found that in very close proximity to one another, their internal particles could affect one another "across the gap between them", and replicate exactly what James Clerk Maxwell had devised and used to develop his Electromagnetic Equations (based upon an Analogistic Model of the then assumed Aether),

And, further investigations revealed that these oscillating effects were enough to produce a loosely-linked, solid-like Substrate of Neutrtrons, which could be a perfect propagator for electromagnetic radiation, via a bucket-brigade handing-on of quanta of energy via Substrate version, which I termed A Paving! And, this could be easily dissociated into a Gas of separated joint particles, which could even also be driven into a Stream by moving particles: and even into active Vortices! Indeed, as proved in the Tevatron, individual joint pairs could also be easily dissociated into an Electron and a Positron.

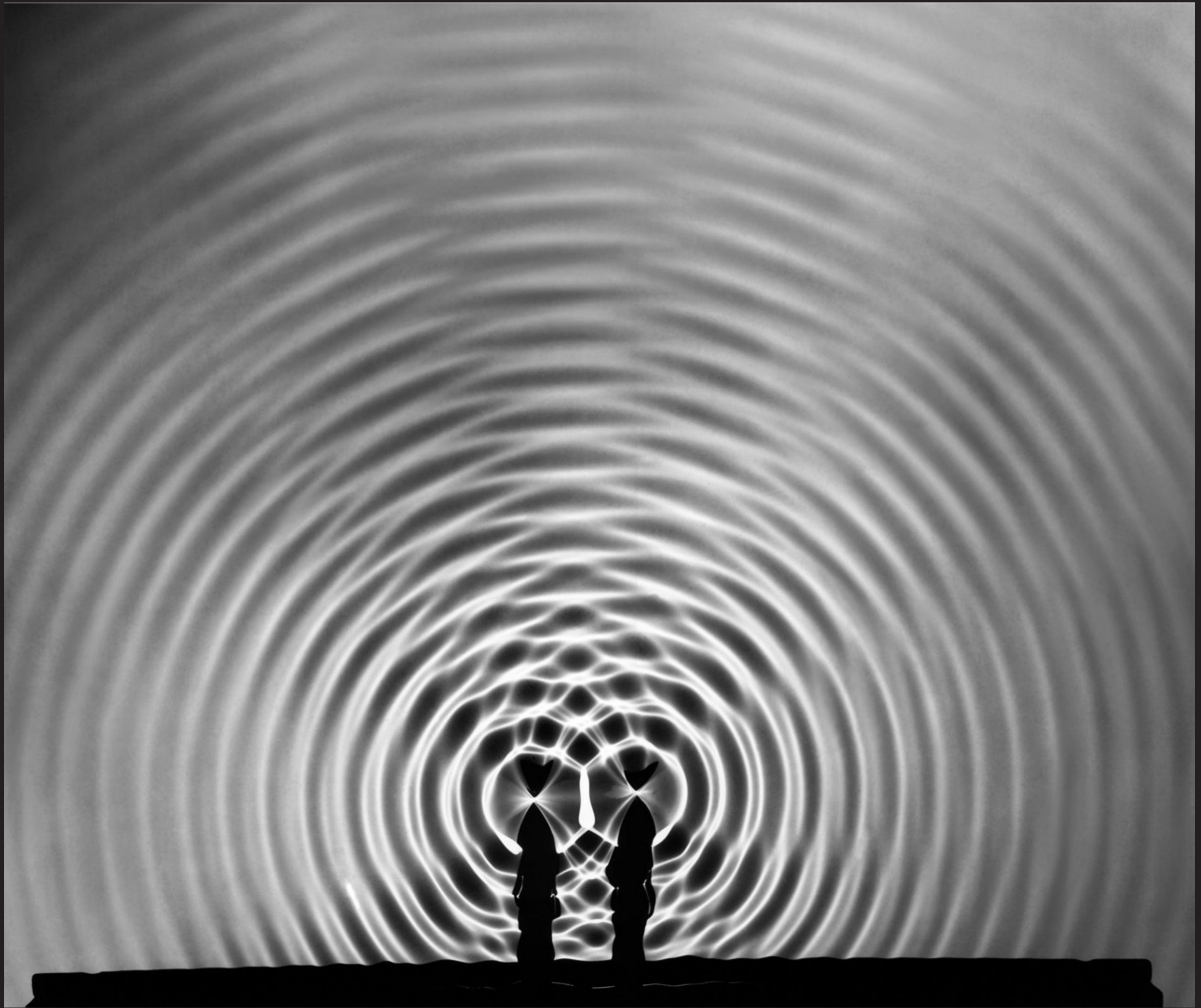
So, these individual mutually orbiting pairs I renamed as Neutrtrons, and found that they could exist in all these different modes occasionally detectable, but mostly not (well do detect it, and call them photons or EM radiation).

In these various phases the Substrate would display quite different properties. NOTE: within the atom, driven by an orbiting Electron, it would turn a path in the Substrate into a driven stream and thereafter, into sustained vortices, accompanying the entire Electron orbit, constantly exchanging energy with it, until a balance is achieved, which is only possible in certain orbits - the supposedly "quantised orbits" of Copenhagen!

Now, of course, these particular Units of a Universal Substrate, could not possibly deliver everything that occurs within "Empty Space": so an extension of the ideas, which produced the Neutrtriton, led also to the Magnetons - delivering both Electrical and Magnetic Fields, as well as Gravitons doing the same for Gravitational effects (without recourse to Einstein's idealist Space/Time Continuum!). Indeed, the basic pattern of mutually-orbiting pairs of particles of opposite charge, produced both of these but not as single particles, but as Mirror-Image Pairs (to cancel out identical but opposite effects when in a random Gas).

The dichotomy of Wave/Particle duality was resolved dialectically, showing that the contradiction was based on false assumptions and missing parameters. The particle of light when detected was an individual Neutrtriton in a sea of such entities. Light's Wave-like properties were a result of energy in their mutual orbits passed between Neutrtrons across space.

For the latest on these investigations see Issue 65 on Jim Schofield's *Substrate Theory*.





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