Non-linear Processes and the dialectic

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Most writers and researchers in the humanities speak of something like "dialectical processes" or "dialectical thinking" and use a number of *metaphors* to characterise the complex and nuanced processes of reality in contrast to what may be called "linear" or "mechanical" processes or thinking.

In his exposition of dialectics in the *Logic*, Hegel dealt with this problem at great length and detail from a *conceptual* point of view. **Thirteen** distinct forms of the dialectic could be abstracted from Hegel's work, which are elaborated below. Firstly, though, I shall briefly review the relevant metaphors and forms of words used in popular and scientific discourse and then outline the concepts Hegel introduced for these same problems.

Popular conceptions of linear and non-linear processes

The idea of characterising processes or someone's conception of a process as 'linear' has its origin in mathematical representations of processes in natural science. Here there is a dependent and an independent variable (possibly time), and this relation may be represented by a line on a graph. Given appropriate measures for each variable or combination of variables, this graph may take the form of a **straight line**. In this case, the same change in the independent variable produces the same change in the dependent variable (add an extra kg to the pan and the spring always extends by one cm.), and the change is reversible (remove one kg from the scales and the spring retracts by one cm.)

This is the archetype of the 'linear process': a cause **always has the same effect** and is reversible. The 'linear effect' is thus independent of how many times it is applied, and in this specific sense is independent of previous history and context. A process can still be 'linear' in the strict sense while being context- and repetition-dependent, but this dependence on context and history is usually taken as one of the characteristics of 'non-linear' processes. In the archetypal 'non-linear' process, a certain stimulus always produces a certain response, but at a certain point one more stimulus produces a different response – the straw that broke the camel's back. Irreversibility is also taken as a characteristic of 'non-linear' processes: "you can't unscramble an egg."

Processes which cannot be encompassed within the concept of **cause-and-effect** tend to be irreversible. Certain conditions give rise to certain changes; take away those condition and the changes are reversed, but things do not generally quite return to how they were. In general, people express the complex and intractable nature of most real processes found in nature and society by contrasting them with 'linear processes'. Evolution by natural selection is a process where the effective 'cause' brings about an 'effect' by creating conditions in which conceptually extraneous and indeterminate causes (such as genetic mutations) will produce a determinate result. Stretching to reach the leaves on tall trees does not 'cause' the giraffe to have a long neck. Although not strictly causal, thanks to the notion of adaption, evolution by natural selection is amenable to causal analysis (an adaption took place

because of a given condition). Like linearity, cause-and-effect is contrasted with the complexity of reality, which is said to be 'dialectical'.

'Linear' also summons up images not only of steady progress, but of **continuity**. Some processes are marked by discontinuity, such as Stephen Jay Gould's notion of punctuated equilibrium. Here evolution is not depicted as a process of continuous incremental change, but of sudden changes punctuating periods of relative equilibrium. So processes which are characterised by leaps and sharp breaks, reversals and bifurcations are also described as 'non-linear'.

Given these characteristics of non-linear processes, many writers will refer not so much to measurements of a process as being linear or non-liner, but rather describe the *underlying processes* itself as linear or non-linear. As a result, we see various process-words being deployed as metaphors to indicate the complexity and intractability of processes.

'Emergent' describes processes where a phenomenon arises when conditions surpass some limit in scale or complexity, but which cannot be explained by notions of causality. For example, invite enough teenagers to your late-night party and at some point you are going to get violence, even though it is not possible to say that violence is the *result* of the number of guests. People often refer to the emergence of consciousness for the first time in *homo sapiens* as an 'emergent' phenomenon, because they do not know the specific basis for conscious awareness in phylogenesis. In this sense, 'emergence' can fulfil the role that God fills, to explain what cannot be explained.

A process may be described as **'iterative**' or **'recursive'** if the next step in its development is determined by its current state in such a way that its progression cannot be predicted over more than a small number of iterations. Being an iterative process does not necessarily exclude a process being obedient to a regular law and being in that sense linear, but processes which operate through such 'non-analytical' mechanisms are often regarded as 'non-linear'. If they were linear, they could be predicted.

Likewise, **'feedback'** produces processes which are unpredictable and non-linear because they are not the result of one integral process but incorporate the results of interaction with the response of the object, which has its own independent existence. Again, feedback does not necessarily exclude a process exhibiting linear properties, but the lack of autonomy and predictability often lead such processes to be seen as 'non-linear'. It could be said that the process involves the **coupling** of two systems while only one of those systems is abstracted for consideration, like the abstraction of subject from a subject-object relation. Each of the two systems in itself may be linear and predictable, but coupled together they are unpredictable.

'Feedback' is a metaphor which originated in the domain of technology and manufacture, domains which also provide metaphors for the complexity of processes. Rather than reifying the properties of processes as 'natural', metaphors often deploy styles of thinking and acting in characterising the complexity of processes.

The Fordist **assembly line** is the archetype of the 'linear' process of manufacture. Insofar as products are produced in complex processes of distributed production with process engineering and consultation with workers and consumers, reaching the consumer through a competitive market and vigorous innovation, then the process is seen as 'non-linear'. Planning which incorporates iterative responses, from customers for example, is 'non-linear'.

People sometimes refer to **'linear conceptions of time'**, claiming that the conception of time passing from past through the present to the future is 'linear'. This somewhat bemusing claim cannot be taken literally. 'Linear time' may be contrasted with religious conceptions of 'cyclical time' in which every event repeats itself over and again so that there is no clear distinction between past, present and future. But critics of the 'linear conception of time' are rarely adherents of this conception. The fact that culture and history unfold in different epochs and continents may also be taken as requiring a more flexible conception of time in that notions of 'primitive' or 'decadent' and so on are relative to the culture and epoch, not tied to a single time scale. So it is the unitary conception of time – one time line from the Big Bang to the Heat Death of the Universe – which may be seen to not be useful in matters of culture and history. The co-existence and mutual imbrication of processes taking place over very different time-scales is another problem for conception of time in terms of a single linear scale. On the other hand, the observation that 'every journey begins with a single step' brings out the complexity which is presented by the fact that long-term processes of development take place in the only way they can – minute by minute, on a single 'time-scale'.

A further complication of the 'linear conception of time' is introduced by cosmology with the idea of a 'space-time continuum', which transcends notions of past, present and future, to the extent that events are separated by large distances. This cosmology does demonstrate that our conception of time *is* indeed an abstraction and not simply something given, but helps us in understanding problems of human development only metaphorically.

The real target of criticisms of 'linear time' is the notion of 'progress', that is, that all conditions of human life can be arrayed along a continuum of time, placing every way of life in a single, **hierarchical** sequence, and likewise ordering every life stage of a person in single a sequence from infancy to senility. In other words, it is not so much a criticism of notions of time which is in play, but rather conceptions of the monochromatic, repeatable, hierarchical and linear coherence of processes of development, which is at issue.

Such criticisms encompass the idea that future states may provide an *explanation* (as opposed to the *cause*) for past actions, rather than seeing the present as solely the outcome of past events, and that present actions may also have their roots in experiences in the distant past as much as in proximate conditions.

'Linear' in this sense is implicated in the idea that states of affairs can be sorted into a single ordered sequence, in contrast to both **multivariate orderings** and sets which cannot be ordered at all, or whose ordering is unstable.

Programed Learning is a method of teaching which requires the pupil to perform a series of tasks in a pre-set sequence and on successful completion of one task, to move on to the next. This Behaviorist approach is the archetype of 'linear' in the domain of education. This approach to learning is commensurate with all those conceptions which place subjects in a **sequence** or on a scale according to some criteria. A variation in this approach devised by Norman Crowder in which the path *branches* according to a pupil's performance on a test, along with other programed sequences of tasks which include decisions (Decision Theory) are generally regarded as remaining within the ambit of 'linear'. Syllogistic thinking ("if this ... then this ...") is

sometimes wrapped up in the same concept with Decision Theory conceptions of development as 'linear'. Although not linear in the sense of placing entities in a single sequence, the underlying logic remains linear.

Sequences of stages or events may be deemed linear if like the sequence of hominids – homo habilis, homo erectus, homo sapiens, etc. – the earlier type disappears and is replaced by the later, rather than co-existing alongside each other. A sequence of stages which appear in a sequence can be described as nonlinear if the earlier continues side-by-side with the later, or is included in the later in one way or another (as a childhood trauma is included in the character of the adult). In general, the range of relations involved here is described by the word **sublation**.

But the whole conception of **independent and dependent variables** which underlies all the linear conceptions discussed above and also many of those deemed 'non-linear', may be called into question. This is because before the relation between 'variables' can be described at all – whether quantitatively or qualitatively – the values to be measured have to be abstracted from the whole complex of activity, and this abstraction is made from outside of the process (or culture) under consideration. No single 'variable' can be isolated from the whole of its social context and its realisation in the process of measurement (for example, an interview), without distortion. Only those measures *endogenous* to the culture being observed can be meaningful. Severe limitations are placed upon cross-cultural research in the light of these considerations. You can't compare apples with apples if some countries only eat oranges.

'Linear' is also used to characterise conceptions which continue to rely on correlating variables as if they were independent whereas there is no such thing as an independent variable in social research. Every act of observation implicates the entire culture of both the observer and the observed.

If a process is linear, then responses to any stimulus are additive. So the effect of a large stimulus may be calculated by multiplying the effect of a small stimulus. But more importantly, the effect of any stimulus (such as an experimental cue) may be taken to be independent of any other stimulus. So for example, a subject may be offered a reward for successful completion of a task, and the impact of this reward may be taken as independent of whether or not a subject was coerced into participating in the experiment, was doing a favour for the researcher or simply enjoyed the game. This ability to treat every action as an independent cause is vital to the interpretation of experiments with linear processes, but it is hardly likely that any research in the human sciences may make valid use of this relation.

This draws attention to the fact that there is no process in nature which is as complex and intractable as the social and cultural life of human beings. So all those metaphors which use natural processes as models for the subtleties of research into human life necessarily fall short. Nonetheless, several centuries of human sciences which modelled themselves on the natural sciences, taking mathematics and mechanics as their ideal of scientific precision, lend some plausibility to the use of such metaphors. So for example, a process or research approach may be described as 'organic' as opposed to 'mechanical'; 'mechanical', like 'linear', functions as the counter-example. But it should always be remembered that **'organic'** still necessarily sells human life short, just as do biological explanations of cultural phenomena. It remains the case though that the organic world exhibits many of the features that we would

look for in a suitably nuanced and complex representation of human actions: ecological interdependence between the subject and its environment, gradual development punctuated by sharp transformations, multivariate dependencies, etc., etc.

Sometimes literature, and narrative in particular, provides metaphors for the linearity or complexity of processes which may be more adequate to the subtleties of human life. In linear narrative, a plot unfolds with each situation being the result of choices made by the hero in preceding situation. Linear narrative may be described as 'time driven' in the same way as the conceptions of 'linear time' referred to above, in contrast to narrative which is not linear but goes back and forth, with fits and starts, and breaks.

History, and narrative of any kind, is not just a chronicle of events, or even a story. Rather it entails arranging heterogeneous components together into a plot in such a way that one situation follows from another in an intelligible and convincing way. Science requires of its narratives both that they are intelligible and that they are validated by their interconnection with other narratives, just as it makes the same demand of its concepts. Likewise, narrative and conceptual knowledge depend upon each other in for their validation. The leading alternative to narrative explanation for historical events is the 'covering law', that is, the subsumption of events and situations under a universal *law*. But situations and problems for which a 'law of history' is adequate are very rare. History is therefore essentially **idiographic**.

Causality and Moral Responsibility

There is a serious ethical problem in letting go of the concept of causality in social life. In public health policy matters, professionals know which factors will increase the statistical rate of occurrence of an event, such as illness, and the actions which contribute to those conditions can be determined, but in general there is no causal link between an action which affects conditions and the occurrence of the problematic event. This severely blunts the identification of moral responsibility for actions which undermine public health. Consider the following observations by Ortwin Renn (2007):

> "... laypeople deem causal relationships important if a relationship is seen between individual events (like exposure and illness). ... The fact that cancer, for example, can be caused by ionizing radiation, at least legitimizes the suspicion that all incidents of cancer that occur in the vicinity of a nuclear power plant can be explained by the fact that the plant emits radiation. Anyone who contracts cancer or is forced to watch a family member or close friend suffer from the illness will search for an explanation. In our secularized world, metaphysically based explanation patterns have lost their importance. At the same time, the best explanation supplied by current scientific knowledge, that cancer occurs at random, does little to satisfy the need for a 'meaningful' explanation. There is little consolation in knowing that one has contracted cancer by way of a random distribution mechanism. If one has an actual reason, say environmental pollution, smoking, or bad eating habits, then the illness's occurrence at least makes some sense. ...
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> "The often highly emotional debate on this type of risk must be viewed from this psychological standpoint. ... While risk analysts characterize the relative risk of events by using stochastic theories that do not take

> in direct cause and effect relationships (thus creating distance between themselves and the object of their study), the layperson sees these theories as proof of the part played by social actors in causing life-threatening diseases.
> "But then again, the definition of probability is the crux of the discrepancy between intuitive and technical perceptions of risk. It is difficult to give someone a plausible explanation as to why, ... some 28,000 people in Europe will contract cancer in the next 50 years as a direct result of Chernobyl, but the individual risk of dying of cancer has only risen by 0.002 per cent. ... So who do these 28,000 cases involve, if each potential victim is subject only to a marginally increased risk of contracting cancer?"

Arguably, no-one ever 'causes' the death or injury of another person, but only 'increases the likelihood' of their death or injury. The issue here is not one of objective, natural processes but of moral responsibility, something which the 'layman' evidently knows more about than the scientist. To *cause* an event *means* to be *morally responsible* for it. In the light of the considerations discussed above, the claim that slack supervision of the Chernobyl reactor 'caused' the death of a given person in Germany would be regarded as 'linear' and 'mechanical' and frankly false. But a closer inspection of the content of the concept of causality would lead, I believe, to a conception of causality in terms of moral responsibility. The mistake of professionals who regard 'causality' as something which the layperson believes in but which science excludes, is to transpose the natural scientific conception of causality into human activity. In human life, to be morally responsible for something is to cause it.

Likewise, we correctly condemn writers who unthinkingly describe a person or way of life in terms of an hierarchical conception of human life, or compare different societies with one another on a linear scale. Nonetheless, in making decisions about *our own* life we do indeed place values on conditions we may achieve or fail to achieve, and consider moving from one country to another in terms of our preferences in relation to specific, quantifiable aspects of our life. That is, while such linear and mechanical conceptions are sometimes inappropriate for sociology, they may remain valid for subjective judgment and as **criteria for action**. We may forgive a murderer because of their unhappy childhood, we do not posit our own childhood problems as a reason for committing a crime. This is not a matter of 'psychology', but of *ethics*, both issues which are foreign to the natural sciences. The reason for a student's failure at school is never that the child didn't try hard enough, but that may be the only way the child can fix it for themselves.

Another example: a young woman is attacked while crossing a park late at night. The response of the local police cannot be the same as the mothers of young women in the area. Mothers will be telling their daughters not to cross the park at night, but this is not a legitimate response from the police, who will rather announce measures they are taking to secure the park at night. A mother who complained of the poor job the police were doing but gave no warning to their daughter would be negligent. Causality and moral responsibility depends on the **subject position**.

Values and preferences are another way in which social processes and ethical problems can be rendered into more tractable, 'linear' problems by creating convenient 'variables' for analysis. However, human motivation is always tied

up with conception, which are culturally formed and diverse, and attempts to reduce human behaviour to utilitarian pursuit of individual preferences is always fraught with difficulty.

What then is the appropriate register for a rigorous and emancipatory human science? I would contend that there are severe limits on an approach which takes social processes as objective quasi-natural processes, standing outside and independent of our own sphere of activity. The various natural-scientific metaphors which help us form nuanced and realistic conceptions of the processes of human social life are helpful insofar as through our own life experience and education we may have gained an understanding of them in our dealings with natural science and technology, but they remain metaphors, and reliant on an analogy between the model and target processes. It is taken for granted that the conception of the model process is not problematic, and is generally reliant on an intuitive or visceral understanding of the model process.

In fact, it is not necessarily the processes themselves which may be linear or non-linear, which may be simplistic and mechanical, or multifaceted and organic, but often it is our concept of them which is 'linear'. That is, what we have to deal with is not objective processes of development and realisation but processes of **conception**. What Hegel offers us is a system of concepts which is not reliant on such intuitive or visceral understandings of model processes, but relies instead on the logic of concepts.

Furthermore, the characterisations we discussed above were all *negatives*: non-linear, not causal, not independent variables, discontinuous, open-ended, etc. What Hegel offers us is a positive approach to those processes which escape formal analysis.

A typology of Dialectical Movement in Hegel's *Logic*

1. Inner Contradiction or Self-negation

The first type of movement that Hegel presents us with is the movement which a concept exhibits when subject to internal, skeptical critique. What we mean by 'internal' is this. A concept is to be understood as some aggregate of actions (word meanings or physical actions), which are organised around some word or other symbol or artefact, and together constitute a project, an object-oriented system of actions. A critique is *internal* if it arises within that project, according to its own principles. In that sense then the concept may be said to come into contradiction with itself, or *negate* itself. This typically happens when the concept comes up against some kind of limit beyond which it ceases to be valid. Think for example of a legal principle which is applied in the courts but at a certain point or when faced with a particularly difficult case, the principle breaks down. The judiciary then have to work out how to modify the principle, or ultimately abandon the principle and supplant it with a new principle, whilst relying on precedents and experience in trying so far as possible to keep to the spirit if not the letter of the law, so to speak. This is the kind of process Hegel applies in his *Logic*.

This form of movement underlies the whole of Hegel's *Logic* and the various forms of movement to be described below, first exhibited by Hegel in the *Phenomenology*. Hegel demonstrates the process by means of a **logic of concepts**.

The logic of concepts differs from propositional logic in the following respect. The logic of concepts examines only propositions of the form "*X* is absolute," or if you like, "Everything is *X*." Clearly, such claims come up against their limit and prove to be only relative truths.

In the *Logic*, "*X*" is not a blank space like the "*p*" and "*q*" of propositional calculus in propositions like "$p \rightarrow q$" or "$\forall(p)\ q$," and so on. "*X*" is a definite logical concept or category. By this means, Hegel creates a method by which he can exhibit the logic of concepts beyond the bounds of logic, particularly the concepts found in the human sciences. We can demonstrate this logic by examining five distinct forms of movement which are manifested in the *Logic*.

2. Seriality or Objective dialectics

Seriality is the form of movement found in Book One of the *Logic*, Being. Hegel insists that philosophy must make its beginning without any presuppositions. Any proposition like "*A* is *X*" ascribes some content to *A*, so such an *A* cannot be the starting point of Logic. Logic must begin from a claim like "*A* is." This concept is Being. The point is that Being is not any determinate being at all, it just is. In other words, Being is Nothing. So the simplest conceivable concept Being, proves immediately to be its opposite, Nothing. Being can longer stand; it has shown itself to be Nothing. This is the most well-known of Hegel's logical moves and is the archetype of seriality or objective dialectics.

> "Transition into something else is the dialectical process within the range of Being. ... when some-what becomes another, the somewhat has vanished." (Hegel 2009, §§161, 111n)

It is seriality because what results is one category supplanting another which then disappears. The new concept is not what it is in relation to the preceding concept, but simply supplants it. It's just one damn thing after another. Thus the concepts form a series of formations somewhat like syncretic thinking: as each concept falls into contradiction it is abandoned and replaced by another which rises from the ashes of its predecessor. An example would be a concept like race, which, once subject to criticism dissolves into ethnicity.

It is called *objective* because all the concepts of this division of the logic express an outsider or observer point of view. The self-consciousness of the object is not taken into account. So when a sociologist takes measurements of a social process, a series of values are produced which are objective and have no basis in the self-consciousness of the social actors being observed. Each measurement supplants the former measurement unaffected by the previous act of measurement. This is the thinnest and least interesting of all the forms of movement and is basically the type of conceptual movement characteristic of positivistic science. Nonetheless, it underpins all the processes to follow.

3. Diversity, or the Struggle of Opposites

The form of movement of the Second Book of the Logic, Essence (a.k.a. Reflection), Hegel calls *diversity*.

> "Transition into something else is the dialectical process within the range of Being: reflection (bringing something else into light), in the range of Essence. ... (2009, §161)
> "In the sphere of Essence one category does not pass into another, but **refers** to another merely. In Being, the form of reference is purely due

> to our reflection on what takes place: but *reference to another* is the special and proper characteristic of Essence. In the sphere of Being, when some-what becomes another, the somewhat has vanished. Not so in Essence: here there is no real other, but only **diversity**, reference of the one to *its* other. The transition of Essence is therefore at the same time no transition: for in the passage of different into different, the different does not vanish: the different terms remain in their relation. ... "In the sphere of Being the reference of one term to another is only implicit; in Essence on the contrary it is explicit. And this in general is the distinction between the forms of Being and Essence: in Being everything is immediate, in Essence *everything is relative*." (2009, §111n)

This Book of the *Logic* deals with the emergence of a new concept, the emergence of a form of self-consciousness, through the reflection of an existing concept on the series of conceptions produced in Being. So in Essence, each successive concept is relative to another, and each stage in the development of Essence is a unity of opposites, such as Matter and Thing, Form and Content, Cause and Effect, and so on. The two opposites form a unity because each is meaningful only in relation to its other. Realisation of how the opposites mutually constitute one another is the insight which moves the process forward. But the form of movement is this: as the opposition develops, it gives rise to another opposition which expresses the contradiction more deeply, and the former opposition does not disappear, but merely moves into the background, so to speak, and continues to exist as a subordinate moment of the new opposition.

So as Essence progresses, the reflection becomes more and more multifaceted, but it still lacks a stable and unifying concept of itself. It is somewhat like a research project into a complex social or public health problem in which a multiplicity of approaches have been investigated and co-exist side-by-side, but without a definitive resolution which is able to bring all the divergent points of view into relation with one another.

4. The Leap or *Aperçu*

The 'leap' is a dramatic change which has been described by a number of writers in quite different terms. We may mention: Goethe's *Urphänomen*, C. S. Peirce's apperception, the Old French term *aperçu*, Stephen Jay Gould's speciation, Marx's social revolution and Thomas Kuhn's paradigm shift. In Hegel's *Logic* the leap is typified in the formation of the true, abstract concept which marks the movement from Essence to the Subjective Logic, and is always to be found in the founding of a new science.

All writers agree that the outcome of the leap cannot be predicted or determined by the preceding conditions, but rather the new concept provides a solution for all the outstanding problems which could not be resolved in the former situation. It represents a sudden insight or *aperçu*, like when Sherlock Holmes suddenly puts all the pieces of the jigsaw puzzle together. It is a leap.

The difference between the higher grades of Essence (such as Real Possibility and Reciprocity) and the Concept, is that in Essence we have a very rich, theory-laden and multifaceted representation of the process, but no unifying concept of it, just so many unsolved puzzles, circular chains of cause and effect, real possibilities which only require to be realised and so on. The leap to the abstract Concept is the key to unlock the mystery, but still lacks the

richness of actuality represented in the higher grades of Essence, but nevertheless functions as the basic explanation of actuality, bringing out what hitherto lay hidden behind contradictory appearances.

5. The Unfolding of what is Implicit as Development

The Subjective Logic begins with an abstract concept which remains to become more concrete. Hegel describes this development in the following terms.

> "The onward movement of the notion is no longer either a transition into, or a reflection on something else, but **Development.** For in the notion, the elements distinguished are without more ado at the same time declared to be identical with one another and with the whole, and the specific character of each is a free being of the whole notion. ... The movement of the Notion is development: by which that only is explicit which is already implicitly present." (2009, §161)

The development of the Concept is not a transition into something different, but rather a bringing out of what was already implicit in the Concept. It is what Kuhn called 'normal science', that is, puzzle-solving. Hegel conceptualised this process in terms of the reconciliation of the logical dissonance between the individual actions, the universal symbols and tools of the new concept and the object-oriented project of the Concept. The concept remains what it always was, but it develops. In this process, what proves under fire to be faulty logic is disclosed and overcome and the Concept grasped successively more firmly and truly – honed or fine-tuned one might say, as when the parties to a treaty resolve subsequent disputes by seeking the clearest possible formulation of the treaty so as to overcome difficulties in its implementation.

6. Objectification: the interplay of Subject and Object

The development of a new Concept (or social movement, form of social practice, science, etc.) is driven not only its internal logic but also by interplay with the rest of society, its object. At the same time as an abstract concept develops what was already implicit in it, it also interacts with other institutions and in one way or another *merges* with them. It's ideas are translated into the terms of other movements, while conversely the requirements and achievements of other movements (concepts) are incorporated into itself. This process is often described as **objectification**. In the process of objectifying in the customs and practices of a community and 'mainstreaming' itself, it becomes domesticated; the outcome is a transformed totality in which the new concept is simply one aspect of a new whole.

Hegel describes three forms of movement by means of which this interchange between subject and object takes place: **Mechanism, Chemism** and **Organism**. They can be conceptualized as three competing conceptions of multiculturalism. In Mechanism, the subject and object remain complete and self-subsistent things which relate externally to one another, adapting to the extent of co-existing with one another like the patchwork of ghettoes found in some cities. In Chemism, the subjects find selective affinities with one another in which they mediate each other's needs by their labour, like the way different immigrant groups find niches in the division of labour in a society. In Organism (or Teleology) each is to the other both a means and an end, with

the formation of an 'ecosystem' which functions as an organism in its own right, both preserving difference and consolidating mutual interdependence.

7. Exceptions that become a Rule

Going beyond the *Logic*, in the *Subjective Spirit*, Hegel introduces a new form of movement which, among other things, allows him to theorise how consciousness emerges out of natural processes. This is best illustrated by an example.

Imagine an organism as a self-enclosed system of feelings which regulate its own behaviour. If such an organism were to come into contact with some other body, then these feelings would be different in some way, and these differences would alert the organism to the presence of something outside its own system of self-regulation. Those differences – unusual and unexpected feelings – are thereby sensations, feelings which alert the organism to the presence of others and make possible interaction with the objective world and other centres of activity. But at the same time, these sensations are just feelings, in themselves no different from any other feelings, arising from the same natural processes. Thus the exceptional or outlying feelings form a new system of their own, the system of sensations regulating the external interactions of different organisms – a new layer of reality.

Darwin's idea of natural selection is a variant of this type of movement.

Hegel uses this dialectic to show how a whole series of 'layers' of reality are built one upon another in which at the same time *all are natural processes*, obedient to the same laws of physics and chemistry as inorganic objects. The internet and the computers connected to the internet work in much the same way, with coherent meaningful texts and images, conveying meaningful information between selected human beings at disparate points on the network, mediated by 1s and 0s and nothing else.

8. The Negative is creative

Hegel uses a variation on "exceptions that become a rule" in the *Objective Spirit*, the work in which he develops his theory of history and social life. Marx makes fun of this dialectic in *Capital* when he says:

> "A criminal produces crimes. ... The criminal produces not only crimes but also criminal law, and with this also the professor who gives lectures on criminal law and in addition to this the inevitable compendium in which this same professor throws his lectures onto the general market as 'commodities'. ... The effects of the criminal on the development of productive power can be shown in detail. Would locks ever have reached their present degree of excellence had there been no thieves? Would the making of bank-notes have reached its present perfection had there been no forgers? etc. (Marx, 1863)

A right only comes into existence after it is violated, ... and someone objects and struggles to realise the right and inscribe it in law and custom; but if it were never violated in the first place, it could not exist as a right. This is sometimes referred to as the "labour of the negative."

9. Normalisation of Alterations

Hegel described the gradual changes in a nation's customs as "an alteration which ... lacks the form of alteration" and this is a very well known process of maturation. At some point, some insignificant alteration is made in a practice

which is not understood as a new custom or law, but simply an expediency for the moment; but, it remains expedient and in fact, becomes normalised, and in itself what was a momentary accommodation becomes accepted as custom and no-one can even remember where it came from. This is the classic form of gradual development.

Although Hegel never formulated the idea of natural selection, Darwin's idea is very similar.

10. Normative Essentialism

Next, we come to the uniquely Hegelian idea whereby some process or social practice realises its own concept. For example, Hegel said that humans are essentially free, but whereas Rousseau observed that "Man is born free; and everywhere he is in chains," Hegel saw the entire history of civilisation as a realisation of that freedom. Likewise, Hegel saw the process of growing up as a process of realising one's own concept, the concept of who you really are. All the processes listed above may be subsumed in the process of personal or social development. This process has been referred to by Robert Brandom as making explicit what was already implicit.

11. Differentiation

Lastly, Hegel shows that as an initially-abstract concept develops and becomes more concrete, there arise specialised concepts. For example, once Chemistry is unified on the basis of the concept of the chemical element and its molecule, Chemistry differentiates into Organic and Inorganic Chemistry, and Molecular Chemistry, Industrial Chemistry and so on. This process happens through specialisation or a division of labour, with each branch having its own founding definitions, principles, methods and institutions.

A corollary of this dialectic is that whenever two concepts interaction with one another, a specialised form of labour is entailed in participating in that interaction and as a result the abstract concept constituted by this interaction develops into an independent concept in itself. For example, when two neighbouring peoples, with the discovery that each produces a surplus which meets a need of the other, begin trading with each other, then that trading activity becomes the activity of a certain class of people with their own self-consciousness, forms activity and principles.

12. Organic development

When a social institution, such as a state, develops subordinate concepts – such as a head of state, legislature and an executive – formerly the functions of a single organ – such as an absolute monarch – then the resulting more concrete body Hegel calls "organic," because its parts are not an aggregate of otherwise separate powers but 'organs' or the whole, which have no separate existence or function outside of maintaining the whole, like the organs of the human body.

Conversely, institutions or processes which have distinct bases and have existed separately, may be drawn together as "organs" of a single organism. For example, a king who conquers a nation and rules through the native nobility and the institutions already independently existing in civil society, absorbs them into an integral state as its organs. This is the same process which Vygotsky described in which thinking and speaking each originate from separate bases – there is pre-intellectual speech and pre-verbal intelligence –

but once they come together they are inextricably intertwined in a single process of verbal intelligence and intelligent speech.

13. Development through difference

A unity which is immediate and in that sense abstract may develop into a concrete unity by passing through a phase of difference or diversity. An instance of this is the development from the ancient state based on kinship into a modern state, in which civil society opens up in the gap between the family and the state. Civil society is characterised by particularity and difference and mediated interdependence. On the basis of this struggle of diverse interests, a state which expresses the concrete unity of all can arise.

Organisers know that when a relatively immature organisation begins to prove incapable of transcending internal differences, it must pass through this phase – be it a split or a period of federalism – in order to be able to later form a stronger, more mature unity. This is a special case of negation of the negation.

Summary

Each of the forms of movement Hegel describes also include numerous specialised dialectical concepts to represent the entities undergoing change. Study and practice is required to get used to these concepts and to be able to recognise them and deploy them in understanding complex social processes. Words alone cannot communicate an understanding of anything. It is only by merging the use of these concepts, through reflection, with the visceral experience of participating in social struggles that Hegel's concepts become meaningful and useful.

It is just the same with the natural-scientific and technological metaphors most commonly used to conceptualise complex social processes. Economics students use the hydraulic model to understand the concepts of economic science; civil engineers learn to imagine their own body as a building to feel where the stresses flow. The understanding of non-linear processes relies on our visceral and intuitive familiarity with the boiling of water, the bending of steel beyond its limit of elasticity, the effect of feedback on a microphone, and so on.

One might draw the conclusion from the above review of the shortcomings of natural scientific metaphors, especially when the target is a social process, that these conceptions are inadequate. Social processes are *non*-linear, *non*-causal, *non*-repeatable, *non*-rectilinear, *non*-continuous, organic, *non*-mechanical, *multi*-variate, emergent, *non*-independent, *non*-quantitative, *non*-analytic *non*-objective, *ir*reversible, *a*symmetrical processes.

The important thing is that the concepts introduced by Hegel do not rely on reifying processes of change as natural, but on the contrary, the complexities of grasping these processes is located essentially in the processes of rational conception. Hegel's *logical* approach makes the specific nature of each process intelligible.

The illustration given above about public health risks shows that it is not only the use of linear, mechanical models of social processes which causes difficulty, but the use of all natural scientific metaphors is fraught with danger.

References

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Links

Andy Blunden's Writings