Real Science?

Paper III: *A Patchwork of Parts or a coherent, indivisible Whole?*

III. The Forms of Holism

But, before we tackle the biggy referred to at the end of the last paper, let us consider the smaller versions of change that can be handled by various much easier methods.

Many years ago Hegel attempted to define the next major task in Philosophy, and he saw it clearly as the inclusion and necessary handling of Qualitative Change. Indeed, his ***Science of Logic*** was his attempt to address such Change, and his chosen area in which to attempt this prodigious task he decided had to be Human Thought.

He, using his own "Thinking about Thought", began the task of developing a Logic of Change. His effort was around 200 years ago and the weapons he could employ in such a tremendous task were at that time extremely limited. Nevertheless, he was perhaps the greatest ever philosopher and he famously came out with a series of "words of wisdom" about Change, which have become part of our present vocabulary. But, though we remember his aphorisms, we forget his purpose. The fact that he could only use the contents of his ***own*** Thinking, caused them to be dismissed as unscientific, and the situation was not helped by his evident and indeed trumpeted Idealism centred on his pivotal Absolute Idea.

His most famous phrase is probably ***"Quantity into Quality"***, and it is important though NOT to do with cataclysmic Change that we will be concentrating on later.

This phrase was to do with Change within Stability. The pointers for this kind of Change are the variable factors involved in extracted relations. If they could persist through and after the process of Change, then such is certainly of this more limited type of Change.

What is encapsulated in this statement are situations wherein a certain factor is varied quantitatively.

At first, when the changes are small it will have NO effect on things, but at a particular stage, a crucial determining value is passed, at which the Form of the situation changes quite clearly.

The gradual tipping of a stable pile of sand will at first have no appreciable effects, until a certain angle of tipping of the pile is passed. As soon as this occurs, the pile starts to flow, and the original pile is lost. The previous form has been replaced by a reasserted new stability.

Such Changes are not profound, and are limited to re-organisations of Form alone. The main entities, and any quantified elements remain after the transition, but have been restructured in some way. These sorts of phenomena are therefore characterised by a crucial "tipping value" at which the change of form occurs. But most things remain exactly as they were.

A further step along this road must be that occupied by the famed Changes of State (or Phase Changes)

The classical example is the sequence of transitions involved in the changes between the solid, liquid and gaseous states of a substance, which occur on the simple quantitative increase of energy into a system. These transformations are quite different to the very simple case outlined above, because the results lead to wholly different Phases of the given substance in question, which clearly have entirely different qualities as it changes from Phase to Phase.

The atoms involved are still the same atoms. The distances between atoms are still the same sort of measurement, and the driving force of the whole sequence of changes is, of course, the available energy being pumped into the system. But though more involved than the "tipping slope" example, these changes are still to do with unchanging basic units. It is merely that the atomic relations get successively kicked into new arrangements consistent with the energy involved. Once more the significant things in these transitions are the actual values at which the changes take place.

BUT, there is an important difference.

In these changes we also get New Laws for each state. So each transition not only changes the formal arrangements, but also requires that new laws must be used thereafter as the previous theories will no longer pertain.

Such Changes of State are easily reversible by merely removing energy, and the substance will revert successively through the lower states, as the transition points are passed.

Now, these and many others are actual change WITHIN stability, and their handling is clearly achieved via identifying the change over points and the consequent necessary changes to new laws and formulae.
But these are classic ***Quantity into Quality*** situations à la Hegel.

The real problem, however must be Revolutionary Change – a form of Change so radical and all-changing that it has its own special name - it is called Emergence

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