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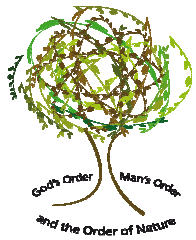

ORDER: GOD'S, MAN'S AND NATURE'S

The Diversity of Powers

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Lay folk, lawyers, physicists and almost everyone are so accustomed to ordering their lives and thoughts with agentive concepts that efforts by philosophers to dislodge the concept may seem very odd. The arguments against the usefulness of concepts of agency turn on the meaningfulness agentive concepts. The core concept of this group is the concept of `power' or `efficacy'.

Arguments for Abandoning Agentive Causality

If one were to hold that only those words that have observable referents are meaningful then one might be tempted, after failing to observe the exercise of agency other than in its prior conditions and its apparent effects, to declare the concept and its family of related concepts incoherent. This is the core of Hume's famous argument and the positivistic line of thought that flowed from it.

Another promising line of argument against taking the concept of a causal power seriously begins with the apparent ease with which people are aware of their own efforts in bringing various states of affairs about. It is then suggested that the concept, now rendered meaningful in the empiricist way, can be displaced by simile or metaphor on to other contexts, particularly those comprehended by the sciences of physics and chemistry. Sceptics either declare that the metaphor is weak being no more than a dubious anthropomorphism, or that the personal experience on which it based is an illusion – the individual simply being unaware of the forces that have led the action.

More telling, I believe, is the `virtus dormativa' objection. If the identifying crierion for a power of a certain kind is uniquely tied to the effect that it has when the

corresponding disposition is activated, then there is a vicious circularity between powers and their manifestations. In principle, there would be a power for every disposition. Opium has the power to put someone to sleep, a `virtus dormativa'. But there is no independent criterion for the ascription of this power. Moreover, if by the work of biochemists we are now able to give a chemical account of why opium makes people sleepy, we have eliminated the `power' term from the explanation in favour of occurrent chemical properties of `poppy juice'. Is this a fatal flaw in explanatory regresses that terminate in powers, be they attributes of powerful particulars or ultimate beings?

Finally, in this catalogue of doubts of the viability of the concept of agency, some philosophers, again and notably David Hume, have linked power, agency and causal efficacy with necessity, as if active causes necessitated their effects. Hume argued that there could never be a contradiction in supposing that though the antecedent causal conditions had been satisfied the usual effect did not occur. On this view there is no substantial link between causes and their effects. The only `link' is mere statistical regularity

I will not spend time on knocking down the first, second an fourth of these argument here. It will suffice to refer to the pretty comprehensive refutation of their various premises and presuppositions that Edward Madden and I developed in our *Causal Powers* of 1977. The `virtus dormativa' objection undercuts the use of the concept of `power' in scientific theorising in a much more serious way. It poses a dilemma that forcs us to pay close attention to the criteria of identity, both numerical and qualitative, of causal powers, whether they are attributes of powerful particulars or individual substances, the foundations of the material world.

To What Category to Causes Belong?

Proposing events for the ontology of causality renders the link between causal laws and counterfactuals mysterious. Events are ephemeral and so cannot serve to support counterfactuals, since these refer to possibilities rather than actualities. Causal powers endure whether exercised or not. If we can make their status acceptable they are well fitted to be an ontological basis for causality. As enduring beings, intimately involved in the causal process, they make the link between causes and their effects, and the analytical grounding of causal conditionals to counterfactuals intelligible. The claim that if

a certain causally potent state of affairs were to occur, then it would have an observable effect needs to be grounded in some notion of natural necessity.

The Outline of the Analysis

In this chapter I will be developing parallel analyses of the concepts of causality and agency, as each bears on the other. My strategy will be to lay out a kind of Rylean `logical geography' of the uses of agentive concepts in a wide variety of contexts. In this way I hope to illustrate the necessity of adopting such concepts as a condition for the possibility of such human enterprises as the carrying on of theory driven research in the natural sciences, the management of life by law and custom and the creation of discourses of the human sciences associated with them.[1] To study concepts we study the uses words and other symbols for all sorts of purposes.

Agency

To exercise a power is to act as an agent. In simple cases of agency in the material world an agent can initiate a process or linked series of events without itself being acted upon, and in some cases an agent can sustain such a process when initiated. However, in principle, initiating and sustaining a process may require different agents.

Concept of a causal power includes two root concepts, dispositions to respond to external conditions, and radical agency or spontaneity.

Dispositions: properties possessed permanently but which are displayed only occasionally if at all. Problem: what is the justification for ascribing these properties to an entity when they are not being displayed? In short what grounds dispositions? It should be a permanent occurrent property of the being in question - for example chemical composition. However, such a property cannot be an exhaustive analysis of the disposition since the latter includes an external aspect, the conditions under which the disposition is displayed.

Spontaneity: the causal activity or efficacy of a powerful particular is not brought into being by the prior activity of some other particular. A primary powerful particular is a

[1] A brief study of usage of key words as the bearers of key concepts of a discourse genre ought to begin every philosophical analysis of such a genre. As John Austin remarked `Freely fair and fairly free, divinest etymologie'.

being that is efficacious in a stronger sense, namely its efficacy is not the result of internal processes within the particular itself. A secondary powerful particular acts by virtue of some process or structure or both internal to the being in question. Sometimes this `nature' is the source of the identity of the being in question, that is it is its intrinsic nature or part of its intrinsic nature. Without this cluster of occurrent properties that entity in question would not be of the type or species or chemical kind that it is thought to be.

Conditionalised Attributes

Powers invoke the idea of agency, as sketched above, while liabilities invoke the idea of passivity. Beings with powers act and beings with liabilities are acted upon. Something may properly be said to have a power to initiate a chain of events, even when quiescent. Similarly something may be said to have a liability to effected in a certain way by an outside influence, even when nothing is affecting it. Gilbert Ryle's distinction between occurrent and dispositional properties is an essential element in the analysis of the concepts of `power' and `liability'. An occurrent property is displayed to a person, an animal or a suitably sensitive instrument at the time that it is properly ascribed to the relevant being. A dispositional property is manifested only when certain conditions are fulfilled, conditions that occur only occasionally. Typically we express the content of a dispositional attribution in conditional form: `If conditions C are (were to be, had been etc.) realised, then phenomenon P will (would, would have etc) occur(ed)'. Since powers are not always exercised and liabilities not always revealed, powers and liabilities are dispositional properties, analytically speaking.

Conditionalised properties, in general, are empirical. Both the clauses of the conditional formulation of the content of the attribution of such properties are observables. In the statement `If it rains the picnic will be called off', `rain' and `calling off the picnic' are observables. The same epistemic character is a feature of powers and liabilities. `This magnet has the power to attract iron' when spelled out goes something like this: `If a piece of iron is near a magnet it will be drawn towards it' and both `iron near magnet' and `iron being drawn' are observables.[2]

[2] Of course, there are some tricky issues in philosophical logic apropos of the relation between the meaning of `magnet' and the empirical concepts in the above statement. If the piece of metal is not drawn to the seeming attractor then the test object is not iron (or nickel) or the attractor is not a magnet.

Ryle set about showing that the best analysis of the predicates used to ascribe mental attributes to people is conditional, that is mental attributes such as `knowing', `believing' and so on are dispositions. `She knows the way home' is analysed as `If asked to lead the party she successfully beings us home'. This scheme worked very well for cognitive attributes such as knowledge and belief. However, another important class of words in this context is the `mongrel categoricals, such as `ready', `careful', `intelligent' and `resolute' (Ryle, 1949: 47). Instead of taking `he drove carefully' to refer to two activities, driving and being careful, there is just one activity performed in a certain way. These words are semi-dispositional (that is conditionalised attributes) and semi-episodic (that is descriptive of something occurrent). `He solved the problem brilliantly' is an occurrent performance displaying brilliance. But his `brilliance' like her `intelligence' is a dispositional attribute, true of each of them even when they are not solving problems.

Unnoticed by Ryle, a third element has been smuggled into this story – to act resolutely, intelligently, diligently and so on is the exercise personal power. These features of human action don't just happen.

Where `tendencies' and `propensities' appear on this grammatical map? They are certainly conditionalised attributes, but unlike Ryle's fully or semi-dispositional attributes they carry no implication of agency. Rather the contrary in that to remark that he has a tendency to slice the ball when driving off the tee suggests that this defect is outside his control.

Grounding of Conditionals

The requirement that a conditional be grounded in an occurrent state of a powerful particular leads to a `powers/natures' hierarchy. This is simply a generalised feature of the characteristic form within which powers and dispositions are related.

The notion of a power as an emergent property of a complex being does no more than mimic a genuine power attribution because the `no further back' condition is violated. In science we do not rest content with secondary powerful particulars, but try to account for them by searching for primary powerful particulars as part of the grounding conditions of their efficacy, that is their dispositions to display in various ways, as observable properties, as deriving forces for various kinds of change and so on. Clearly this inaugurates regresses. To manage this feature of scientific thinking we need to

attend to the difference between homogeneous and heterogeneous regresses as originally formulated by (19).

In a homogeneous regress each level that is reached as the regress progresses from macro-wholes to micro-parts and from micro-parts as micro-wholes to nano-parts and so on, the ontological category of the beings at each successive level is the same. A traffic jam consists of cars, each of which is an ordered collection of material parts, each of these parts is an assemblage of yet smaller parts. This is a very strong mereological principle. Even in chemistry the regress from material stuffs to molecular constituents to their atomic components to their sub-atomic particle make-up to the realm of quarks raises all kinds of metaphysical problems about the relative metaphysical status of the beings at each level. For example, it is far from clear that the criteria of identity effective at the `upper' levels' hold good at the deeper levels. How do we decide `same electron'? Certainly not according to the criteria we use for `same boulder'.

In a heterogeneous regress a temporary halt is reached when the beings of the lowest level are singularities in the ontology that defines identity in the whole scheme. However, by various linking devices a second regress can be constructed to support that first. For example, to take a case from discursive psychology, we make use of rule-regresses in psychological explanations, and these soon run out. As Wittgenstein famously quipped – my spade is turned. Of course, we can always turn to cultural and historical studies to account for the existence of particular rule-systems. Driving on the right defines one possible motoring culture, but that rule is explicable by reference to anti-Royalist sentiment in eighteenth century France and the United States.

We can now make sense of the idea that the emergent powers of structured beings are not fundamental. As we build an explanatory regress we reach a point at which the constituents of the being with emergent powers do not have these powers as individuals. The possibility of one or more heterogeneous regresses now opens up terminating in singular beings, ultimate powerful particulars, or if one is of a Kantian or Leibizean turn of mind, elementary causal powers.

Powers as Attributes and Powers as Entities

As the argument unfolds we might become convinced that the concept of a causal power is ineliminable from intelligible discourse be it concerning human affairs or the material

world. At this point the concept of causal power appears to refer to an attribute – the salient attribute of this or that kind of powerful particular, be it human agent or electric charge. We can ask what sort of beings have causal powers, and what is it about their natures that so endows them. However, philosophers of physics such as Gottfried Leibniz and philosophically minded psychologists such as William Stern seem to want to go further. For them the basic *beings* of the world are causal powers. Leibniz's `monadology' and Stern's `personalism' ground the world in primitive active beings, with no other primary attributes than their causal powers.

Identity Criteria for Causal Powers

By resting content with associated dispositions as the basis of criteria for the identity of either secondary or primary powers we have no defence against the `virtus dormativa' objection to the entire project of developing an analysis of science as the working out of a metaphysics of casual powers. If there a power for every observable disposition then the powers concepts do no work at all in the discourse of the sciences. Of course, observable dispositions are involved in the semantic content of distinctive powers, but so are the natures or constituent structures of the material beings in question, be they particulars or mass substances.

The problem is easily resolved for secondary or derived powers, those that are manifested as emergent properties of complex particulars. The same essential nature characterising a powerful particular can stands in an explanatory role to a variety of dispositions in so far as this variety is explicable by reference to the conditions under which they are displayed. Petrol can be a solvent in one conditions and an explosive in another. These distinctive dispositions are the expression of distinctive causal powers which are grounded in a common structure of carbon and hydrogen atoms. The powers/natures regress supporting a range of dispositions as manifestation so the causal powers of a material stuff does not disintegrate into a proliferation of virti dormitivi.

However, the serious `powers' devotee wants to go further. The elementary beings of the material universe and of the social worlds of people are singularities, active beings with no internal complexity and the bearers of simple powers. Emergent or secondary powers are the result of the structural forms of congeries of simple powers. These will show up in the exposition of the causal structure of physics and chemistry

below. It is a more daunting task to defend the idea that people are active singularities in the worlds of meanings and rules that they create for themselves.

Having laid out a structure for the related concepts of `disposition', `power' and 'agency', can we show that in the sciences and in everyday life this conceptual pattern is inevitable and ineliminable? To do this I turn to a series of examples.

Discursive Location for Agentive Concepts

Four discourse domains will provide the examples I will need to set the scene for an analysis of the conceptual cluster around the core noon of a causal power: quotidian uses in everyday life, with its mix of material and moral contexts; the sciences of physics and chemistry with their hierarchical patterns of explanation; the law and abnormal psychology where criteria for responsibility and blame are salient; and some interpretations of the discourse of the social sciences as informing a vision of a way of life in which personal agency is minimized, if not deleted.

There are four clusters of concepts related by family resemblances that seem to me to cover most of the ways the generic concept of causal power is used.

Agentive Concepts in the Contemporary English Vernacular

The semantic field of words whose uses bear a family resemblance to one another includes `activity', `power', `force', `energy', `capacity', `agency', `tendency', `propensity', `efficacy', `might', `capability', competence', `self-perpetuating', `self-propelled', `self-motivated' and so on.

One way of grouping these words is with respect to whether `activity' is a necessary root idea in the meaning of the word or simple involved sometimes depending on context.

+activity: `power', `force', `efficacy', `agency', `might',

-activity: `capacity', `tendency', `propensity'.

The OED defines `propensity' in terms of `tendency' and the latter as follows: `an inclination towards a particular characteristic or type of behaviour'.

Another way is to highlight the source of causal powers strictly intrinsically to the being in question.

+intrinsic: `capability', `competence', but –agency.

-intrinsic: `tendency', `propensity', and `agency.

Most of the common uses of `self-verb participle' are +intrinsic and +activity, for example `self-propelled' and `self-motivated'. Some are not – for example `self-disgust' does not suggest any kind of activity – only the direction of attention and judgement towards the person in question.

Agentive Concepts in the Natural Sciences

There are many examples in chemistry and physics where causal powers play an ineliminable explanatory role. To what are causal powers properly to be ascribed in the discourses of chemistry and physics? We will find the now familiar dopuble level scheme: emergent powers and structures of more elementary powerful particulars, which are themselves are structures of yet more elementary powerful particulars. Thus we have `acidity', `valency', `charge' and so on in descending order of explanatory depth. Explanations of the causal power of few millilitres of caustic soda solution to clear a drain or of an axe to split a log are easily and satisfactorily provided from the resources of chemistry and physics. In each case the power of the active being is analysed as the vector sum of the powers of its constituents when structured in a certain way. So begins the powers/ structures regress which crops up everywhere in the natural sciences.

INSERT Causation in chemistry

The character of these regresses can be complex, multiple levels of powers/structures. The homogeneous/heterogeneous regress distinction in the general discussion of the concept of a causal power reappears in the philosophy of chemistry in the question of whether the discourse of chemistry can be reduced without conceptual remainder to the discourse of physics.

The work of Robert Boyle in the seventeenth century marks the point of departure for the chemistry of the modern era and the causal concepts that begin to appear in the discourse of chemistry.

1. A mix of agencies external to the apparatus in which a reaction is taking place. One of these is the human agency of Robert Boyle as he assembles the ingredients and sets the experiment in motion. Another is the power of heat – the fire as an agent.

2. Agencies internal to the apparatus. In many experiments the agencies are acids, for example, *Aqua regia*, and *Aqua fortis.*

The chemical phenomena are processes and are still described in terms of temporal asymmetry. However, Lavoisier knew very well that many such processes are reversible – the reversibility of oxidation and reduction is the underlying principle of his famous metal oxides and oxygen experiments. In chemistry we do not have the tidy past – to – future sequence that philosophers take to be part definitive of causation.

Lavoisier is best known to high school students, one supposes, for his work on combustion, though his use of causal concepts is prominent in his studies of acids.

In his *Traité Elémentaire de Chimie* of 1789, he freely uses activity concepts, particularly those that are most naturally rendered as `causal powers'. In Section VII of Part II he says `Charcoal, in red heat, has the same power of decomposing water, by attracting the oxygen from its combination with hydrogen'. (Lavoisier, 1994: 61). In other contexts the activity aspect of a chemical reaction is ascribed to the chemist as manipulator. The usual French words for this cluster of concepts include `la puissance' generally translated simply as `power; `la force' meaning force or strength as it might be exerted by a person or an animal; `le pourvoir' roughly `to supply' or `provide' and finally the verb `mener', to conduct, guide or lead. All four words share a common root idea, that of asymmetrical activity. The supplier is active while the recipient is passive. Power is exerted on something while force has a similar connotation. In using some of these words Lavoisier is highlighting the asymmetry of *chemical* processes.

In the 20th century agentive concepts retain their importance. For example, Sir Cyril Hinshelwood in his major work *Kinetics of Chemical Change* (1933) expresses causal and causality related concepts – in the word `kinetics', derived from Greek for `motion' and the use of the word `change'. However, neither motion nor change just happens. In everyday discourse they strongly suggest the operation of causes since both words denote processes, the one specific and the other generic. The common concept of `cause' as `bring about' is usually coupled with another concepts, something like `potentiation', `making something ready to bring about a change'.

`In order to take part in a heterogeneous reaction molecules must be *activated by* a catalyst. But attachment to the surface is not itself *sufficient to cause* their transformation. They require *activation* just as in homogeneous reactions. '(p. 348)

`There is a general correlation between adsorptive capacity and catalytic effect to the extent that all metals show some capacity for adsorbing those gases the interaction of which they *promote*'. (p.348).

`It is clear ... that *thermal activation* plays a part ...' (p. 349).

Here we have a variety of examples of a chemical discourse which grounds chemical explanations in causal powers. With the advent of quantum mechanics in chemistry the generic agency concept, `energy', makes its appearance.

Agentive Concepts in some Legal Systems

The curious blend of Roman Law and Anglo-Saxon customary law of Western Europe and elsewhere. Giving a functionary certain powers means that this person can act without getting prior consent or without having taken orders from anyone else. In a sense when the police are given the power to stop and search people they suspect of villainy they can act independently of their superiors in the force. This use of `power' does not entail `efficacy', `propensity' or `tendency'.

Agentive Concepts in the Scientific Analysis of Social reality

The current debate on the nature of social reality – abstract structures or discursive practices – hinges partly on subtle issues about how causal concepts, and particularly concepts of causal powers, are to be brought into the explanatory formats of social science.

In this context the question of secondary and primary powers is again of importance, but even more important are questions of the nature of social systems, institutions relations etc as beings, Of what do their intrinsic natures consist? The debate is a family affair, since the protagonists of both sides agree that social science needs agentic concepts – the issue is where they are to be located – in people or on social structures, whatever these are.

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