A PRAGMATIC REALISM: EVENTS, POWERS,

AND RELATIONS IN THE METAPHYSICS

OF OBJECTIVE RELATIVISM

by

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THESIS ABSTRACT

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The early twentieth century witnessed the emergence of "objective relativism," a distinctly American school of metaphysical realism inspired by the works of John Dewey and A.N. Whitehead. Largely forgotten, objective relativism provided a metaphysical framework, based upon an ontology of events and relations rather than substances and discrete properties, that has continued relevance for contemporary metaphysical discussions. In this thesis, I attempt to chart the boundaries and pathways of this ontology, outlining what Dewey calls the "ground-map of the province of criticism." In particular, the ground-map of objective relativism is invoked to situate and analyze the model of psycho-physical emergence outlined in Dewey's *Experience and Nature*. Because it is a relational ontology, objective relativism avoids problems with emergence models common to substantival models. Additional analyses of its ontological premises, both in Dewey's writings and elsewhere, demonstrate how compelling accounts of causation, consciousness, and meaning may be formulated within this model.

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CHAPTER I

AN AMERICAN REALISM

There were, according to A.O. Lovejoy (1930), two phases to the great revolt against dualism that defined the landscape of American metaphysics in the early twentieth century. The first phase was the movement sometimes called *new*, *naïve* or *neo-realism*. The second phase was the form of contextualistic naturalism usually referred to as *objective relativism*, though it went by many other names as well. Against both phases of this revolt Lovejoy bore the standard of a form of dualism called *critical realism*. Donald Oliver explains the controversy between the three schools in this way:

> Let us consider the three propositions: (1) *This apple is sweet*, (2) *This apple possesses that which has the power of producing the sensation of sweetness in myself and all other normally constituted human beings*, (3) *This apple is sweet for me and all other normally constituted human beings*. The first is the predication of naïve realism; the second is that of critical realism; the third is that of perspective realism.[1]

'Perspective realism' was one of the many names of objective relativism, the one preferred by Oliver and E.B. McGilvary (1956). Though it is largely forgotten now, the pragmatic realism carved out by the objective relativists, I will argue, represents an important step in the evolution of American metaphysics. The term 'objective relativism' was the coinage of A.E. Murphy (1927), who chose the name to indicate a metaphysical tendency that he found to be common to the work of both John Dewey and Alfred North Whitehead. Inspired by their work, Murphy sought a middle ground between two extremes, a position that would conserve the better part of the objectivism of the neo-realist and the relativism of the critical realist. It is this view that I will be concerned with in the following chapters.

Though its roots extend at least to the Pre-Socratics,[2] the most distinctive and significant features of objective relivism originate within the theories and controversies of the American realists – William James,[3] E.B. Holt,[4] A.E. Murphy,[5] E.B. McGilvary,[6] John Dewey,[7] A.N. Whitehead,[8] A.O Lovejoy,[9] and their respective collaborators and adversaries.[10] There is perhaps no other philosophical landscape that possessed the particular alchemical properties necessary to produce such a singular metaphysical current. Telling the story of objective relativism thus requires telling, at least in part, the story of the historical

controversies to which it was responding. These disputes, their history and context, provide the meat of **Chapter II**.

The purpose of this historical analysis is not merely to place objective relativism within its particular time and place, but also to make a preliminary step towards locating it within its particular *conceptual* geography, to locate its premises within the play of ideas that occupied American philosophical realism in order to demonstrate why a radical ontology such as objective relativism was *needed* in order to advance the debate.

John Dewey in particular plays a formative role in the development of this movement. Dewey was in many ways the standard-bearer for the anti-dualist insurgency, leading the charge in both the early direct realist and later contextualist phases of the revolt. Dewey is a direct realist. He is also an emergentist, an event ontologist, a pragmatist, and an objective relativist. In this sense, Dewey may have been the quintessential American realist, even if he wasn't always as realistic as he could have been. He will accordingly play the role of Virgil in this chapter and in the chapters following, providing direction and structure through the tangles and thickets of the metaphysics of objective relativism.

The Ground-Map

Dewey's metaphysical writings, I will argue, afford a number of excellent critical tools that have maintained their edge and relevance with regard to contemporary debates. In particular, there are three tools that I will be borrowing from Dewey in the early chapters of the following. The first of these is Dewey's notion of metaphysics as "a ground-map of the province of criticism, establishing base lines to be employed in more intricate triangulations."[11] The term map may be taken generically to refer to a structural schematic, and this is the sense that I will be concerned with. A metaphysical ground-map not only charts the paths for investigation and inquiry, but also places *limits* upon the paths of inquiry that it is possible to undertake. A metaphysical map thus serves as the transparent background that *regulates* the development of ideas in other areas of interest.

W.V.O. Quine famously suggested that we think of our most cherished background commitments as the more central nodes in a wider interconnected web of belief.[12] The web in this case represents a relatively coherent, interconnected network formed by our various beliefs and their relative influences upon one another. Individual nodes within the web are

more or less connected and will thus impact more or less strongly upon other nodes. Nodes that are more central will be more firmly entrenched; nodes closer to the periphery will be more passing and mutable. Individual revisions within the web will be either selected or rejected based upon how little disruption they cause within the structure of the whole. Any such changes within the model will reverberate, sending shockwaves outward into the local ecology. Minor revision will leave things more or less intact, while major shifts could cause more drastic structural changes. Coherence thus increases in regions of stability.

Dewey's metaphysical ground-map can be pictured as a formalization of this concept, a model tracing and detailing the functional topology of the web. The beliefs that are of concern in this case are those that inform and regulate our habitual metaphysical stances, and the ground-map is an articulation of the structural contours of such ontological background commitments. These commitments are usually transparent; we are not aware most of the time that they are even operative. The choice of what paths of criticism will show up as live options however is conditioned and regulated by the contours of this background theory. The primary import of this process is in the impact that our background commitments have upon the regulation of our foreground concerns. The metaphysical stances that we adopt will determine, at least in part, what paths of inquiry will show up for us as live options. Imagine the ground-map as genuinely marking off the boundaries and limits of exploration. Statements that fail to conform to the schema will not even register as false; they will register as noise. The role of the map is thus essentially selective; it is the soil that will accept or reject individual seeds of inquiry.

In the following inquiry, the ground-map that we will assume is that of objective relativism. Maps are tools, and the merit of a tool lies in the work that it does. In the case of a metaphysical ground-map, that work is the elimination of philosophical problems. In the following chapters, I will argue that an objective relativist ground-map affords compelling models of emergence, causation, consciousness, and meaning that avoid some of the pitfalls of more traditional models. In addition, it achieves a good fit with the landscape of contemporary physics, ethology, ecology, and systems theory. This is in a sense unsurprising; motivation for the objective relativist ontology comes in part from evolutionary biology via Dewey and in part from relativity theory via Whitehead. Objective relativism is thus not only realistic, but also thoroughly *naturalistic* in its approach.

Charting the Province of Criticism

Despite its seemingly radical position within the realist triarchy of its time, objective relativism was, in its own way, a conservative movement. By this I mean that its most important moves were based ultimately upon the *constraint* of events and processes by events and processes occurring at higher levels of analysis. The ground-map constrains the moves on the board of philosophical criticism. Likewise, an event is constrained in its possible outcomes by the particular successes and failures that are encoded within its historical evolution. Similarly, the context of an event's occurrence also constrains the values that it may ultimately manifest.

Talk of constraints and higher and lower ontological levels immediately implies a stratified model of nature. Accordingly, the second tool borrowed from Dewey will be his model of the *emergence* of natural systems at different levels of ontological analysis. Emergent theories of mind have enjoyed an enduring popularity within philosophy, both because of their intuitive appeal and, more importantly, because of the failures of reductionist theories to provide suitable accounts of the self-evident causal *relevance* of events at higher levels of description. Mereological forms of reductionism, as **Chapter III** will argue, have difficulty with keeping causal powers operating realistically within the world, because of the problem of *causal drainage*. Emergent theories based upon mereological supervenience have not fared better, and for similar reasons. In fact, the mereological picture of the world will be argued to be both philosophically and scientifically otiose; it has been surpassed in contemporary physics and is fatally unsuited to the philosophical analysis of causation and modality. In its place, a model of emergence based upon Dewey's naturalism will be introduced. This model avoids the pitfalls of mereology by virtue of its underlying event ontology that places ontological emphasis upon the structural *configuration* of systems as opposed to their mereological *constitution*.

The third critical tool utilized to carve out the edges of the ground-map of objective relativism will be the *event ontology* that is at the heart of the metaphysics of objective relativism. In particular, an analysis will be undertaken of the ways in which evolving, qualitatively individuated modal histories serve to unsettle the environing network of internal relations. This relational background in turn structures, regulates, and ultimately *selects* the individual events that will emerge and endure. This process, which is implicit in

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Dewey's ontology and in that of his contemporaries such as A.E. Murphy and E.B. McGilvary, will be argued to provide a naturalistic foundation for the emergence of *perspectivity* in the world, and thus provides a crucial move in the establishment of Dewey's *direct realism*. Strong objections will be considered to this view in **Chapter IV**, including several from Lovejoy, the most persuasive and vehement of objective relativism's adversaries.

Chapter V will serve to bring the ontology of objective relativism into dialog with contemporary metaphysics. In particular, I will follow the lead of Andrew Ushenko and argue that defending objective relativism against challenges such as Lovejoy's may be accomplished by treating *dispositions* with ontological seriousness.[13] Thus a brief overview of recent debates in the metaphysics of dispositions will be provided, with particular regard given to the role of *qualities* in a world that is 'powerful all the way down.' This discussion will be capped by the introduction of a new model for the analysis of events, based in the objective relativist ground-map that has been described thus far. This will involve an abstract model of a dispositional ecology, referred to as an *event space*, and the related processes of *modal interference* and *modal decay* that may be employed to describe the evolution of an event from its tensional initiation toward its final termination in a renewed systemic stability. In response to concerns regarding emergence in Chapter III, the event space model will be used to illustrate a model of causation that does not require lower-level events to be 'downwardly caused' in any philosophically dubious sense.

The final chapter will return to Dewey's emergence model with the tools unpacked in the previous four chapters. Thus **Chapter VI** will be primarily concerned with elaborating upon the levels of psycho-physical emergence and the temporal evolution of events at each level. New tools will be invoked for this analysis, in particular the notion of *affordances* from James J. Gibson's ecological psychology. Support for Dewey's model will also be summoned from the study in neuroethology of the emergence of planning in telereceptive organisms and the corresponding ecology-driven emergence of consciousness into the world. This chapter will conclude on a more critical note, as Dewey's linguistic model of meaning is examined and found ultimately unsuited to the ontological picture traced thus far. In its stead, an alternative model will be briefly sketched that is more in harmony with the ground-map of objective relativism.

In closing, it should be noted explicitly that the version of objective relativism that I will be ultimately conveying in this paper is not precisely Dewey's version, nor is it

Whitehead's, Murphy's, or McGilvary's. But it has a bit of them all, along with James Gibson, Mark Johnson, Nancy Cartwright, Karl Popper, Stephen Mumford, Werner Heisenberg, J.E. Boodin, Hilary Putnam, and the hard-headed schools of contemporary British and Australian realism. I do not claim that all or any of the above would sign off on anything that I have written here, but its virtues are theirs first and mine only by proxy. Its defects are of course mine alone.

Notes

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[1] Oliver 1938, p.197

[2] Heraclitus, in particular.

[3] Especially in the *Essays in Radical Empiricism*, 1916.

[4] Holt et. al. 1910, 1922.

[5] Murphy 1927.

[6] McGilvary 1956.

[7] Especially in Dewey's "Postulate of Immediate Empiricism" (MW3) and *Experience and Nature* (LW1).

[8] Especially in Whitehead 1925.

[9] Lovejoy 1930.

[10] A short list: Beck 1952; Lamprecht 1922 and 1929; Murphy 1927 and 1929; Ushenko 1946; McGilvary 1956; Oliver 1938; Boodin 1934; Piatt 1935; Hahn 1942; Meade 1964; Buchler 1966; Lafferty 1949; and Stolnitz 1960.

[11] LW1:309.

[12] Quine "Two Dogmas of Empiricism" 1980.

[13] Ushenko 1946. The language of 'ontological seriousness' with regard to dispositions comes from John Heil.

CHAPTER II

THE GREAT REVOLT

The metaphysical ground-map during Dewey's time was largely dominated by the post-Hegelian idealism popular in the Anglo-American universities. There was a sense at the time however that change was on the wing. Certain ontological assumptions that had reigned, in some cases, for hundreds of years were being newly questioned in light of scientific developments. Darwin had cut the legs from the view of nature as 'fixed and final.'[14] Einstein had similarly transformed Newton's separate and absolute conceptions of space and time into a relationally-specified space-time manifold. Upon the horizon, quantum theory was hinting at objective modalities within nature.[15] The world seemed ripe for conceptual revolution.

Dewey had in particular been deeply impressed by the emergence of evolutionary biology and tended as a result to look for ontological explanations in terms of function and fit. If something like experience was to occur in the natural world, then it must have emerged *for* some purpose – namely, the ability of organisms to successfully engage their environment. Direct realists such as Dewey thus assumed, optimistically but not unrealistically, that human experience was not an aberration in the world, that it was more or less precisely what it seems to be – a reliable medium through which to encounter and engage an objective and sometimes precarious environment. What we directly experience, according to Dewey, *is* a portion of nature:

> [E]xperience is *of* as well as *in* nature. It is not experience which is experienced, but nature … Things interacting in certain ways *are* experience; they are what is experienced. Linked in certain other ways with another natural object – the human organism – they are how things are experienced as well.[16]

He assumed this in part because experience is *itself* such a complex and intricate process. That any such fragile and rarified event as an experience could not only occur but flourish within nature, must, Dewey reasoned, be evidence that it is uniquely well-suited to its task. Otherwise, its continued existence would seem astonishing. Because they are so complex and rarified, experiential events must therefore represent nature at its most intricate and vivid. Experience is nature in full bloom, so to speak, and it thus represents the most precise

of tools for penetrating nature's depths.[17] Such observations do not, of course, represent anything like a proof for the suitability of experience to the world – there are a number of vestigial structures within evolved organisms that have lingered on despite serving no obvious purpose – but they do succeed in shifting the burden of demonstrating experience's *unsuitability* to the anti-realist.

Dewey's metaphysical mappings were thus concerned to chart the most generic traits "manifested by existences of all kinds without regard to their differentiation into physical and mental."[18] If such structural regularities could be discovered to cut across the experience/nature divide, then Dewey reasoned that much of the work towards the reconciliation of nature would thereby be accomplished. This notion is at the heart of Dewey's *principle of continuity*. Dewey sought to replace an ontology that bisected reality into mental and physical 'realms' with an emergent ontology that viewed mental events as more complex instantiations of the sorts of functions and processes that are ubiquitous throughout nature. Experience is thus both emergent from and continuous with the generic patterns and regularities that define nature as a whole.

The New Realisms

Lovejoy identifies the birth of the new American realism with the publication of William James' paper, "Does Consciousness Exist?"[19] In it, James argues that philosophical tradition has generally erred in treating consciousness as if it were a substantial, self-sufficient entity. Instead, James argued that consciousness should be understood as a functional relation. Just as a single point may mark the intersection of two lines, a single object may form the intersection of two unique histories, one physical and one mental.[20] Any single object within the environment can thus enter into any number of simultaneous 'physical' or 'mental' relations.

Harlow (1931) recalls that the dominance of idealism in the American academy at the turn of the century gave a genuine sense of urgency and intellectual revolt to James' lectures. Students flocked to his philosophy as an antidote to the (then) old-fashioned dogmas of the academy. Among the ranks of these enthusiastic realists were James' pupils R.B. Perry and E.B. Holt from Harvard, W.T. Marvin and E.G. Spaulding from Princeton, and W.B. Pitkin and W.P. Montague from Columbia. In the belief that philosophers would

do well to follow the example of the sciences and eschew isolated system-building in favor of collaborative and targeted inquiry, these six combined forces to pen the brief "Program and First Platform of Six Realists" in 1910, and, later, a more detailed and thorough analysis in a collection of essays titled *The New Realism* (1922).

The neo-realists agreed with James that the objects of experience were directly present in perception. They thus strongly rejected the representational and sense data theories of knowledge. Like James, they sought to escape dualism "by employing the notion of *relation* in place of the notion of *substance*."[21] In contrast to the internal, constitutive relations favored by idealists, the neo-realists insisted that relations were *extrinsic* to their objects. Such relations, they argued, are selective rather than constitutive, they picked out independent objects in the environment without entering at all into their constitution. Consciousness, as a special sort of relation, is analogous to the beam of a searchlight; it picks out and illuminates certain features that are objectively present within the environment. This reconciliation of *immanence* (the direct presence of objects in experience) and *independence* (the mind-independent existence of objects) was the main issue at stake for the neo-realists. Idealism affirmed immanence while denying independence; dualism affirmed independence while denying immanence. The neo-realists insisted upon having both.

Not surprisingly, the position of the new realists met with formidable resistance. When the six realists published their first collaborative paper, idealism was the coin of the academy. Ten years later the metaphysical ground-map had changed dramatically, and it was from defenders of dualism that the most ferocious challenges emerged. This time it was seven scholars collaborating – Durant Drake, A.O. Lovejoy, J.B. Pratt, A.K. Rogers, George Santayana, R.W. Sellars, and C.A. Strong. These seven combined their considerable talents to mount an explicit counter-attack against all "neo-realists, idealists, and believers in 'pure experience.'"[22] They called their position *critical realism*.

As a counter-insurgency, the critical realists had no better standard bearer than Lovejoy, who seemed to be waging a relentless and brilliant one-man campaign against every manner of nonsense that the younger generation of philosophers might be getting up to. The neo-realists, as Lovejoy (1930) was eager to point out, were quite comfortable accounting for the sorts of common, everyday veridical perceptions familiar to non-philosophers, but seemed less at ease when considering how sense was to be made of hallucinations, dreams, or perceptual illusions. Consider for example two individuals, Alice

and Bob, who are standing right beside one another, looking at the same red apple. It could be the case that Alice and Bob, despite the similarity of their situations, are having completely different perceptual experiences. Alice, being of sound mind, sees before her a ruddy, roughly spheroid fruit. Bob, who has ingested the sort of conveniently super-powered hallucinogen that exists only in philosophical thought experiments, sees before him a towering and likely very irate blue dragon. We want to affirm that Alice is having a veridical perceptual experience, and that Bob is hallucinating. Further, we want to say that Bob's perception is *false*.

The identification by neo-realists of the content of perception with its object makes this determination problematic. In fact, the simplest explanation, according to the critical realists, is to say that Bob's perception is false because the blue-dragon doesn't exist in the world outside of Bob's brain. Alice and Bob perceive the same object (the apple), but they have different mental contents (their respective mental representations). When Alice looks at the red apple, her mind's eye constructs a simulation out of pixels of *redness* and *roundness* and other bits of *qualia*. Critical realism thus endorses an epistemic dualism of *content* and *object* that has the advantage of being far more tolerant of naturalism than other, more ontologically dualist varieties. The critical realist could thus accept that minds were ultimately natural phenomena of whatever sort, while at the same time denying that the contents of perceptions were identical to the physical objects that they represented.

Unfortunately, this position leaves the critical realists as baffled by veridical perceptions as the naïve realists were by hallucinations. If the direct realists had no compelling explanation for the fact that we sometimes get things wrong in perception, the critical realists could not offer a satisfactory explanation for how we could ever possibly get anything right. The problem, familiar to Descartes and Locke, is that once you classified all perceptual data as inner or subjective representations, you lose all warrant for claiming that individual representations in fact corresponded to anything external at all. How do you verify the truth of any individual simulation if all that you ever encounter are more simulations?

We are left then with a metaphysical ground-map divided between two opposing dogmas, neither of which seems adequate as it stands to the phenomena it set out originally to explain. It was left for a new movement to light a torch in the darkness. This is, of course, where objective relativism enters the story.

The Rise of Objective Relativism

The objective relativists had the advantage of inheriting the successes of their predecessors while learning also from their respective failures. They were thus able to embody the better angels of both the new and critical realisms, as well as the objective idealism that preceded them. This they accomplished by retaining what was most empirically compelling about both the 'idealistic' doctrine of the internality of relations and the 'realistic' doctrine of a mind-independence of properties.

The union of Dewey and Whitehead forged by Murphy in his seminal paper "Objective Relativism in Dewey and Whitehead" seemed audacious at the time; each philosopher on the surface seemed to have little in common with the other.[23] In the work of both, however, Murphy noted a strong rejection of *bifurcationism*, the thesis that reality is in some sense divided between two opposing realms – one mental, the other physical. Further, this denial of bifurcation in both Dewey and Whitehead is warranted by a deeper rejection of a substantival metaphysics. In its place, both philosophers offer naturalistic ontologies of coarse-grained and dynamic *events*. Murphy locates a central claim at the heart of the ontologies of both philosophers:

> (a) The objective facts of the world of nature and of reality are the very 'apparent' and relative happenings directly disclosed to us in perception.

> (b) In spite (or because) of such objectivity such happenings remain ultimately and inescapably relative. Such relativity is hence an ultimate fact about the objective world.[24]

To illustrate, Murphy considers a book on a table in his room. Conceived as an object, the book possesses an essential nature that is unaltered by its inclusion within any set of extrinsic relations. This, roughly, was the position of the neo-realists. But conceived as an *event*, the book forms a part of what Murphy calls the 'total situation.'[25] By this Murphy means that the *fact* of the book is manifested under circumstances in which it is situated upon a particular table at a particular time as a result of a particular series of historical events, etc. Murphy explains:

> As an event, the situation is caught up in a whole network of interactions and

circumstances, without which it would not be what it is. In other words the relations of an event are *internal*, and it is precisely that fact which distinguishes it from an object.[26]

The quality of the event is thus conditioned by the mutual reciprocity of its internal relations (i.e. the book is *on* the table and the table is *under* the book). Relations, in this sense, are symmetrical. The terms of a relation function both as agent and patient relative to one another – each contributes to the specification *of* and is in part specified *by* the other. Any difference-making function that holds between two or more terms is thus a relation. The result is an ontology in which every event is specified relative to some network of further events. In laying out the ontology of his own 'perspective realism,' McGilvary drafted a list of three postulates (and a corollary) that makes the objective relativist stance on relations plain:

> *Postulate 1. In our sense-experience there is presented to us in part the real world in which we all in common live and move and have our being.*[27]
>
> *Postulate 2. Every particular in the world is a member of a context of particulars and is what it is only because of its context; and every character any member has it has only by virtue of its relations to other members of that context.*[28]
>
> *Postulate 3. In the world of nature any "thing" at any time is, and is nothing but, the totality of the relational characters, experienced or not experienced, that the "thing" has at that time in whatever relations it has at that time to other "things."*[29]
>
> *Corollary: Every character which any thing has at any time it has only as it is a term of some relation in which at that time it stands to some other thing.*[30]

We may draw from these postulates a generalized maxim, that I will call *McGilvary's Maxim*: *to be is to be a term in a network of relations.*

Following Murphy's baptismal paper, the term 'objective relativism' quickly began to spread and evolve. Sterling Lamprecht invoked it sympathetically in relation to his own relational metaphysics.[31] Ernest Nagel called it "without question America's most significant contribution to philosophic intelligence."[32] W.P. Montague found it, not necessarily sympathetically, to be "the essence of American New Realism."[33] Victor Harlow, in his *Genetic Study of American Realism*, refers to it as "the most promising of all the realisms for the thought of the immediate future."[34] But it was likely Lovejoy's characterization of objective

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relativism as the mature phase of the 'great revolt against dualism' which constituted "the most characteristic and ambitious philosophic effort of our generation"[35] that codified the term.

A flourishing diversity of metaphysical naturalisms began to emerge during this period, each sharing a central core of related concerns, yet answering to an embarrassment of different "*-isms*." Over the course of five decades the central network of commitments that Murphy noted in Dewey and Whitehead turned up with minor variations as *functional realism*,[36] *contextualism*,[37] *natural realism*,[38] *empirical naturalism*,[39] and *perspective realism*[40] – just to name a few.[41] Regardless, it is the term 'objective relativism' that has persisted, for better or for ill, and that is the term I shall use.

As befits a philosophy with such a proliferation of strains and mutations, objective relativism developed no set doctrine, no single holy writ, and no exhaustive list of commandments. Instead, it is characterized by a mutable web of interrelated ontological concerns. Process ontology, pragmatism, relational cosmology, and direct perceptual realism all, to varying degrees, play a part in the discussion.[42] Objective relativist authors, as Thomas Robischon notes, have as a result tended to emphasize some of these traits over others within their writings, contributing to a perception of ambiguity within the theory.[43] It was thus in part the very conceptual pluralism that fed the theory that contributed ultimately to its decline. I will attempt in this paper to unravel some of these tangled threads and thickets, but first a few words must be said regarding the trajectory of objective relativism's decline, and indeed regarding the decline of metaphysics in general within the Anglo-American academy.

The Fall of Objective Relativism

In 1956, McGilvary's long-awaited *Towards a Perspective Realism*, a volume that rests beside Dewey's *Experience and Nature* and Whitehead's *Science and the Modern World* as a classic within the objective relativist cannon, was posthumously released. This was a watershed moment for American realism. Yet, when commenting upon McGilvary's magnum opus, Murphy ironically mused that "it was as if signals from a remote philosophical planet, traveling at something less than the velocity of light, were now presented in a frame of reference ill-adapted to their appropriate reception."[44] Murphy had by this point become

increasingly dissatisfied with 'speculative philosophy' in general and his own metaphysical offspring in particular. So it was that the philosopher who gave objective relativism its name would take up his pen once more, this time to announce its demise.[45] At a time when philosophers were increasingly focused upon honing their skills in conceptual analysis, Murphy began to see the clash of realisms as having been superseded by the clear and precise study of language and logic. What, Murphy wonders, would a Wittgensteinian think of such controversies?[46]

This opinion was not unique to Murphy. By the middle of the twentieth century, the world of philosophy had moved on, and metaphysics was being increasingly left out of the discussion. The ground-map of American metaphysics, which had been split among the combative siblings of neo-realism, critical realism, and objective relativism, shifted dramatically as the dual fists of logical positivism and postmodernism began to close around it. These anti-metaphysical schools, along with the current of so-called 'neo-pragmatism,' each carved their own marks upon an increasingly barren ontological ground-map.

While Dewey's writings on education, democracy, art, and social theory have continued to be widely influential, the standing of his metaphysical musings has diminished somewhat as the center of the general conversation has drifted over time. Students of Whitehead have meanwhile forged their own path, largely in isolation from the mainstream of Anglo-American metaphysics. As for McGilvary, Murphy, and the other objective relativists of the time, their writings have been largely neglected within the contemporary debate. Objective relativism, with a few scattered exceptions,[47] seemingly vanished from the philosophical landscape. It was not so much that its arguments had been decisively refuted; it was that it asked questions about which most philosophers had agreed not to care.

Objection: The Possibility of a Pragmatic Metaphysics

Some contemporary pragmatists, such as Richard Rorty (1982) and Charlene Haddock Seigfried (2004), have expressed degrees of disapproval ranging from mild scorn to outright hostility towards the metaphysical aspects of Dewey's legacy.[48] There has in fact been a strong thread of resistance from this quarter to the very notion of a pragmatic metaphysics. As an unfortunate result, pragmatists have in general enjoyed a limited and somewhat marginalized role within contemporary metaphysical discussions.

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Rorty praises Dewey's pragmatic instincts for noting that the problems of philosophy are not neutral to history and culture. This realization, according to Rorty, suggests however that we never arrive at any 'permanent neutral matrix' outside of language or culture from which to survey Dewey's generic traits of existence. As Rorty describes the situation, Dewey's talk of generic traits is in conflict with his pragmatism. There are two horns to the dilemma. If Dewey grabs the first horn, he admits that there are no traits suitably generic to transcend local cultural norms. This would bring Dewey's position closer to Rorty's brand of cultural relativism. If he grabs the second horn, however, he assumes the foundationalist stance of an omniscient observer and thus forfeits his pragmatism. Neither horn seems particularly appealing.

One possible answer to Rorty is to simply bite the bullet and agree that what Dewey has constructed is a model of a foundationalist metaphysics. In a sense, this is plainly true. Dewey explicitly denotes events as his fundamental ontological units and then proceeds to analyze the emergence of matter, life, and society on this basis. The emergence model outlined within the following chapters is a blueprint for an internally consistent *system* in the strong sense of the term. Any metaphysical model must to some degree operate in this fashion if it is to hold together well enough to direct philosophical criticism. We isolate nature's traits and habits into clear ontological categories in order to analyze their patterns and structure. Philosophers do this in conceptual analysis. Scientists do this when they shield off interferences in an experiment. It is in general a good strategy. Successful navigation of the world hinges upon the ability of organisms to successfully anticipate what sorts of effects may be realized by what sorts of interactions. It makes sense then to map such generic patterns in order to work towards an understanding of their powers and potentials.

What is striking about Dewey's model is that it is *explicitly* a model; it represents, in a sense, metaphysics become self-aware. The ground-map is constructed with no expectation that it will be the perfect or final word on the matter; premises are always subject to further criticism and revision. This is because Dewey's conception of metaphysics recognizes the ground-map itself to be among the objects of criticism. As with any map, the lines of orientation must be periodically updated and redrawn.[49] The metaphysician is thus more cartographer than cataloger, honing the contours and boundaries of the space of inquiry,

carving endlessly at nature's background structure in order to bring the foreground into sharper relief.

Difficulties may begin to emerge however if we forget that we are working with models. To stave off this possibility, an adequate model for a pragmatic metaphysics should thus not only function as the *background* to critical inquiry, but also as the *instrument* and the *object* of inquiry. As an instrument of criticism, a metaphysical map should function as a tool for the crafting of better, more specialized tools. As an object of criticism, it should present itself among the objects to be revised as necessary to remain suitable to the demands of inquiry. As the background to criticism, it should outline in broad strokes the formal landmarks that structure and regulate the space of inquiry.

Objection: The Purpose of a Pragmatic Metaphysics

There is a world however between can and should. Dewey can construct an explicitly pragmatic metaphysics, but this does not necessarily imply that he should have bothered. Rorty questions "why we *need* a discipline at that level of generality" and wonders how its results could be "anything but trivial."[50] Seigfried is similarly critical of Dewey's metaphysical aspirations. Dewey would have been better served, by her account, to point us "away from metaphysical ways of thinking to fully engage in critical thinking and world-transforming."[51] Her central concern is that engaging in metaphysical inquiry constitutes "at least a distraction from the concrete concerns of everyday life and at most a tragic detour away from everything that gives value and meaning to life."[52]

This objection seems strange to me. It is as if someone demanded that the department of mathematics be shut down because the study of calculus could represent a potential distraction from the important work of community outreach. Surely there is room in the academy for world-transforming cultural anthropologists and metaphysical pragmatists alike. It seems strange also because it implies that metaphysical commitments are the sorts of things that one can simply choose not to have. One is reminded of McGilvary's wry comment regarding behaviorism: "The reason it has not recognized its metaphysical status is that for it only that metaphysics is metaphysics which is not its own metaphysics."[53]

Seigfried's view on this matter seems to miss Dewey's point about metaphysics entirely. No one faces the arena of experience without a ground-map already in place.

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Seigfried writes of "the bio-historical development of minded organisms in social and natural environments" as if these concepts swing free of the sorts of structural background commitments that concerned Dewey.[54] It is just this type of assumption that Dewey is warning us against. Philosophers who claim to not be operating within a metaphysical map of some sort do so because their map has long burned into grooves and become transparent. But if we forget that our metaphysical ground-map is a model, if we begin to take it for granted as a brute uncovered fact, then our background commitments drop out of view of criticism and begin the long journey into dogma. The more certain one is of his commitments, Dewey reminds us, the more likely he is "to direct the conduct of life, that of others as well as of himself, upon the basis of the character assigned to the world."[55]

The Aftermath

Philosophy, like any other discipline, is subject to fashions, trends, and paradigm shifts. What was once new and exciting may become entrenched and stale, and ideas thought long dead may suddenly erupt into new life. The death of metaphysics, as it turns out, was announced somewhat prematurely. The story of its return to respectability in the latter half of the twentieth century is now familiar. Saul Kripke, Hilary Putnam, David K. Lewis, David Armstrong, and others have ably demonstrated that new blood may still be drawn from the stone of ontology. The dire situation that Murphy described in 1963 is thus long out of date; the philosophical reign of the logical positivists and their hard-line anti-metaphysical sympathizers has passed.

Contemporary inquirers have access now to tools, crafted over a century of scientific and metaphysical advances and innovations, which were unknown to the early objective relativists. What seemed loose and speculative in 1925 may now be treated with clarity and precision. To the objective relativist arsenal of events, relations, and situations I will thus be adding contemporary tools and concepts drawn from the metaphysics of dispositions, emergent systems, and the philosophy of physics. I will attempt, wherever reasonable, to keep the discussion grounded in the results of empirical inquiry. Contemporary research in neuroethology, quantum theory, and ecological psychology is thus represented in the following chapters, though only briefly. I have tried in such cases to keep the discussion moving briskly rather than dwelling upon the gory details of auxiliary theories.

The time is right for a reassessment of the metaphysics of objective relativism, not only because the contemporary metaphysical ground-map bears more than a passing resemblance to the ambitions of the objective relativists, but also because in many important respects it as of yet does not. The implications of Darwinian selection for the types of events and properties that concern metaphysics has hardly advanced since Dewey. Relativity is rarely invoked at all outside of the philosophy of physics. Quantum mechanics, when it is mentioned, is typically mentioned in service of some fantastical thought experiment far removed from practicality. Outside of philosophy of physics journals, there is a resilient tendency among philosophers to theorize as if scientific advancement ended with Clerk Maxwell. The billiard-balls-in-a-box universe of classical physics is simply more reassuring and familiar than the weird tales drifting from modern physics departments; it is a fiction that we may comfortably slip into whenever our intuitions become overtaxed.

But the objective relativists were braver than this, and we should follow their lead. The contours of the ground-map are always in need of revision somewhere. If, in our explorations, we find that the existing lines upon the map are ill-drawn, we may attempt to make emendations. Some of these may prove fortuitous. Alterations that are reliably beneficial will thus sink into background and harden into habit. In this way the conceptual territory represented by the ground-map evolves and adapts to the changing territory of experience and experimentation. If the operation of our ground-map on the other hand works to shield off internal criticisms or to stifle inquiry, then our map has outlived its usefulness and should be discarded. In the next chapter, it will be argued that contemporary philosophy still operates to some degree upon an outdated ground-map, which I will refer to as *naïve physicalism*, and that a seemingly fearsome challenge to Dewey's ontology is in fact merely the result of leaving old landmarks upon the map intact, though the territory of empirical data has transformed dramatically.

Notes

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[14] MW4:3.

[15] e.g. discussions of Aristotelian *potentia* in Heisenberg 1958.

[16] LW1:12.

[17] LW1:201.

[18] LW1:308f.

[19] James 1916a. cf. Lovejoy 1930 p.7.

[20] James 1916a, p.12.

[21] Perry 1912, p.308.

[22] Drake 1920, p.4 fn.

[23] Murphy 1927.

[24] ibid.

[25] ibid. p.53. Murphy appropriates talk of 'situation' in this sense from Dewey.

[26] ibid. Italics added.

[27] McGilvary 1956, p.15.

[28] ibid. p.17.

[29] ibid. p.30.

[30] ibid. p.36.

[31] Lamprecht 1929.

[32] Nagel 1954, p.53

[33] Montague 1937, p.17.

[34] Harlow 1931, p.104.

[35] Lovejoy 1930, p.1.

[36] Boodin 1927; Piatt 1935; Randall 1958.

[37] Hahn 1942; Nagel 1954.

[38] Lamprecht 1929.

[39] Dewey LW1.

[40] McGilvary 1956; Oliver 1938.

[41] J.E. Boodin once complained that his friend Donald Piatt's discussion of Dewey's naturalism might as
well have been a point-for-point discussion of his own functional realism. cf. Piatt 1939 and Charles 1987.

[42] It is unfortunate that the objective relativists never followed the examples of the new realists and the critical realists in collaborating on a single, definitive statement.

[43] Robishon 1958.

[44] Murphy 1963, p.79.

[45] cf. Murphy 1963. The essay that appears as "What Happened to Objective Relativism" is excerpted
from a larger, unfinished, and unpublished work.

[46] ibid., p.84.

[47] Objective relativism, so-called, has seen a handful of isolated revivals. Lafferty (1949) considers the intersection of objective relativism and value theory; Stolnitz (1960) considers aesthetics. Justus Buchler (1966) and Charles Morris (cf. Fiordo 1977) have both summoned the term to describe elements of their philosophies. John Shook's (2003) direct contextual realism is also a relative of objective relativism.

[48] See also Sydney Hook's introductory essay to LW1.

[49] cf. Boisvert 1998.

[50] Rorty 1982, p.77.

[51] Seigfried 2004, p.72.

[52] Seigfried 2001, p.13.

[53] McGilvary 1930 p.110. Myers 2004 makes this same point with regard to Seigfried 2001.

[54] Seigfried 2004, p.59.

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[55] LW1:309.

CHAPTER III
THE PERILS OF NAÏVE PHYSICALISM

The second tool that I will borrow from Dewey is his model of psycho-physical emergence. The following chapters will be concerned with filling in the details and contours of the sort of ground-map that needs to be in place in order to drive the model of the emergence of consciousness from nature set out by Dewey in Chapter VII of *Experience and Nature*. I provide a quick and rough overview of this model at the conclusion of the present chapter.

Dewey's model represents a particular example of a more general philosophical trend with regard to the understanding of the mind in nature. Emergent theories of mind were popular during Dewey's time and they have enjoyed a similar resurgence in recent years.[56] The generic rallying cry of emergentism has typically been 'the whole is more than the sum of the parts,' and this is true of Dewey's model as well. Stated more precisely for present purposes: there are properties of systems that exist at higher levels of functional organization that are not explicable as terms of sums of properties that exist at lower levels. To cite a common example, it is sometimes claimed that no analysis of the individual properties of hydrogen and oxygen atoms will be sufficient to explain the property of 'wetness.' Wetness is therefore a higher-order property that is 'something more' than a listing of the properties of its constitutive parts. Call this the *irreducibility thesis*. In debates over the ontological status of mind in nature, this thesis typically gets cashed out in the claim that a description of consciousness cannot be provided in terms of a complete description of the physical state of the organism. There is thus something *more* to be said about mental states over and above what a mature physics would say.

The most controversial aspect of emergentism is the notion that there are higher-order properties that are somehow *new* to the world at their level of organization. Within the ontological picture, common to much of traditional metaphysics, of the world as composed out of different arrangements of a fixed set of discrete fundamental properties, such emergence seems to represent a rupture of the continuity of nature. Accounts that explicitly affirm such a position may be referred to as *strongly emergent*. Such accounts have struck some as implausible because they seem to imply that the emergence of properties represents an

example of the creation *ex nihilo*. New properties seem to appear in the world 'as if by magic' at the achievement of certain compositional thresholds.[57] In the following, I argue that the need for this (too) strong form of emergence may be obviated by moving from a compositional to a configurational ontology. Talk of the emergence of new properties seems less mysterious if such properties are understood to be functions that systems perform rather than something that systems 'have.'

In focusing specifically upon Dewey's model in particular, I do not want to suggest that every step and definition along the way is a definitive or even a good approximation of the world. I find Dewey's linguistic account of mind unconvincing, for example. Where Dewey succeeds is in bringing the relational context and the historical conditioning of events together into a picture that is both philosophically satisfying and respectful of the empirical facts. Dewey provides nothing less than a fully naturalized step-by-step account of the emergence of higher cognitive functions out of inanimate systems. The beauty of such a model from a naturalistic perspective is that it locates the mechanisms for the emergence of dynamic processes *within* the operations of nature itself, thus removing the need to outsource that work to external laws, supernatural agencies, the transcendental ego, or what have you. It is more remarkable for the degree of structural continuity that Dewey is able to locate across multiple levels of functional organization. Where the model succeeds, it seems genuinely to latch onto the 'generic traits of existence,' or at least some of them.

Before moving on to a more detailed examination of Dewey's model, however, a few moments should be spared to consider one of the more formidable challenges that face any model of ontological emergence.

Emergence and Reduction

As Jaegwon Kim notes, the fortunes of emergence and *reductionism* are inversely proportional – what counts in favor of the one will count against the other.[58] In its stronger forms, reductionism tends towards some version of the claim that there are no events in nature that are not describable in the vocabulary of a mature physics.[59] Once you have the physical (or perhaps quantum mechanical) description of the entire universe, you have exhausted all that can be meaningfully said. Talk of the *quality* of the experience may here be regarded as loose and unsophisticated; what such talk actually refers to is physical *quantities* if

it refers to anything at all. Kim simply refers to this position as 'physicalism,' defining it as the thesis that "all things that exist in this world are bits of matter and structures aggregated out of bits of matter, all behaving in accordance with laws of physics," and "any phenomenon of the world can be physically explained if it can be explained at all."[60]

This view, not surprisingly, has enjoyed far more popularity among physicists and philosophers than it has among biologists, psychologists, or anthropologists, and for good reason. It is obviously too strong. Despite a handful of individual successes, this form of reductionism has in general failed to provide anything like an uncontroversial account of the wholesale reduction of any particular level of inquiry to any other.[61]

We can of course tell a rich quantitative story of the redness of the apple in terms of its ability to absorb and reflect light in combination with the neuro-visual architecture of Bob and Alice, but this seems, as legions of thought experiments have pointed out, to explain everything *but* the redness of the apple.[62] Similarly, there seems to be no complete quantitative description of waveform values that could adequately convey the *experience* of listening to Beethoven's Sonata No. 14. An overly strong program of reductionism thus seems as intuitively unappealing as an overly strong program of emergence.

The standard compromise is that some form of *supervenience* relation is necessary to keep mind tethered to the physical world without reducing it away.[63] Supervenience is typically understood as the thesis that there can be no difference in higher-order (supervenient) properties without a corresponding difference in their lower-order (subvenient) property base. Kim (1993) fleshes out this notion in terms of an asymmetrical relation of mereological composition. The properties of higher-order macro-scale objects (e.g. water molecules, baseballs, etc.) are symmetrically dependent upon their micro-scale subvenience base (elementary particles) because the properties of the former are *realized* by the composition of the latter. This version of dependence, which is cashed out in terms of the relationship between parts and wholes, is sometimes called *mereological supervenience*.[64] Since the powers and properties of macro objects are 'nothing over and above' the sum of the properties of their micro-scale constituents, then any two worlds that are identical with regard to the spatio-temporal arrangement of their most fundamental physical parts are also identical in every other way.

Objection: Causal Exclusion

Kim however has demonstrated convincingly that accounts of emergence predicated upon a relationship of mereological supervenience are doomed to fail, at least if epiphenomenalism is to be avoided.[65] Mental acts, according to the epiphenomenalist, are incapable of causing any change in the world; mind is in effect 'just along for the ride.' Samuel Alexander famously mocked this position for supposing "something to exist in nature which has nothing to do, no purpose to serve, a species of *noblesse* which depends on the work of its inferiors, but is kept for show and might as well, and undoubtably would in time be abolished."[66] Kim (1992) refers to this as Alexander's Dictum, and it comes down to this: *to be is to be causally relevant.* If it can be shown that mind, under an emergentists description, reduces to an epiphenomenal 'residue,' then that should count as a strong argument against emergentism.

To illustrate this, Kim invokes the notion of *causal exclusion*, which states that no effect has more than one sufficient cause (or set of causes). Consider **Figure 1** below:
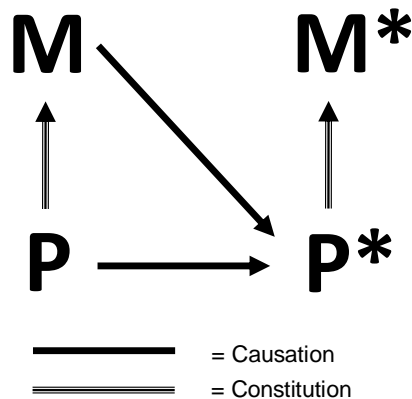

Figure 1. Kim's Model of Causal Exclusion

We generally suppose that our desire to raise our hand is the cause of our effort to raise our hand. Let this desire be called mental state M and let the resulting mental effort be

called mental state M*. Thus M is supposed to be the cause of M*. According to mereological supervenience, both of these mental states supervene upon their respective physical-state realizers. Let physical states P and P* then be the respective realizers of M and M* such that M and M* necessarily emerge at instances of P and P*.

This is where causal exclusion kicks in. M *cannot* be the direct cause of M* because the existence of P* is sufficient by itself to account for the instantiation of M*. The only alternative possibility is for M to enter earlier in the *causal chain* that terminates in M*, and thus function as an *indirect* cause. But every mental state has a sufficient physical cause. The only option then is for M to function as the cause of P*. This would constitute a form of *downward causation*, where higher-order properties are causally efficacious with regard to lower-order properties. Emergentists, Kim argues, are necessarily committed to some form of downward causation.

The problem is that P* already has a sufficient physical cause in the form of P. There is in fact nothing here for M to do; every effective move within this transaction has been sufficiently determined by P or P*. Thus M and all higher-order states like M are excluded from playing a causal role in the world. This leaves us with two choices: either (a) we reject the irreducibility thesis and admit that talk of mental states is just misguided talk of microphysical states or (b) we keep irreducibility but reject downward causation and admit that mental properties are powerless in the world.[67] Thus (a) is equivalent to a claim of reductionism and (b) to a claim of epiphenomenalism, two equally unappealing choices.

The problem with this account, as Ned Block (2003) has shown, is that Kim's argument generalizes greedily.[68] Kim has not simply demonstrated that mental properties are made causally impotent by their realizers; he has shown that *all* higher-order properties must be excluded from the causal-physical order. Causation may be shown to *drain down* always to the level just beneath the level of inquiry, until all causal efficacy presumably 'bottoms out' at the fundamental level of elementary physics. This leads to the counterintuitive conclusion that it is not the baseball (or its powers) that breaks the window, rather it is the fundamental particles that constitute the baseball that do all the causal work. This goes for all systems at all scales; anything that is not irreducibly basic is forbidden from making a difference to the world.[69]

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Naïve Physicalism

From the perspective of an event ontology such as objective relativism, Kim's causal exclusion argument represents a wonderful *reductio ad absurdum* of the standard ontological picture that has served historically as the ground-map of Western metaphysics. The argument seems almost impossible to block once its basic premises are accepted and its logical terminus is an absurdity. The philosopher who has to *argue* for the ability of a baseball to shatter a window is obviously starting at an ontological disadvantage.

Fortunately, only one premise from the above needs to be outright rejected in order to escape the causal regress. In particular, the notion of mereological supervenience is an inappropriate tool for ensuring correspondence between the physical and mental levels. The model of causation indicated in **Figure 1** is the sort of tool that will only show up as likely within a ground-map structured along mereological lines.

In setting up his dilemma, Kim supposes that causation describes an external relation between two discrete terms. This is the familiar billiard-ball mechanics account whereby M and M* are discrete, temporally sequential events that are connected by some third entity R (where R is a transfer of conserved energy or what have you) and the occurrence of M together with R is sufficient to determine the state of M*. It is this model of causation that sets the gears of the exclusion argument turning, and there is little in this account to block them once it is started.

The problem with the mereological account is that it invites the same unanswerable question that has plagued most reductionist philosophies in one form or another – that is, the problem of building *quality* from *quantity*. We cannot doubt that there *are* qualities in the world; we experience them every conscious moment. For this reason, one of the central projects for Dewey and the objective relativists was to provide an account for the primitivity of qualitative properties in nature. In opposition to the reductive instincts of naïve materialism, the objective relativists claim that Alice and Bob's apple *really is* red.

Further motivation for rejecting the separability thesis comes from contemporary physics, which recognizes no such objects as the discrete atomic particulars that Kim describes as the inhabitants of the fundamental physical level. Kim's metaphysical ground-map – his conception of 'physicalism' – locates mereological constitution as the essential factor that uniquely determines the state of a system. Such an ontology requires that nature

be reducible to discrete particulars that, when properly arranged and related, constitute the furniture of the world. Dewey sometimes refers to this type of ground-map as 'mechanistic metaphysics.'[70] Going forward, I will refer to it as *naïve physicalism*, to indicate both its intuitive appeal and its ultimate unsuitableness to contemporary theory.

The Separability Thesis

Probably the most famous statement of naïve physicalism in contemporary metaphysics comes from David K. Lewis, under the name of 'Humean supervenience.'[71] According to Lewis:

> [A]ll there is to the world is a vast mosaic of local matters of particular fact, just one little thing and then another … we have an arrangement of qualities. And that is all. There is no difference without difference in the arrangement of qualities. All else supervenes on that.[72]

By this view, all that exists is a spatio-temporal distribution of isolated points or point particles scattered across what Lewis calls the Humean mosaic. This is a perfect example of the sort of ontology that objective relativism opposes. In the Humean mosaic, only isolated components and their momentary arrangements are taken into consideration. All powers, relations, and non-spatiotemporal properties are taken to supervene upon the mosaic.

Tim Maudlin (2007) has challenged Humean supervenience upon the grounds that it rests upon the scientifically problematic notion of *separability*. Two systems may be said to be separable if and only if their properties may be specified without reference to one another. An earlier, influential critique of this thesis was offered by Whitehead in his rejection of simple location.[73] Whitehead worried that the particulate view of physics, which followed Newton and Locke in conceiving of the universe as constructed out of discrete, fundamental units, had outlived its utility. Both Maudlin and Michael Esfeld (2004) have argued more recently that separability is incompatible with an understanding of the universe motivated by contemporary physics.[74] The proof of this is ironically believed to have been inspired by separability's most famous defender, Albert Einstein.

Einstein and Neils Bohr had spent years engaged in public debate over the implications of quantum theory. In his famous 'EPR paradox' paper, Einstein insisted that

if Bohr were correct about quantum theory, then the states of any two systems could be correlated regardless of distance, a process known as *entanglement*.[75] This meant that a measurement of the value of one particle in an entangled pair would 'instantaneously' determine the value of the other, regardless of spatial separation. Famously, Einstein insisted that no 'complete' physical theory would permit such 'spooky action at a distance.'[76]

The matter stood more or less unresolved until the Scottish physicist John Bell was able to confirm entanglement mathematically in 1964, bringing the debate essentially to a close.[77] Bell's Theorem, as the result is called, demonstrates that no theory may preserve *both* locality (or the constraint of information transfer by the speed of light in a vacuum) *and* counterfactual definiteness (or the independent existence of unmeasured values or 'local hidden variables'). Empirical evidence has since provided strong support for Bell's conclusion.[78] Most interpreters choose to preserve locality at the cost of counterfactual definiteness, and thus separability.[79] Bell's Theorem, which has been called the most profound result in all of physics, is often cited as the nail in the coffin of the theory, sometimes known as *local* or *classical realism*, that physical events possess clearly-defined states independent of their interactions or 'measurements.'[80]

Decoherence and Measurement

For his part, Lewis admits that Bell's Theorem might serve to falsify Humean supervenience. In Einsteinian spirit, however, he chooses to withhold assent to this conclusion until such time as quantum physics is "purified of supernatural tales about the power of observant minds to make things jump."[81] Like Einstein before him, Lewis is worried about the so-called 'measurement problem' in quantum physics. Very roughly, a quantum system is described as a wavefunction. This wavefunction describes the temporal evolution of a distribution of states that the system *could* potentially occupy. According to the formalism, when a system is measured, the smeared-out possibilities of the wavefunction 'collapse' into a determinate state. The measurement problem refers to this seemingly miraculous intrusion of human laboratory measurements into the transition from a quantum probabilistic state to an apparently classical actual state.

There are tools available now however to frame the measurement problem that are less damaging to our intuitions. One of the most prominent is *decoherence*.[82] The theoretical

physicist Wojciech Zurek describes decoherence as the process by which the "environment surrounding a quantum system can, in effect, monitor some of the system's observables." To quickly flesh this out – systems are always embedded within environments. As a result, a target system will always be involved in a number of local interactions. Each of these interactions can be modeled as a binary yes/no 'question' that is posed to the system. Electrons for example are sometimes 'bounced off' of photons in a double-slit experiment in order to specify the location of the photon. The interaction of the two particles counts as a 'measurement' of the photon's position. With regard to any target system, then, there are any number of such questions being posed by the system's local environment, and each question counts as a measurement of the system by the environment.

The state of the environment then determines what questions will be posed to a target system. The distribution of probabilities represented by the state of the environment thus represents a limiting condition upon the states that the target system may occupy. Certain possible states of the target system may represent a better 'fit' with the environment than other states. States that are incompatible with one another will cancel out. As a result, we consistently find that the distribution of probabilities represented by the wavefunction will lose coherence as 'unfit' values 'leak' into the environment, until the target system 'collapses' under environmental selection pressures into a stable, determinate state. Zurek refers to this process, perhaps with tongue slightly in cheek, as 'quantum Darwinism.'[83]

In this model, there is nothing special about human measurement. Systems 'collapse' into determinate quasi-classical states as a result of the perfectly ordinary and explicable processes of interaction, interference, and negotiation between systems and their environments. In addition, this points to a view of nature as *dependent* upon its relations for the specification of its properties. We do not encounter Schrödinger cat-states at the classical limit because the environment is always 'measuring' the system and 'selecting' in favor of one state over another. Separability, thus, fairs no better under decoherence than it did under Copenhagen rules. Lewis' model of Humean supervenience, then, would seem to come out false also by the lights of an interpretation of quantum theory 'purified' of any privileged role for conscious agents.

Composition and Configuration

Mereological supervenience is not the only model available, however. Cunningham (2001) has offered a detailed account of the ways in which the *configuration* of various systems, as opposed to their constitution, can be sufficient to individuate them into emergent levels. R.W. Sperry (1960), William C. Wimsatt (1994), Mark Bickhard and Donald T. Campbell (2000), and Claus Emmeche, Simo Köppe, and Frederik Stjernfelt (1997) have all offered contemporary models of emergence based upon an ontology that emphasizes configuration over constitution, and I will follow this route as well.[84] I will attempt to bring the voices of Dewey and the objective relativists into harmony with the configurationist choir by sketching the rough outline of an ontology of structure and process as opposed to one of classical atoms and void. Cleansing the model of the separability thesis, and thus affirming a *relationist* ontology in accordance to McGilvary's Maxim, is a first step in this analysis.

Metaphysics, for Dewey, involves "a statement of the generic traits manifested by existences of all kinds."[85] He elsewhere provides an incomplete list of such traits:

> Structure and process, substance and accident, matter and energy, permanence and flux, one and many, continuity and discreteness, order and progress, law and liberty, uniformity and growth, tradition and innovation, rational will and impelling desires, proof and discovery, the actual and the possible …[86]

The point of this procession of opposites isn't to provide anything like a water-tight categorical taxonomy. An important structural commonality is being emphasized in each pairing. In each example, we find concepts that are defined in relation to one another and meaningless apart. It is thus not the individual traits that are crucial, but instead "their degrees and the ratios they sustain to one another."[87] Here, as elsewhere, Dewey is concerned with the problematic cases – the ways in which events cooperate and conflict, combine and transform.

It is by virtue of this processual nature of events that they become structured. Dewey defines this co-implicative relationship in terms of the regulation of temporal evolution. What differentiates structural relations from processes is their rate of transformation relative to one another. "To designate the slower and the regular rhythmic

events structure, and more rapid and irregular ones process," Dewey states, "is sound practical sense."[88] Structural events thus show up as invariant in the sense of a horizon with respect to a smaller moving body.[89] They provide a stable referential coordinate system against which localized changes are detectable.

Structure is thus related to process as a boundary condition; it represents "an arrangement of changing events such that properties which change slowly, limit and direct a series of quick changes and give them an order which they do not otherwise possess." Likewise, the one and the many are individuated by their contrast, the possible constrains the actual, and order directs and regulates progress. These pairings do not represent metaphysically independent variables; they each pick out instead the terminal values of a relation. They mark modes of coordination, not distinct entities.

It is this system-theoretic view of nature that marks Dewey's model of emergence as configurational rather than compositional. Contrary to mereological supervenience, it would seem that you do not get all of the properties in the world by arranging their constituents *just so*. It is the configuration of the whole, the way its internal relations support and frustrate one another, rather than its mere constitution, that is relevant. Below, I briefly summarize the broad-strokes of Dewey's model before moving on to a more detailed analysis of its premises in the following chapters.

Dewey's Model of Psycho-Physical Emergence

Figure 2 below is meant to represent a rough approximation of the model of emergence that Dewey describes. The diagram divides into four rows with four columns. The rows represent the evolution of event-types that are specific to different and qualitatively distinct ontological levels within an ascending hierarchy. These should be read from left to right as articulating qualitatively distinct phases within a temporally unfolding process. These phases are represented by the columns within the diagram. In **Chapter VI**, a more detailed analysis of these individual levels and phases will be provided. For the moment, a few preparatory remarks should suffice.

Each level of functional organization within the model is fixed by two related factors, *viz*. the susceptibility of a system to disruption by its environment and the power of that system to respond accordingly. For more complex event-types, the degrees of freedom

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required for adjustment are greater. As a result, different powers are necessary to maintain structural coherence at different levels. Events at the psycho-physical level for example require more complex and subtle adjustments to maintain coherence than events at the physical level. Systems lower in the hierarchy will thus tend to be more stable; they are less susceptible to environmental stressors and thus require fewer and simpler powers.
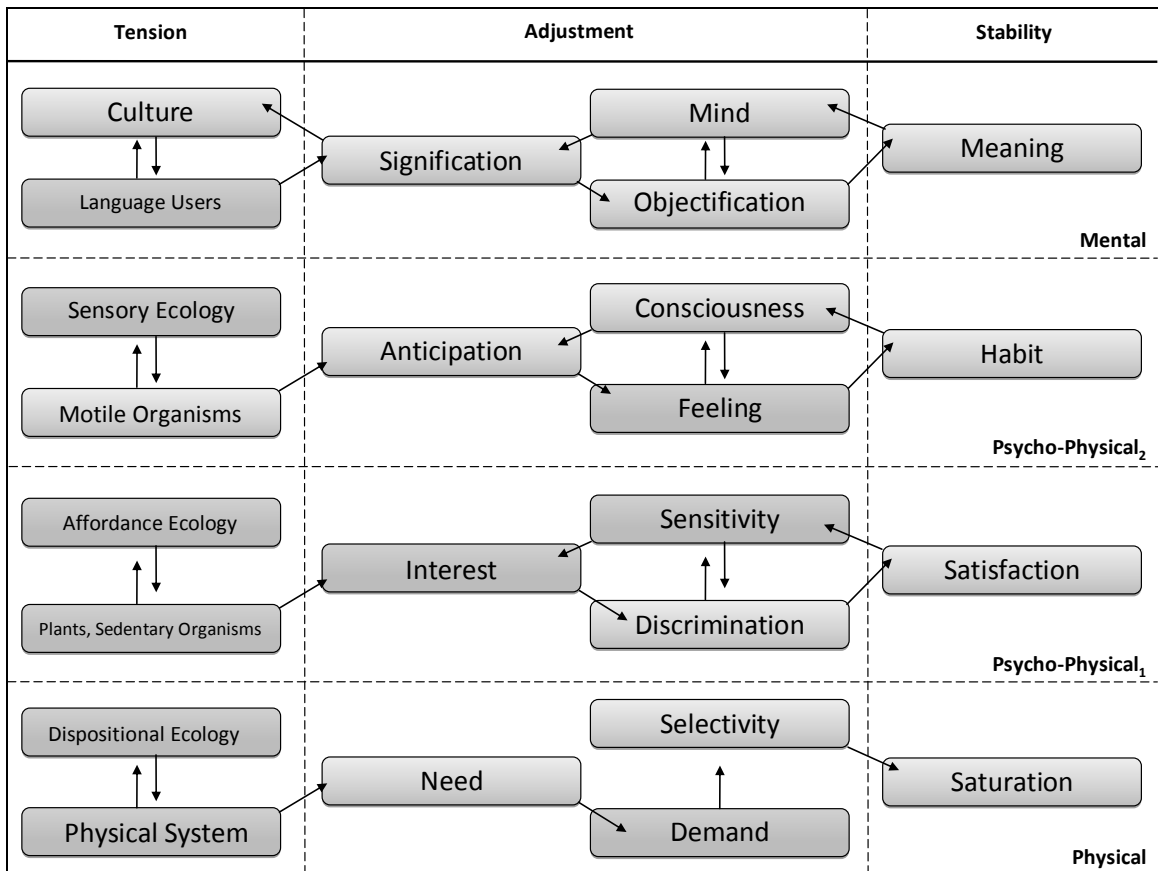

Figure 2. Dewey's Model of Psycho-Physical Emergence

The emergence of levels is thus correlated with the emergence of new and more sophisticated powers for adjustment. As events become more complex, they become more specialized and less general. Physical events are ubiquitous, while mental events are far more restricted. The division between levels represents a qualitative shift in the organizational complexity of the higher-order level relative to the level below. The levels of functional organization within the model are thus structured by the quality of their internal relations.

Chapter V will elaborate further upon this topic.

The career of any event, in Dewey's terms, initiates within a problematic situation and terminates in its resolution. At each level, the event cycle begins with a focal system embedded within an environment. Two factors influence the selection of a focal system. First, the focal system shows up as a point of unstable equilibrium against a relatively stable and invariant background environment. Such tensional faults are the focus of events because it is at their occurrence that systems are compelled to make adjustments. Disruption of systemic stability is a precondition for *something to happen*. Events are thus inherently problematic. They stand out *as* events relative to a stable situational background because they put a number of established relations at risk.

To endure, the system must have the capacity to detect and respond appropriately to the forces that impinge upon it. Events are thus always transformational, beginning with a state of environmental tension, proceeding through a cycle of adjustments, and culminating in a new state of relative equilibrium that conserves the changes from the previous state and sets the initial parameters for the next phase of readjustments. Three generic phases may be emphasized within this process: *tension*, *adjustment*, and *stability*.

Second, the quality of prior events is carried forward into the historical development of the focal event. The degree of fit between this conserved structure and the background structure of the local environment determines the extent of the readjustments required to complete that particular event-cycle. **Chapter IV** will go into greater detail regarding this process, which is crucial to the understanding of events as restricted relational networks and thus to the vindication of the emergence model.

Notes

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[56] Prominent examples from Dewey's time include Alexander 1920, Broad 1925, and Morgan 1926. Contemporary examples include Davidson 1970, Beckermann, et. al. 1992, Cunningham 2001, Clayton and Davies 2006, and Corradini and O'Connor 2010.

[57] cf. Van Cleve 1990.

[58] Kim 1995 p.5.

[59] John Worrall (1989) warns us about the vagueness and obscurity inherent in terms like

‘mature physics.’

[60] Kim 2005, p.149f.

[61] The reductions of phlogiston and caloric to the mechanical theory of heat is an example of an arguably successful scientific reduction.

[62] The most famous probably being Frank Jackson’s (1982) ‘knowledge argument.’

[63] At least, the standard method since Davidson 1970.

[64] Kim 1993, p.101f.

[65] See e.g. Kim 1992, 1999, 2001, 2005, and 2006.

[66] Alexander 1920 Vol.2, p.8. Compare with McGilvary’s Maxim above.

[67] See Kim 2005, chapter 6. Kim does not believe that qualia can be reduced to a physical description, and is thus committed to postulating them as an epiphenomenal ‘mental residue.’

[68] See also Walter 2008 and Crawford 2003.

[69] Worse, as Bertrand Russell (1912) points out, the causal profile illustrated in **Figure 1** does not even apply at the quantum level. Thus causation so defined is fated to drain out of the world entirely.

[70] e.g. LW1:201.

[71] Although it is debatable whether Hume ever accepted such a strong position. See Maudlin 2007.

[72] Lewis 1986, p.ix.

[73] Whitehead 1925 p.58.

[74] See also D’espagnat 1989 Chapter 2, and Ladyman and Ross 2007 for additional scientifically-motivated argument against the separability thesis.

[75] i.e. a measurement of the value of one would ‘instantaneously’ determine the value of the other, regardless of spatial separation.

[76] Einstein et al. 1935. Einstein collaborated with Boris Podolsky and Nathan Rosen on the paper, thus ‘EPR.’ See also Bohr’s response (1935).

[77] Bell 1964. This brief paragraph of course represents a vast oversimplification of the theory.

[78] e.g. Aspect 1981.

[79] e.g. Aspelmeyer et. al. 2007.

[80] See e.g. D'espagnat 1989; Ladyman and Ross 2007; Maudlin 2007; and Esfeld 2004.

[81] Lewis 1986, p.xi.

[82] Zurek 1991, p.2002. Also Zurek 1982 and 2003.

[83] Zurek 2009.

[84] See also Sperry 1986; Emmeche et. al. 2000; and Bickhard and Richard J. Campbell 2011.

[85] LW1:305.

[86] LW1:66f.

[87] LW1:309.

[88] LW1:64.

[89] cf. Gibson 1986, p.73.

CHAPTER IV

HISTORIES IN THE MAKING

The objective relativists mapped the contours of their metaphysics (arguably too often) by means of destructive arguments leveled against that august philosophical artifact – the ontology of stable, self-sufficient *substances*. Substance, in this sense, is the primitive essence that underlies phenomena and that may endure independently of any of its apparent modifications. Because substance is non-relational, however, it cannot directly interact with the perceiver – we can know of it only via its powers. Dewey (1926) and Lamprecht (1929) have both traced the sundering of experience from nature back to this distinction, which was drawn initially by John Locke.[90] Locke defined knowledge explicitly as a relation between the powers of a substance and a perceiver. But since the substance and its powers are non-identical, it follows that we can never *really* know anything of the substance itself. We have in this premise the seed of epistemological dualism, which, in the case of Locke, takes root in the distinction between primary and secondary qualities.

Against this type of *substantivalist* ontology, the objective relativists affirmed a conception of nature as a dynamic system undergoing continuous evolution, adjusting and transforming as its various processes move in and out of harmony and tension. One of the central premises that unites objective relativism as a school (however loosely) is the assumption of a universe that is everywhere in process – unstable, unfinished, and precarious.[91] 'Things' show up as persistent topological spikes within the flux of interacting fields, but they are not ontologically fundamental. The fundamental units of the objective relativist ontology are complex and irreducible *events*. The third tool borrowed from Dewey will thus be this ontology of events.

Histories and Situations

One consequence of such a dynamic ontology is that we are always catching the world in the process of state-change. Events, unlike substances and mereological sums, have *duration*, they *take time*. We do not find the world frozen upon a knife-edge between discrete temporal states – one a set of clear antecedent causes and the other a set of distinct

consequent effects. We instead find the world always as a rushing chaos of adjustments and transitions, from which we may, if needed, abstract individual causes and effects. Events as such do not represent discrete space-time slices – they are as irreducibly complex from a temporal-historical perspective as they are from a relational-situational perspective.

Objective relativism thus recognizes that events occur in and are conditioned by their functional role within a sequential temporal history. Dewey uses the term 'history' in a somewhat technical sense, referring to a sequence of events that retains a core of structural stability throughout consecutive state changes.[92] This should not imply that histories are somehow 'made up' of atomic events however. An event should instead be understood to constitute a *phase* of a history that is individuated by its functional role within some wider situation.

I am using the term *situation* here in Murphy's sense to refer to the network of relations within which the event is situated. Every event is specified relative to some situation and every situation is specified relative to some event. The situation is the entire network of relational deformations that ripple forth from any individual transaction. It is all that is put at risk in the intersection of a history and an environment. The situation of the book includes the table that it is on, the lamp that it is beside, etc.[93]

The terms of the relations that constitute the situation are also events – they mark phases within additional histories that are specified relative to the focal event. Consider Murphy's book as an example of a focal event. The book event is focal because it is the object of our concern. Does this introduce an element of subjectivity into the investigation? No, because there is an objective network of relations which has the book as its focus. There are other events in the environment that could just as easily be singled out, each of which is the center of its own objective network of relations.

What then fixes the state of Murphy's book? The answer has already been given, at least in part. The state of the book as an event is fixed relative to *both* its situation and its history. Every situation involves the coming together of some process of historical development and some network of environing relations. The book represents the terminal stage of a historical sequence of events that have conserved a stable core of equilibrium sufficient to maintain the coherence of the generic pattern 'book' across any and all situations into which it has entered. Histories are thus *conservative* – they retain an evolving record of their state-transitions, funded by their past transactions. It is in the intersection of

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this historical book-event and *this* present environment that limits the scope of the possible transactions the book may enter into.

Objection: Idealism

There is a potentially troublesome consequence for an objective relativist ontology that is driven by the internality of its relations. If every event is constituted by its perspectival relations, couldn't this set in motion a vicious regress in which every individual event is specified by the sum of the events that constitute its situation, and every event that constitutes its situation is *also* constituted by every event that constitutes *its* situation, etc.? The only way to halt such a regress once it has begun it seems would be to posit some maximal set of relations sufficient to specify every particular event in the universe. In other words, the Absolute of the idealists.

Must we specify the absolute state of the cosmos in order to specify the actual state of any particular event? No, because the total system-state, to be specified in practice, would need to be specified relative to a history just like any other system-state. But this means that the state specified is never the total state – there must be always at least one more event that the state of the system is fixed relative to. This position marks a fault line between functional and foundational metaphysics. The foundationalist believes that the notion of a complete system-state that is specified independent of any relations is coherent. Rather than stipulating that the 'true' event is the one whose final state is fixed by the maximally complete set of all possible relations (or predicates, or properties, etc.), the objective relativist denies that there is any sense to be found in the notion of a 'maximally complete set' of anything.

Theoretical physicist Carlo Rovelli draws the same conclusion from a similar regress with regard to quantum systems. Rovelli notes that physical values do not describe isolated physical quantities; they describe the correlations between systems. Questions regarding the independent value of physical quantities are thus meaningless; the description of the world is exhausted by the "relative information that systems have about each other."[94] Upon this ground, Rovelli argues that the classical notion of an absolute or observer-dependent system-state is conceptually incoherent. No system-state – including any theoretical total state – is determined in isolation. Any 'absolute' description encompassing all relations within a

system would itself count as an additional relation, thus triggering the regress mentioned above. Rovelli compares the status of the absolute system-state to the status of absolute simultaneity following relativity. The notions are not so much wrong as strictly meaningless within the changed boundaries of a new scientific ground-map.[95]

Here then is how the regress of internal relations may be halted without recourse to the idealist's Absolute: the specification of an event is a function of a situation, and unlike the promiscuous pan-relationalism of the idealists, the scope of the situations described by objective relativism are *restricted* by the concrete in-the-world transactions of historical events and actual environments. It is the introduction of a focal history into an environment that transforms *that* environment into a concrete situation. Correlatively, it is *that* environment that selects a particular event out of an evolving history. The temporal evolution of a historical event and the environing relational nexus represent limiting conditions upon one another. Where the two meet, the gears of possibility grind to a momentary halt in the actuality of the event.

This distinction between an internally restricted versus unrestricted relational matrix represents a stark distinction between objective relativism and idealism. Objective relativists see constraints upon relational coherence as natural, internal factors arising out of the historical and situational contexts of individual systems, whereas idealists tend to take the total system-state to be the only legitimate constraint. Upon the former view, constraints arise naturally out of the world; upon the latter, constraints must be imposed from without. Objective relativism is thus a more parsimonious theory than idealism; it requires nothing beyond what is already given *in* nature in order to allow for the operations *of* nature.

Objection: Ambiguity

Lovejoy has taken forceful issue with what he considers to be the sloppy invocations of the term 'relations' by objective relativists as an all-purpose dissolver of philosophical difficulties. Specifically, Lovejoy argues that at least three senses of the term are regularly conflated:

> [T]he plausibility of objective relativism … has owed a good dealt to a current tendency to read into the notion of conditionality, and especially that of perspectivity, the logical implications of what I have named 'respectivity.' It is easy

to confuse the proposition that an object exhibits such and such a character from the standpoint of a given relatum with the proposition that it has that character 'relatively,' *i.e.*, respectively, to the same relatum.[96]

By 'conditionality' Lovejoy means something like the causal relation.[97] A is conditionally dependent upon B iff had B not occurred, A would not have occurred. By 'perspectivity,' Lovejoy means a relationship of conditionality wherein the B term is the 'percipient event' of a conscious mind. Both of these Lovejoy finds amenable to the existence of sense data (or other sensory contents). By 'respectivity,' however, Lovejoy means something more along the lines of what the objective relativist means by 'relativity,' i.e. that a term has no meaning considered in isolation from its (actual or possible) relations.[98] It is this third sense of relativity that Lovejoy finds odious.

The objective relativist, says Lovejoy, generalizes the term 'relative' without warrant, conflating the sense in which any set of physical values may be specified relative to a reference frame with the radically different sense in which any set of sensory *qualities* may be specified relative to a conscious percipient.[99] What the objective relativist *means* when she speaks of relations is the latter, perspectival sense. And here the trap is sprung, because this type of perspectivity is exactly what the *dualist* means when he speaks of perspectives. As Lovejoy frequently emphasizes, the notion of two qualitatively distinct perspectives upon the 'same' event is functionally indistinguishable from the notion of two qualitatively dissimilar *ideas* corresponding to the 'same' event. Objective relativism then collapses (as, according to Lovejoy, all philosophies inevitably must) into a bifurcation of objects and ideas, and thus into epistemic dualism.

There is reason to suspect that the trap is unfairly set however. Lovejoy sees a categorical distinction between relations and perspectives. The former are the children of nature and its causal-temporal order; the latter are the children of minds. To someone setting out with Lovejoy's ground-map, the objective relativist will seem to be speaking nonsense when she speaks of perspectivity as an objective feature of natural systems. With a starting point of ontological bifurcation, any story of the natural emergence of mental functions will appear suspect. But it is this point precisely that the objective relativist wants to challenge.

Perspectivity

The minimal set of individuating conditions for an event includes reference to *both* (a) its functional role within a larger situational context and (b) its historical context within a dynamic and enduring system. An event is thus at least the point of focus of a history relative to a situation. But it is also more than this. *An event is a perspective on a situation.* It is this *perspectival thesis* that separates objective relativism most sharply from competing theories.

Every history, as a unique system that fixes the point of focus within a wider environment, represents a perspective on that environment. The event is the focal point of its situation, the singularity in which the networks of relations that constitutes the situation converge and interlock. The corollary of this thesis is that the quality of the particular network of relations that constitutes the situation is specified always *relative to* or *from the perspective of* the focal event. In this way, objective relativism bridges the gulf between internal relations and perspectives.

Showing up from a perspective is what transforms a local network of relations into a situation. If all relations were equal, then perspectivity would be irrelevant to the specification of any patterned event. There would be no situations as we have described them, only an impersonal background of fixed relations. But not all networks are created equal; some localized relational webs will simply have greater *weight* with regard to the specification of a particular event than others. How the local environment is structured, including the relative weight of various local relational networks, will directly influence the selection of an event out of an ongoing history.

Murphy explains that an event's "properties belong to it in relation to the world with which it interacts; they are at once properties of the world and of the center, for they are properties of the world in its relation to the center."[100] An event, whatever else it may be, is primarily an indication of a need for tensional adjustment. The focus of this internal tension occupies the center of an outward-spreading network of relations populated by every relata for which the event is a difference-maker. At minimum, some otherwise-stable dispositional ecology must be *put at risk* by tensions within the event space at some vector of historical development if the cycle of tension-adjustment-stability is to first initiate.

Already, perspectivity is built-in at this level. This complex relationship between histories and relational networks ensures that any particular event will both be qualitatively

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unique and constrained in scope by its internal structure. It will in fact be situated within just *this* network of relations that is eventuated by just *this* history. Thus the event is centered, not within an impersonal network of relations, but within a situation that is specifically and dynamically adapted to just *that* event.

Any given relata within the situation thus realized is, from the perspective of the focal event, embedded within a qualitatively unique network of relations. We can sharpen this by saying that a perspective is the *quality* of a situation relative to an event. Here the distinction between perspectives and relations becomes plain: perspectives fix the quality of networks of relations. They thus perform the same sort of limiting function with regard to relations as structure was suggested to perform with regard to process. Perspectivity cannot in such a system be explained away or rendered 'merely apparent'; it represents a brute fact about the nature of events. Perspectivity is thus not only objective but also *primitive*.

Objections: Constancy

Lovejoy at one point attempts to draw a substantive distinction between relations and perspectives more in terms of the robustness of their respective relata.[101] Alice, for example, may verify or falsify Bob's findings regarding any physical relation by occupying Bob's standpoint and seeing for herself if his measurements were accurate. Alice cannot, however, verify Bob's blue-dragon-experience by simply stepping into Bob's vacated spatio-temporal coordinates and running tests. Mental events then are radically different from physical events in at least one way – only the latter will remain constant under repeated measurement.

But then, we are not concerned in that case with spatio-temporal perspectives exclusively. It is not just the external coordinates of Bob relative to the red apple that causes Bob to see the blue dragon, it is the intersection of these situational factors with the historical trajectory of Bob up to this moment, including but not limited to the antecedent events conditioning Bob's neurochemical state and Bob's historical relationship to concepts like 'apple,' 'dragon,' and 'blue.' The entire situation comes to bear upon the determination of the event, and the entire history of the event as well. It cannot, I think, be doubted that anyone with just *that* history in just *that* situation would have just *that* experience.

For a perspective to be objective means little more than this – any similarly

constituted organism embedded within a similar context when encountering similar stimuli would have a similar experience. Saying that the blue dragon is 'merely subjective' means very little if it is granted that any organism for whom history H leads to neurochemical state N would, when embedded in system S and confronted with Stimulus X, have experience E where E is equivalent to a particular experience of a blue dragon. What matters here is that *anyone* instantiating the above conditions would have exactly the same experience. The situation is objectively what it is from the perspective of the event to which it is relative. What more than the repeatability of determinate values under identical constraints could one reasonably ask of objectivity?

Direct Realism

It is at this point that the perceptual thesis of objective relativism may finally be cashed out. The perceived apple is specified relative to the perception of a conscious agent, but this is in no principled metaphysical sense different from any other relation that the apple may enter into. As an event, the apple is specified as massive with regard to its interactions with the Higgs field; it is specified as solid with regard to other apples; and it is specified as red with regard to organisms that are receptive to wavelengths of roughly 650nm within the electromagnetic spectrum.

To become conscious of the red apple then is to enter into a transaction with the apple such that its objective qualitative properties become *manifest*. There is no utility to be found in the assumption that events manifest their sensible properties in the absence of sensing agents. Nature is not so wasteful.

Consciousness upon this view is not a box within which marbles of qualia may be kept; it is a process, a form of behavioral response to environmental stimuli.[102] This sounds behavioristic, and it is. Unlike the more austere behaviorists of their time, however, the objective relativists emphasized the qualitative as well as the quantitative dimensions of consciousness by locating qualities *in the world*. The apple *really is* red when considered in its relation to visually-oriented organisms, and it is *just this* redness that is the object of the organism's perception. In an objective relativist ontology, qualities *do work*.

The quality of redness thus isn't something the apple *has*, it is something the apple *does*. The apple has (or rather *is*) the power to do many things, and it is constantly measuring

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and being measured by the environment to discover what things it *may* do. When a network of relations exists that is cooperative with regard to the apple's dispositions to manifest the quality of redness, then we are justified in saying that the apple is objectively red.

Objection: Veridical Perception

If all percipient events are thus objective, in-the-world transactions, how then are we to evaluate between Alice's veridical red-apple experience and Bob's illusory blue-dragon experience? The answer, in keeping with the broad pragmatic underpinnings of the objective relativist position, is that we evaluate the consequences of the transaction. Illusions and hallucinations are of course 'real' – there are objective, scientifically verifiable conditions under which they reliably occur. But just because something objectively occurs that is no warrant for assuming that it represents a good tool for regulating interactions with the environment. The inference from the presence of a hallucination to the conclusion that the object of the hallucination will sustain the same sorts of interactions as the objects of a veridical perception is, simply, a mistake. The red apple will reliably survive a number of tests that the blue dragon will reliably fail. What is significant in terms of knowledge is not which event is real, but instead the type of relational network to which the event belongs.[103]

The same holds for the traditional objection of the bent-stick-in-the-water. Take a straight stick and plunge it halfway into a body of water. *Ceteris paribus*, the stick will appear to be bent while in the water, even though it 'really is' unbent. Must the objective relativist hold in the teeth of logic that the self-same stick has two contradictory sets of qualities, *viz.* bent-ness and straightness?[104]

Of course not. A robust body of scientific theory exists that leads us to expect exactly what we observe under these particular sets of constraints. There are not two mutually-exclusive sets of properties co-existing in one stick; there are instead two very different questions that are being conflated regarding the perfectly ordinary dispositional properties of the same stick. More clarity may be had by stating explicitly that the stick *qua* visual event is bent while the stick *qua* tactile event is unbent. No contradiction is to be found here; these two statements refer to different powers of the stick to interact in different ways with its environment. The stick *really is* bent with regard to its power to reflect light in combination with the power of the water to refract light and the power of human sensory

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apparatus to register optical phenomena. The bent-stick experience is the quality of the particular type of transaction that is under analysis, *viz.* the relation of visual perception. This quality does *not*, however, accompany the very different set of relations involved in tactile experience. All of this is exactly as one should expect; interesting philosophical problems would only arise if the stick *did not* appear bent within situations in which prior experience and scientific theory indicated that it should.

Objection: Miller-Bode

One challenge that remains to be faced at this point concerns how it may be the case that an event (*qua* phase of an evolving history) may enter into the situation (*qua* set of environmental relations) of multiple relata and yet still remain numerically singular. Events are after all qualitatively unique and determinate, as Dewey is at pains to demonstrate. Again, consider Alice and Bob and their apple. Bob has now sobered up and is no longer hallucinating dragons, so both Alice and Bob perceive a similar red apple from their respective standpoints. According to the thesis of direct realism, the object of their perception is identical to the content of their perception; there is no intermediary bundle of red-apple qualia or sense data 'inside' the heads of Alice and Bob that 'corresponds' to the physical apple. According to the thesis of objective relativism, the apple-event is conditioned by the network of relations that constitutes its situation. For at least one of these relations, the relata is Alice; for at least one other, the relata is Bob. From Alice's perspective, the apple as a focal event is at the nexus of one network of relations, including all 'external' environmental and 'internal' neurophysical events for which the apple is a difference-maker, however minor or subtle. The situation is similar from Bob's perspective, only the network of relations and thus the quality of the experience is different in any number of subtle but significant ways. But if Alice and Bob are involved in two dissimilar sets of relations which manifest two dissimilar qualitative apple-experiences, what exactly can the realist mean by insisting that it is the 'same' apple that both directly experience?

Some version of this paradox devilled every direct form of realism of the time. It is a generalized version of the so-called Miller-Bode objection upon which James' radical empiricism is sometimes thought to have broken.[105] The right answer is I think given by Andrew Ushenko (1946). The fact that a numerically singular object may feature in two

qualitatively distinct fields of perception loses its air of contradiction if, instead of puzzling over how a complex of *manifest* properties may be so duplicated, we instead cash out the object in terms of a complex of *powers* or *dispositions* to interact with other events in a set variety of ways, some of which are manifest in perceptual relations.[106] The object *qua* cluster of powers is then common to both observers, even though the specific qualities manifested are objectively relative to the individual percipient events. This notion is touched upon in Dewey and McGilvary as well, where the terms of relations are taken to be *terminal* of a process. Perceptual qualities, being the terminal phase of a consummated event, represent the manifestation of what was until then only a potentiality.[107]

This should hold regardless of the temporal duration of the event. Let's say that Alice is sick of staring at apples all of the time and decides to go outside for a bit of stargazing. According to the thesis of direct realism, the object of Alice's perceptual experience (the star) should be directly present in that experience. But, after checking Wikipedia, Alice discovers that the exact star that she was gazing at became extinct a thousand years ago. How then can it be that Alice's experience of the star is identical to the star itself, if the star no longer exists when the experience occurs. Lovejoy treats such an example as his knock-out punch, and it can indeed wreak devastation upon neo-realism.[108]

Here as well though Ushenko has an answer. The exercise of a particular power may be reasonably thought to be a temporally extended process that initiates at t^1 and terminates at t^2 and this should hold true *regardless of the values of t^1 and t^2*. The star perceived by Alice may be said to be the same star that burned a thousand years ago because it is the powers of the star and their exercise, not some separate underlying essence, that the term 'star' picks out. With no concept of substance within this ontology, the identity of an event is exhausted by its powers to interact with other events. There is thus for Ushenko nothing 'underneath' the causal powers of the star that may fail to show up in percipient events. Without motivation to distinguish between the power of a star and its essence, Ushenko has no reason to deny that the star is directly present in experience.

Notes

[90] Locke 1690.

[91] As Dewey concedes, "process, if anything, is what is 'universal.'" LW 1:333.

[92] cf. LW1 Ch.3.

[93] I am here for the sake of simplicity focusing on spatial relations exclusively. The book is of course also a relata in other types of relations: causal, logical, etc.

[94] Rovelli 2008, p.10.

[95] See also Smolin 2000 and 2006 and Cao 2006.

[96] Lovejoy 1930, p. 135.

[97] ibid. p. 90.

[98] ibid. p. 92.

[99] ibid. Chapters 3 and 4 especially.

[100] Murphy 1963, p.61.

[101] ibid. p.127.

[102] cf. James in his "Does Consciousness Exist?" 1916a.

[103] LW1:243.

[104] cf. Lovejoy 1930, p. 75.

[105] See Bode 1905, and also Heft 2002 and Gale 2007. Dickinson Miller's objections were never published, but conveyed to James through personal correspondences, which are unfortunately lost. On the evidence of James' notes, Miller's objections were in line with those published by Bode.

[106] For the sake of simplicity, I will use the terms 'power' and 'disposition' interchangeably.
107 e.g. McGilvary 1956, p.19f. and Dewey LW1:95ff..

[108] Lovejoy 1930, p.188ff.

CHAPTER V
THE GEARS OF POSSIBILITY

Every relation is in one sense perspectival because all relations flow from one relata to another. In this way the interrelated web of relations that constitutes a particular situation achieves a relatively stable coherence that fixes the focal event and allows it to persist through time. An event may thus be understood as the nexus of a coherent network of relations that is evolving along a relatively stable historical vector.

To draw a visual analogy, consider the event as the center ring of a gear, for which each of its relations serve as teeth. Each of these teeth is, in a sense, 'for' the grooves of another gear – it will 'fit' with that sort of groove and no other. Similar for the grooves of the gear – each is adapted to receive a certain type of tooth. When fit is achieved between gears, the ingredients for stability are present. There is a degree of directedness here, a functional *for*-ness that characterizes each tooth and groove as the one that it is. Events are like this as well. For each event, there exists some set of events for which it is a good fit and some set for which it is not.

As the hub of a relational network, an event is directed in any number of directions at any given time. It has an objective potential to transact in certain predictable ways with other events. This potential may be satisfied or frustrated in any number of ways, depending upon other factors in its environment. These additional factors are of course further events, and they also point to potential satisfactions and frustrations. There is, in other words, a primitive *modality* to events – they may eventuate, inhibit, necessitate, or cancel any number of possible outcomes.

There is a term for such an objective modality, one reaching back at least to Aristotle and well-known to Locke, though it had fallen out of academic fashion by the time the objective relativists were writing. That word is *power*, and it is the powerful, *directed* nature of events that bridges the gap between relations and perspectives. The present chapter will thus concern the role of power within an objective relativist ontology.

Dispositions

More needs to be said about what it means for a property to be powerful. A typical example of a dispositional property is the *fragility* of glass. Let's say that a baseball is hurtling towards a window. If enough force is behind the ball when it strikes the window, we expect the window to shatter. This is because the glass that constitutes the widow is fragile; it has the persistent tendency to interact in a certain way with other events (i.e. to shatter when struck appropriately). We want to say that this disposition to shatter under certain constraints represents a fact about the glass. Further, if the glass is never struck in this particular manner, and therefore never shatters, we still want to say that the glass is fragile (no one assumes that windows are not fragile until they are struck). Dispositions thus indicate objective facts that are thought to be metaphysically independent of their manifestations.

Ushenko was the first to explicitly link objective relativism with an ontology of power. This is in a sense surprising – the emphasis of objective relativism upon the dynamic attributes of events lends itself far easier to a powerful universe than to one that is strictly passive and powerless. There was however a general reluctance during this period even among objective relativists to explicitly introduce powers into ontology. There has in general been a tendency among post-Humean philosophers to regard dispositional properties as somehow mysterious, while so-called 'categorical' properties – typically defined as non-dispositional and causally inert qualities such as shape or configuration – are regarded as ontologically basic. Dispositions, as D.H. Mellor colorfully describes the situation, have been thought to be "as shameful … as pregnant spinsters used to be – ideally to be explained away, or entitled by a shotgun wedding to take the name of some decent categorical property."[109]

To be ontologically respectable, dispositions, it was thought, must be regarded as higher-order properties, which supervene upon or are in some sense realized by an underlying substrata of discrete, non-powerful bits of matter.[110] The standard method for attempting to make dispositions ontologically respectable was by means of a conditional analysis. The simplest form is a non-material conditional that for a disposition D specifies a stimulus condition S in the antecedent and a manifestation condition M in the consequent. Formally, the schema is $\forall x\, (Dx \leftrightarrow (Sx \rightarrow Mx))$. The window (x) is fragile (D) iff being

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struck appropriately (S) causes it to shatter (M). If this analysis holds, then it should be possible to analyze dispositions in terms of purely categorical properties.

But the conditional analysis has been abandoned by an increasing number of philosophers because of its apparent vulnerability to a number of potential *interferers*.[111] As C.B. Martin,[112] Alexander Bird,[113] and Mark Johnston[114] have all independently pointed out, there are a number of hypothetical situations in which the disposition may exist without the associated conditional being true, because of some factor that interferes with the outcome at a key juncture. The most common example is Martin's *electro-fink*, a hypothetical device that removes the disposition of a wire to conduct electricity, but only upon the realization of the condition of that disposition's manifestation.[115] Thus the conditional is false (the presence of the fink ensures that the manifestation does *not* occur), even though the wire genuinely possesses the disposition.[116]

Another factor that has led some to be suspicious of attempts to ground powers in a non-power base is the worry that a purely categorical ontology would necessarily involve quiddities.[117] A quiddity is the primitive essence or '*what*-ness' of a thing that is supposed to necessarily ground it as the type of thing that it is independent of its causal or relational qualities. Quiddities have not enjoyed great popularity in contemporary metaphysics, largely because they are by definition undetectable and thus methodologically otiose.[118] Extrapolated to a discussion of powers, the argument suggests that any purely categorical properties would be, by definition, unable to affect any changes upon the world. Against the prevailing Humean wisdom, it seems that such *powerless* qualities are in fact quite a bit more mysterious than dispositions, by virtue of the fact that they are essentially inert, passive, and undetectable.

Since quiddities are defined by their lack of a causal profile, the rejection of quiddities is equivalent to the rejection of any property that lacks causal relevance. For the moment, I am employing the term 'causal relevance' in a non-technical and inclusive sense to include any property that *makes a difference* with regard to any other property.[119] We should thus, in accordance with the rejection of quiddities, as well as the constraints of McGilvary's Maxim and Alexander's Dictum, be prepared to cast out anything from our ontologies that cannot be shown to make some difference in the world. Purely categorical properties, by definition, are thereby excluded. The only properties that we can responsibly assert to exist are thus *powerful*.

Qualities

If dispositional properties cannot be reduced to categorical properties, then is the reverse true? Can categorical properties such as structure and organization be reduced to purely quantitative accounts of physical dispositionality? There are many who have recently suggested that this is the case, a position that is sometimes called pandispositionalism.[120] Others are more skeptical of this approach, and its seeming reduction of all qualities to quantitative dispositional vectors.[121]

It is this latter sort of worry that I suspect lies behind Dewey's occasional tendency to disparage Lockean powers as 'mysterious' and to suggest that Locke's nascent relationism would be better served by analyzing physical power in more Humean terms of an "orderly seriality among events."[122] While this approach is in general accord with Dewey's structuralist tendencies, it is difficult to square with his emergentism, which identifies emergent levels with the release of new potentialities, and thus with the natural emergence of a genuinely physical modality.

Elsewhere, Dewey indicates that such reluctance may be influenced by deeper concerns about the ontological status of qualities. Dewey insists that "in every event there is something obdurate, self-sufficient, wholly immediate, neither a relation nor an element in a relational whole, but terminal and exclusive."[123] This statement is however in tension with Dewey's insistence, in another passage within the same book, that events *cannot* be characterized "independently of a relation to others."[124] Raymond Boisvert defends Dewey upon this point, arguing that there is "a very real sense in which forms can be considered *atemporal*" because "the ontological status of forms is that of possibilities" rather than temporally conditioned events.[125] Thus events acquire form through their temporal relations, but the forms they acquire are atemporal and absolute. This brings Dewey's notion of form closer to the notion of 'eternal objects' central to the later Whitehead.[126]

I find this reading difficult to reconcile with Dewey's generally pragmatic suspicion of absolutes, however. McGilvary is also puzzled by Dewey's meaning here, musing that the "belief that anything has absolute, i.e., non-relational, characters … is so inveterate" that even someone like Dewey "who in general has no use for absolutes of any kind" seems to habitually cling "to absolutes of this kind."[127] McGilvary it seems to me has the right of the matter. The removal of form and possibility from the temporal order and thus from the

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natural world lends a sense of *abstractness* to Dewey's ontology. I prefer to keep Dewey more thoroughly naturalistic by simply ceding this point to McGilvary and treating structure, quality, and modality as temporally-conditioned citizens of the natural order.

How then *should* we speak about qualities? According to Dewey, the qualities of events register "those ultimate differences in affairs which mark them off from one another and give them discreteness."[128] Qualities are thus formal – they represent the contours of events that structure and regulate their temporal evolution. Qualities may then be taken to represent a limiting condition upon relations in the same sense that structure represents the limiting condition upon process. Events upon this view *are* the quality of their relations. The terms are co-implicative – you cannot have unrelated qualities or unqualified relations. Events will *show up* as qualitative when modeled one way (e.g. as sense data or qualia) and relational when modeled another (e.g. as correlations between behaviors and neural activity), but they cannot be abstracted without remainder complex and concrete events. The case for their distinction is pragmatic, not metaphysical.

This preserves a realistic and naturalistic reading of both the categorical and qualitative aspects of events and their causal and dispositional aspects. Both represent real patterns displayed by events, and as such may be isolated and abstracted for the purposes of analysis, explanation, and prediction. There is a contemporary version of dispositional realism that explicitly endorses a view such as this – the 'identity theory' or 'limit view' of C.B. Martin and John Heil.[129] Martin and Heil treat categorical and dispositional designations as making sense only relative to one another, and thus as alternate descriptions of the same event. Martin visualizes this by reference to the famous 'duck-rabbit' drawing, which may resemble either animal depending upon the conditions of viewing.[130]

This position has sometimes been criticized as obscure, but Dewey's understanding of structure and process I think provides good tools for making sense of the claim. The relevance of qualities is to be found in the structural and thus regulatory function they perform with regard to powers and relations. This qualitative character is what brings relations into some form of stable coherence that marks off the contours of one event from any other. The quality of an event is thus not merely a vector sum of the dispositions that it may be analyzed into. Events are *irreducible* in the sense that the specific qualities that characterize any single event are destroyed by attempts to reduce it to an aggregate of component parts or properties. We are thus closer to the crisis of the event when we speak

of 'powerful qualities,' than when we treat the terms as ontologically separable.[131]

Objection: Intrinsicness

There is a potential problem for the objective relativist who incorporates powers into her ontology, however. As noted above, part of the definition of a disposition is that it is a property that exists even if its manifestation conditions never occur. A window, for example, may be fragile even if it should never be struck in the right sort of way to make it shatter. This has led many philosophers to regard dispositions as necessarily *intrinsic* properties. Intrinsic properties are by definition non-relational, they persist independent of environmental changes. Many philosophers have thus argued that powers cannot be relational.[132] Relations (such as the causal relation) may supervene upon powers, but the powers themselves are intrinsic and essential.

There is not universal assent upon this point however.[133] Jennifer McKitrick (2003) notes that at the very least *some* dispositions may be specified relationally. While the property of having a certain mass *m* might be intrinsic, the property of having a certain weight *w* is certainly *extrinsic*: "A person's weight on earth is different than her weight on the moon … a different gravitational field becomes local, and so her weight changes."[134] L.W. Beck (1952) interprets this same fact regarding the relational specification of weight as evidence supporting the objective relativism of properties in general. But if the fact that weight is a function of interactions involving a gravitational field is enough to establish the relational status of that property, then why should mass be thought of differently? The standard model of particle physics suggests that the property of mass is a function of interactions involving the Higgs boson, which is itself less a particle in the classical sense than a quantized fluctuation within the omnipresent Higgs field. Mass, then, seems just as much a relation upon this criterion as weight if contemporary physics is to be consulted on the matter.

Still, if a power is able to exist independent of its manifestation, this is potentially troubling for a relationist ontology. There is reason to suppose that this conclusion is based upon an over-simplified conception of the operation of powers. Martin (2008), for example, admits that:

> I have been talking as if a disposition exists unmanifested until a set of background conditions is met, resulting in manifestation. This picture is misleading, however, because so-called background conditions are every bit as operative as the identified dispositional entity. A more accurate view is one of a huge group of dispositional entities or properties which, when they come together, *mutually manifest* the property in question; talk of background conditions ceases, replaced by talk of power nets.[135]

Mumford and Anjum (2011) expand this mutual manifestation model by incorporating George Molnar's observation that powers are 'polygenic' – that is, a manifestation is the result not of the operation of a single power in isolation, but of the coming together of *many* powers that mutually reinforce or inhibit the exercise of any individual power.[136] Powers, upon this view, are always operative and thus are never in the mysterious state that the intrinsicness thesis seems to require wherein a power seemingly chooses to refrain from doing any work until its preferred manifestation partner appears. Dispositions, as Nancy Cartwright (1999) puts it, are always "trying" to manifest, but may be prevented by the distribution of additional dispositions that constitutes their local environment or situation.[137]

Powers, from an objective relativist standpoint, do not exist in a vacuum. They are always interacting, even if their function within a given relation is simply to support or inhibit another disposition. This stance also has a contemporary analog in the position sometimes referred to as *power structuralism*, which assimilates the powerful properties of the dispositional realist into the thoroughly relational ontology of the structural realist.[138]

Event Space

The metaphysical ground-map of the objective relativist is, ultimately, a map of the qualitative contours that mark the more stable and persistent relational networks. What the map charts is the province of criticism, the landscape that is available for inquiry. In this sense, the lines on the metaphysical ground-map are equivalent to the moves that are available within a particularly large and mostly stable *event space*.

A bit of abstraction may be useful going forward. Let's consider an event in isolation from all relations. For the sake of argument we will say that, instead of being powerless and unreal, such an unrelated event would by virtue of its lack of contextual constraints be analyzable as an *unrestricted* bundle of dispositions. Such a system would be disposed in all directions at once, and, as a result, in no direction in particular. It would be

pure, unrestricted potentiality, and as such could not become manifest as any particular actuality.

This unrestricted potentiality could be mapped onto an idealized event space that imagines potential states of a target system as 'moves' available within a geometrical state-space. An event space in this sense is similar in function to the notion of a quality space that is employed by Mumford and Anjum (2011) for the analysis of causation.[139] Consider **Figure 3** below.
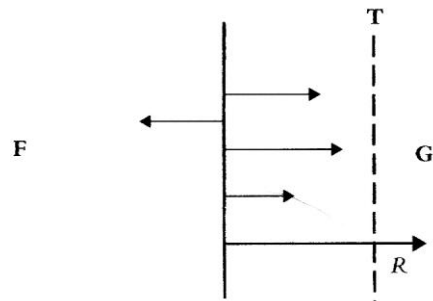

Figure 3. Mumford and Anjum's Model of a Quality Space[140]

The background represents the quality space against which events show up as changes of value in one direction or the other, with F and G representing the opposing directions of adjustment. The arrows represent dispositional vectors disposing toward either F or G. When enough dispositional vectors dispose towards a certain outcome (and are not cancelled by vectors disposing towards the opposite outcome), a threshold (T) is reached, and a result (R) occurs. One strength of this model is that it provides a clear way to visualize the complex and sometimes inhibitory relations between large numbers of dispositions.

An event space should be understood to represent an idealized model specifying the potential states available for a system to enact as a result of its transactions. Applied to our idealized unrestricted system, any particular dispositional vector within the event space would be counter-balanced by a contravening dispositional vector in the opposite direction, resulting in a system that was in a state of perfect, static equilibrium. A system wherein every potential move within its event space is blocked is in a state that Dewey calls

saturation.[141] In order for some degrees of freedom to be available for change, there have to be some specifiable constraints upon the system that restrict its adjustment potential.

This is why the historical and situational facts about the system are key to its individuation – they constrain and thus unsettle the event space allowing for the system to undergo specifiable adjustments. Every history, as remarked earlier, carries the scars of its prior situations. It thus brings a unique qualitative profile to its situation.

Our hypothetical system has, by virtue of its unrestricted dispositional potential, the capacity to manifest any possible value. For any environment that it could enter into, however, there will be some values that are more likely to register than others, and even some values that are strictly forbidden. The reason for this is that an environment is the coherent result of the interplay of multiple restricted systems, each bringing its own dispositional ecology to bear upon the determination of the whole. The environment thus constitutes a relatively stable dispositional ecology that will tend to either frustrate or support the introduction of a new system, depending upon its historical patterns and powers.

Modal Interference

For the purposes of this model, there seem to be at least four ways in which the dispositions of our idealized unrestricted system could succeed or fail to be integrated into an existing dispositional ecology. First, some dispositions could strongly reinforce the preexisting patterns of dispositions in the ecology and would thus be strengthened or *amplified* by their new environing context. To pick a down-to-earth example, the preexisting disposition of a hydrophobic person towards elevated stress levels may be easily amplified via relocation to the middle of the ocean. Amplification enhances dispositions within both the focal system and any systems in the environment with which it achieves some degree of fit. A loose analogy can be made with the process of constructive interference in wave mechanics. Consider the meeting of two transverse waves of identical frequency. The crests and troughs of the two waves would become superposed, resulting in a combined displacement magnitude equal to the vector sum of their individual magnitudes. While it is debatable how closely such a vector sum model resembles the actual interactions of dispositions, the visual component is at least helpful.[142]

A disposition however that weakly interferes with a coherent network of preexisting

dispositions would likely be *inhibited*, its impact greatly dampened by its environment. The disposition of a glass to shatter for example will decrease proportionately as the glass approaches the center of an active volcano and begins to melt. Networks of dispositions that are inhibited by their environment would tend to become unstable and thus to undergo some form of transformation or adjustment in order to better cohere with their local ecology. In the tensional push-pull between a given system and a wider and more stable ecology, it is the relatively unstable newcomer who is likely to give more ground, although both system and environment are altered by the transaction.

Selective pressures within the local ecology may thus enforce catastrophic deformations within the event space of the target system as it adjusts and becomes ultimately *normalized* as a part of the environmental background.[143] If the dispositions of the new system are strongly destructive to the local dispositional ecology, however, they are then subject to potential *cancellation* by inhibitory dispositional networks of equivalent strength. Returning to the wave mechanics analogy, imagine that the frequency of one of the two waves is inverted so that for every crest of the one there is a matching trough for the other, thus annihilating the signal.

Dispositions in the ecology that tend towards inhibition or cancellation with regard to a focal system may be considered *competitive* dispositional partners; those that tend towards amplification and normalization may be considered *cooperative*. Where there is cooperation, the dispositions of the focal system may achieve manifestation; where there is competition, manifestation will be to some extend frustrated. By the negotiation and mutual adjustment of competitive and cooperative dispositional networks, the core structural integrity of an environment is conserved throughout the unfolding cataclysm of an ongoing event.

The structure of our idealized unrestrictive system will of course have been drastically altered via its integration into such an environment. Granting that some among its unrestricted set of dispositions would become normalized or amplified, a far larger set would become either screened off entirely via cancellation or integrated in far weaker form via inhibition. As a result, the system would become reorganized into a new historical pattern as a result of these transformations. The changes undergone by the system would be carried forward into its next cycle of tensional readjustments, and so on for the structure that is conserved after that transaction and the next, resulting in a continuous sequence of qualitative deformations of the system's event space relative to its conserved historical

structure.

The environment is similarly, though less catastrophically, altered by individual events. This is because both the target system and its environmental background each enter into the transaction with a particular dispositional profile, and thus with a qualitatively distinct event space.[144] The dispositions of each system to interact in some way or another with other systems map directly onto the degrees of freedom in each event space. To individuate, we may call the event space of the target system the historical event space and the event space of the environment the situational event space. It is in the coming together of a historical and a situational event space that the mechanisms of modal interference become operative. This is because the values normalized or cancelled in this process are states that each system could potentially occupy.

The resulting outcome state produced by the interaction of our two idealized systems is a function of the degree of fit that holds between the full arsenal of dispositions that define each system. Where that fit is destructive (i.e. where inhibitions and cancellations occur), we will find a *reduction* of the combined event spaces. Where the fit is constructive (i.e. where amplifications and normalizations occur), we will instead find a *stabilization* of those dispositions that are mutually reinforcing. The result, to draw a terminological analogy to a familiar physical process, is that the environmentally-induced *decoherence* of the relative event spaces triggers a 'collapse' of the unrestricted event space of our idealized system and the event space of the local dispositional ecology into a single coherent event space. Call this idealized process *modal interference* if it must have a name and call the resulting event space the *quality* of the situation.

Modal Decay

The current section has been concerned largely with the employment of abstract, visually-oriented models in an attempt, inspired in part by Dewey's conception of metaphysical theories as ground-maps, to bring a few of the ideas introduced in previous chapters together into a relatively coherent model. The map is not the territory however, and it bears repeating that systems, event spaces, dispositions, and relations have meaning only as patterns that may be isolated within the concrete events that we discover in the world. Once discovered, of course, these patterns may then be turned back upon that world

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as tools for targeted analysis.

   Consider for example the problem of causal exclusion described in **Chapter III**. Kim's model of causation assumes a fairly intuitive notion of causation as a relation between two discrete terms that is sufficient to determine the state of the latter. Such an account only makes sense upon an assumption that a principled ontological distinction exists between *intrinsic* properties and their *extrinsic* relations. Once again we find a dualism at the heart of a confusion. From the point of view of objective relativism, a different model of causation seems plausible however.

   Above, the quality of an event was identified with the structure of its event space in the following way. First, the complex dynamical structure of events was analyzed in terms of the interaction of various dispositions (and networks of dispositions). These dispositions were then further abstracted onto an event space defined by the set of possible states that the event could dispose towards.

   From here it is just a matter of letting the event space decohere as a result of the modal interference created by the interplay of cooperative and competitive dispositional networks. The outcome will be the collapse of a distribution of potential outcomes (as indicated by the event space) into a single determinate state. This may thus be called the *modal decay* or the *causation as collapse* account, whereby C and E are boundary conditions established at the initiation and completion of a process that is characterized by the ongoing reduction of the set of potential values of E_p and that is sufficient (over time) to determine the actual state of E_a. A less formal way of putting this would be: an event is sufficiently caused when every factor preventing its occurrence has been removed. Even better: causation is the collapse of possible futures.

   An attempt at visualizing the modal decay model is made in **Figure 4** below: In this illustration, two vectors are used to represent the intersection of the historical and situational dimensions of an event.[145] The vertical (symmetrical) vector represents the network of relations that constitutes an event's situation; the horizontal (asymmetrical) vector represents its temporal-historical trajectory. The dotted lines tapering away from the poles of the situational vector to converge at the leading historical edge are meant to convey the collapse of the historical and situational event spaces into an actual qualitative event. The three-dimensional rendering on the right is meant to bring home more vividly the fact that what is collapsing in this model is the dynamic, structured ecology of objective possibilities for

further transactions that is opened relative to any event. The manifestation of any single property thus represents the annihilation of everything else that could have been the case in the pitiless, roiling furnace of the event.
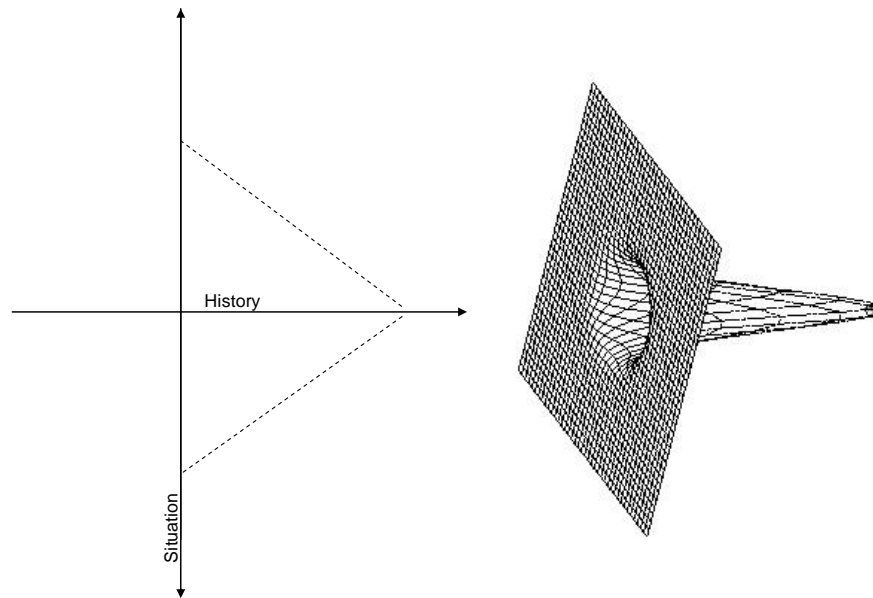

Figure 4. The Modal Decay Model

The conjecture is that this process is occurring *all the time*.[146] Event spaces are abstractions employed for analytical purposes. What is concrete is the actual event, with its regulating structural quality that is perpetually shifting, responding and adapting to environing conditions as its various powers for adjustment move in and out of inhibition, cancellation, and normalization. In a sense, the evolution of a history is the conservative record of a slowly-unfolding catastrophe. The quality of an event bears the scars of a hundred conflicts, and testifies to the resilience of the structure that has been conserved.

Kim's dilemma of the exclusion of higher-order events by their lower order base does not emerge in this model, because the higher-order events here represent boundary conditions that help determine which of the potential lower-order properties will be

frustrated and which will manifest. This process does not involve downward causation in any robust sense, because the terms in the causal sequence are not mediated by any external relation; they are instead related internally by their relative configurational dynamics. This model thus replaces the problematic asymmetrical mereological supervenience of Kim's model with a symmetrical relation in which both levels operate as agent and patient relative to one another. Inter-level causation thus takes the form of an ongoing process of mutual negotiation between levels, rather than the discrete transfer of an external causal 'force.'

Notes

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[109] Mellor 1974, p.157.

[110] This is the position of e.g. Armstrong 1996 and Prior et. al. 1982.

[111] i.e. finks, antidotes, and masks.

[112] Martin 1994.

[113] Bird 1998.

[114] Johnston 1992.

[115] Martin 1994.

[116] See also Lewis 1997, Bird 1998, and Mumford and Anjum 2011, pp.190-193.

[117] e.g. Mumford 2004.

[118] e.g. Hawthorne 2001.

[119] I am borrowing the term 'causal relevance' from McKitrick 2005, who employs it in a similar manner.

[120] Pandispositionalists include Mellor, Mumford, Anjum, Bird, and Marmodoro.

[121] Adversaries of pandispositionalism include Armstrong, Prior, Lewis, Ellis, Martin, Heil, and Molnar.

[122] LW2:24.

[123] LW1:74.

[124] LW1:117.

[125] Boisvert 1988, p. 165. Earlier, however (p.134), Boisvert concedes that "if form were to be described grammatically, it would be a verb rather than a noun. Entities are formed, but form itself does not exist as a separate being." But if form is a verb, doesn't this imply change and thus temporal conditioning?

[126] Especially Whitehead's *Process and Reality* 1929.

[127] McGilvary 1956, p.20.

[128] LW1:204.

[129] Martin 2008 and Heil 2003 and 2010. See also Engelhard 2010 and Jacobs 2011.

[130] Martin 2008 p.67f.

[131] cf. Heil 2010.

[132] e.g. Molnar 1999 and Martin 2008.

[133] See also Popper 1959, Esfeld 2010, and Dorato 2006.

[134] ibid. 160.

[135] Martin 2008, p.50.

[136] Molnar 1999, p.194ff.

[137] Cartwright 1999, p.28. Cartwright prefers terms such as 'capacity' and 'nature' to disposition.

[138] See e.g. Esfeld 2010 and Dorato 2006. The term 'power structuralism' is, I believe, the coinage of Anna Marmodoro.

[139] Mumford and Anjum in turn borrow the concept from Lombard 1986.
[140] Illustration courtesy of Mumford and Anjum 2011.

[141] LW1:195.

[142] Mumford and Anjum 2011 support a vector sum dispositional model. Cartwright 1983 has a less optimistic take.

[143] The mathematical notion of catastrophic deformations in the values of a given state space originates in the so-called 'catastrophe theory' of Thom 1972. See also Zeeman 1976.

[144] Both the target system and its environmental background may be simply regarded as

interrelating systems, the designations of 'foreground' and 'background' being only meaningful with regard to the relative invariance of the latter with regard to the former.

[145] This is again an abstraction; events are not decomposable without remainder into proper historical and situational 'parts.'

[146] Time, it could perhaps be argued, is simply the 'keeping of the books' with regard to this process.

CHAPTER VI
DEWEY'S MODEL OF EMERGENCE

The objective relativists believed that, if the proper metaphysical tools could be crafted to demonstrate how the traits typically associated with mental events – perspectivity, intentionality, qualitative experience, meaning, etc. – could emerge organically within natural systems, then a lion's share of the ontological work towards reconciling experience with nature would be accomplished. The previous two chapters have been primarily concerned with the grounding of perspectivity and quality, and the present chapter will touch briefly upon the topics of intentionality and meaning. Accordingly, while the previous chapters have dealt largely with defining the contours of the wider metaphysical ground-map within which Dewey's emergence model is embedded, this final chapter will turn from such broad metaphysical mappings to more targeted forms of ontological modeling. As such, we will examine the anatomy of the event cycles that constitute the qualitative levels in Dewey's model of emergence.

Dewey's method here emphasizes the tools and processes that are involved in the transformation of nature's ungoverned events into culture's stable and beneficial objects. This, as Dewey points out, is an essentially critical endeavor. We regulate the course of events in conformity with the value we place upon their outcomes. The ability to *recognize*, *evaluate*, and thus *regulate* the course of events is crucial to our survival and success as a species. By taking note of the correlations that hold between antecedents and outcomes under certain sets of constraints we can get a fix on the ways in which natural systems tend to behave. In fortuitous circumstances, we can even learn to redirect their course. The intelligent organism will thus take heed to regulate its dispositional ecology so that beneficial patterns will tend to stabilize. If this process is carried out continuously and systematically, these patterns may become objectified into regulative structures that will serve to mark the path for future events.

Part of Dewey's naturalistic project is thus the demonstration that this evaluative function is continuous with the activities of nature at all levels, and thus to locate a place for objective value. Dewey progresses farther in this task than anyone could reasonably expect. Alas, it is not quite far enough. The mental level in particular is problematic for Dewey's

model, primarily because of his insistence that meaning be uniquely tied to the use of language. As a result, I will be introducing a few new tools into the discussion, borrowed from the ecological theory of perception formulated by James J. Gibson (1986), that were not yet available during the time that Dewey and the other objective relativists were writing. A line of continuity exists however – Gibson's teacher was E.B. Holt, the neo-realist. Holt's teacher, of course, was William James.[147]

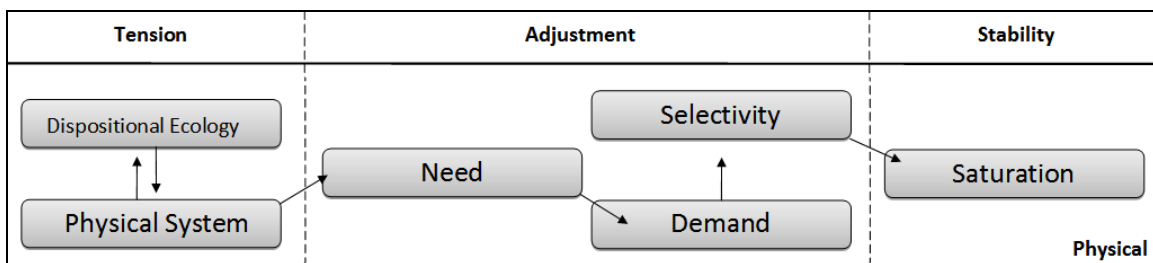**The Physical Level**

Consider **Figure 5** below:

Figure 5. The Physical Level

The necessary set of antecedent conditions for the initiation of an event at the physical level includes at minimum a relatively coherent physical system S in a state of unstable equilibrium relative to its local dispositional ecology E. The instability of S compels it toward a state of structural readjustment. The degrees of freedom available for any readjustment are limited by E. The negotiations between S and E to determine optimal fit trigger the collapse of all unfit potential values for S. The process terminates when only those values that achieve optimal fit remain, reducing the adjustment potential and saturating the event space.

For events at the physical level, the adjustment phase is characterized by a *need-demand-saturation* cycle. In Dewey's words:

By need is meant a condition of tensional distribution of energies such that the body

is in a condition of uneasy or unstable equilibrium. By demand or effort is meant the fact that this state is manifested in movements which modify environing bodies in ways which react upon the body, so that its characteristic pattern of active equilibrium is restored. By satisfaction is meant this recovery of equilibrium due to interactions with the active demands of the organism.[148]

Note Dewey's use of the term *satisfaction* in the above. The difference between satisfaction and saturation is that the latter points to the neutrality of purely physical systems with regard to state. "Iron as such exhibits characteristics of bias or selective reactions, but it shows no bias in favor of remaining simple iron."[149] Satisfaction, by contrast refers to living systems which have a vested interest in maintaining a level of persistent structural integrity. Dewey is unfortunately not always consistent with this usage however. In the interest of clarity, I will refer to the *need-demand-selectivity-saturation* cycle in relation to *physical* systems, and the more explicit *interest-discrimination-sensitivity-satisfaction* circuit in relation to *psycho-physical* systems. One justification for this is that interest and discrimination are invoked only in relation to psycho-physical systems. Thus these properties would seem to represent genuine qualitative distinctions between the powers of physical and psycho-physical systems.

A physical event begins with S in a state of tension with regard to E. There is thus an objective *need* for the system to adjust to its environment if it is to achieve the level of coherent fit necessary to conserve its historical pattern. Since the event space for adjustment is set by the coupling of system-and-environment, any adjustments by S place *demands* upon E, which responds by reciprocally adjusting to changes within S. These demands initiate a process of ongoing feedback between S and E, each of which responds *selectively* to the demands placed upon it in a manner consistent with its dispositional structure. It is this steady cooperative negotiation of the boundaries of the localized event space established by the push-pull of S moving against E that characterizes the adjustment phase of an event. If these negotiations involve transactions between conflicting powers, then the available degrees of freedom will begin to decohere. This process terminates when the event space ultimately becomes *saturated* and S is returned to a state of stabilized equilibrium with regard to E.

Intentionality

Within the context of Dewey's objective relativist ontology, it makes sense to speak of elementary particles as showing "a selective bias in their indifferencies, affinities and repulsions."[150] This statement, properly contextualized, merely notes the modal or dispositional character of events, the fact that they tend towards some interactions and not others. Dewey's decision to reappropriate the vocabulary of folk psychology (e.g. bias, indifferencies, affinities) to describe events at the physical level is meant to underscore the continuity between higher-level intentional functions and lower-level physical dispositionality. This point seems less controversial now, with a robust metaphysics of dispositions in place to support it, than it did when Dewey was writing. At the time, it looked like panpsychism dressed up in neo-Darwinian garb.

There is now a growing consensus around the grounding of the *directedness* of intentionality in the dispositionality of physical systems.[151] An intentional state is a state that points beyond itself – it is *about* some other object or property. My belief that Barack Obama is the president of the United States is a paradigmatic example of an intentional property. This has generally been taken by philosophers to be a distinctly *mental* property that has no analog in non-mental systems, leading some to declare that the intentional *is* the mark of the mental.[152] But, as George Molnar (2007) points out, the salient fact about a disposition is that *it* also is directed at something that is not itself, namely, its manifestation.

As Molnar notes, it seems that every criteria that may be invoked to fix the identity of intentional states may also be used to fix the identity of dispositional properties. If correct, this is sufficient to establish an identity between the concepts. Molnar concludes on this ground that intentionality is the mark of the *dispositional*, rather than the mental. Mumford and Anjum (2011) however suggest that a commitment to naturalism instead supports an analysis of intentionality in terms of dispositionality.[153] This brings their view closer to Dewey's emergence model. Rather than locating a primitive intentionality within nature, and thus courting panpsychism, Dewey treats higher-order intentional states as more complex instantiations of lower-order physical dispositionality. Dispositionality and intentionality are thus evidence of a generic structural continuity within natural systems that cuts across the various levels, but they do not represent qualitatively identical *event-types*.

The Psycho-Physical₁ Level

       The psycho-physical₁ level, represented by **Figure 6** below, is the second level in Dewey's emergence model and the first to actually emerge from a lower level.
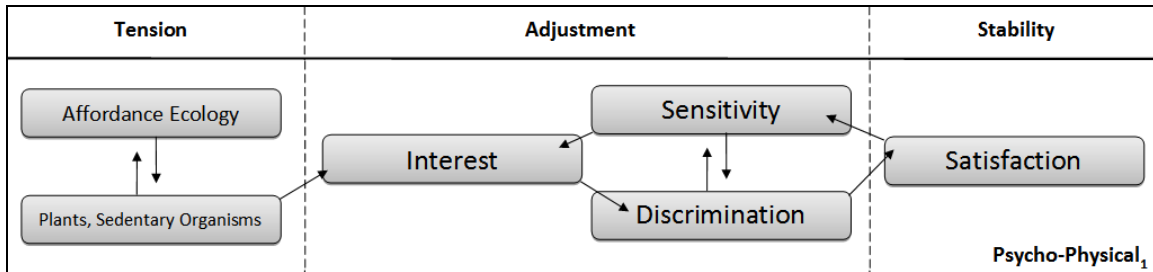

Tension	Adjustment	Stability
Affordance Ecology	Sensitivity	Satisfaction
Plants, Sedentary Organisms	Interest Discrimination	Psycho-Physical₁

Figure 6. The Psycho-Physical₁ Level

Dewey uses terms like 'psycho-physical' and 'body-mind' to draw attention to the natural continuity between physical systems and sentient organisms. In his model, Dewey defines the psycho-physical level coarsely to include all non- and pre-linguistic organisms, everything from sedentary plant life to, presumably, pre-linguistic infants. This seems to me *too* coarse a definition. Surely there is a qualitative distinction to be drawn between plants and infants. Dewey in fact provides an excellent criterion for making a more fine-grained distinction at this level in his discussion of anticipation. For present purposes I've found it convenient to subdivide the psycho-physical level between sedentary psycho-physical₁ events, which are characterized by the *interest-discrimination-sensitivity-satisfaction* circuit, and motile psycho-physical₂ events, which are characterized by the *anticipation-feeling-consciousness-habit* circuit.

Affordances

       The environment for a psycho-physical₁ system is far richer than the environment of a purely physical system. Physical systems interact with a more or less mechanical ecology of physical dispositions. Psycho-physical₁ systems by contrast inhabit what Gibson calls a *niche*, or an interlocking and interdependent ecology of co-reinforcing *affordances*.[154] Gibson coined the term *affordance* to refer to an environmental disposition for which the

manifestation conditions necessarily involve both an organism with the right sort of properties (size, morphology, behavioral dispositions) and an ecological niche with the right sort of features (medium, surfaces, objects, etc.). For example, a branch in a tree may afford the function of perching for birds such as sparrows or crows. This can be expressed in another way by saying that the capacity for perching is a function of the coupled system *branch-and-sparrow*. This capacity however would typically fail, and fail quite spectacularly, to supervene upon coupled systems that do *not* have the right sorts of properties, such as the systems *branch-and-elephant* and *branch-and-dolphin*. Where the causal powers and capacities of an organism intersect the causal powers and capacities within an environment without cancellation, we can say that the environment instantiates an objective affordance relative to that organism.

Affordances are irreducibly perspectival, in the sense that I have been using the term. The same tree that affords perching to the sparrow also affords climbing to the cat. The bird and feline, though they may inhabit the same physical environment, occupy different and unique ecological *niches*. The same mechanical dispositions will impinge upon both organisms, but the affordances for interaction offered by the environment will show up only *for* the organism that can take advantage of them. The cat and the sparrow thus represent perspectival loci of individual niches overlapping a common dispositional space.

Gibson's account of affordances, organisms, and niches maps relatively cleanly onto the ontology of dispositions, events, and situations outlined in **Chapter IV**. In one sense, an affordance is simply a disposition considered at a higher level of organizational complexity. Similarly, a niche is a situation opened relative to an organism. The change in terminology is of course useful to mark a change of level, but there is more to this distinction. The particular balance of the local ecology – how the relative affordances inhibit or reinforce each other, what possibilities are opened or cancelled – is vital to the success of the organism. Should the balance of prey-capture strategies afforded to the cat outweigh the balance of predator-avoidance strategies afforded to the sparrow, so much the worse for the bird. There is thus an irreducibly *evaluative* dimension to affordances that is absent from physical dispositions.

Value

The objective *value* of environmental affordances for the organism enters the picture when the organism, in order to preserve a coherent structural integrity, needs to selectively discriminate between competing possibilities for interaction with its environment. Once an interaction is selected, its outcome has the potential, new to this level, to succeed or fail to *satisfy* the tensional need of the organism. This is different than saturation, which signals a return to a tentative equilibrium between system and environment. The saturation of an event space does not succeed or fail to satisfy an adjustment cycle; it merely terminates the cycle. As such, the adjustments are rendered no more or less likely to recur as a result of their consequences. Should the results *satisfy* the needs of an organism, however, the tendency to select in favor of whatever actions resulted in that outcome is increased. Similarly, the probability of selections in favor of unsatisfactory outcomes is decreased. In this way, the consequences of interactions with environment are conserved in the organism, enabling it to more effectively conserve its characteristic historical pattern.

Unlike the straight-forward saturation of an event space in physical systems, the satisfaction of the event-cycle is predicated upon the capacity of the organism to (a) recognize differences in immediate stimuli; (b) respond selectively towards them; and (c) recursively monitor the outcome of that selection in order to evaluate its quality with regard to the satisfaction of the original need. Successful adjustments at this level thus require the emergence of qualitatively new powers unavailable and unnecessary at the physical level.

This represents a significant shift in the quality of the transactions of psycho-physical$_1$ systems relative to purely physical systems. The latter are purely reactive, responding mechanically to environmental stressors that impinge upon their present state. Psycho-physical$_1$ systems do this as well, but they also display sensitivity to environmental stressors that impinge upon the maintenance of what Dewey calls their "characteristic pattern of active equilibrium."[155] Unlike physical systems, psycho-physical$_1$ systems have a biologically invested *interest* in preserving the quality of their conserved historical patterns. This interest of the organism with regard to the selection of one outcome over another represents the seed of the evaluative function.

In order to maintain internal structural integrity across transactions, the system needs the capacity to *discriminate* among competing moves within its event space. This requires a

level of *sensitivity* to the contours of environmental stimuli beyond the purely mechanical reactivity of physical systems. This sensitivity to the relational contours of a situation is the capacity for registering the affordances of an environment. This is signaled in the model by a shift from the linear *need-demand-selectivity-saturation* cycle of physical systems to the more complex *interest-discrimination-sensitivity-satisfaction* circuit of psycho-physical$_1$ systems.

The difference between a cycle and circuit in this sense refers to the capacity for recursion in the latter.[156] Unlike purely physical events, where the progression from systemic tension to saturation is linear, the regulation of psycho-physical$_1$ events requires a system of feedback to exist between the newly emergent powers of sensitivity and discrimination. When sensitivity and discrimination are further augmented by the repeated satisfaction of needs, the results feed back into the honing and refining of the interests of the organism. This process of *interest-discrimination-sensitivity-satisfaction* thus forms an internal circuit that drives the accelerated evolution of psycho-physical$_1$ events relative to their purely physical counterparts. I will refer to this type of circuit going forward as an *adjustment circuit*.

In the case of a linear cycle, the system reacts in a relatively stable fashion that is not in general affected one way or the other by the outcome of its interactions. In the case of a living organism, however, the system *does* hone its responses in light of outcomes. This brings an increased flexibility to higher-order systems relative to the purely physical. Once competing possibilities for action are detected, then a choice must be made between alternate plans of action, and this choice will bring about objective consequences for the agent. The choice of any particular course of interaction corresponds with the opening of an event space that can be directed, through the manipulation of its internal dispositions, towards the realization of a 'new normal,' an adjusted stable coherence that is more in line with the evaluative preferences of the agent. The organism that is able to regulate this process successfully may be said to grasp the meaning of the event.

The Psycho-Physical$_2$ Level

The initiation of a psycho-physical$_2$ event is triggered at the disruption of an organism's habitual responses to its *sensory ecology*, as illustrated in **Figure 7** below. An organism's sensory ecology may be defined as the coupled system comprised of the sensing organism and any relevant sensory information within its environment. As an example,

consider the sensory ecology of a weakly electric fish such as the South American black ghost knifefish. The knifefish generates an omnidirectional volume of electricity that it projects into the surrounding water. As objects move through this electrical field, variations in their respective conductivity are registered by the knifefish as localized voltage perturbations. By this method, the knifefish detects the presence of predators and prey within its environment.[157] Neuroethologists like Malcolm MacIver refer to organisms that employ such object-detection strategies as *active sensing organisms*. By contrast, animals such as humans that rely on external energy sources such as ambient sunlight to detect objects in their environment are *passive sensing organisms*.
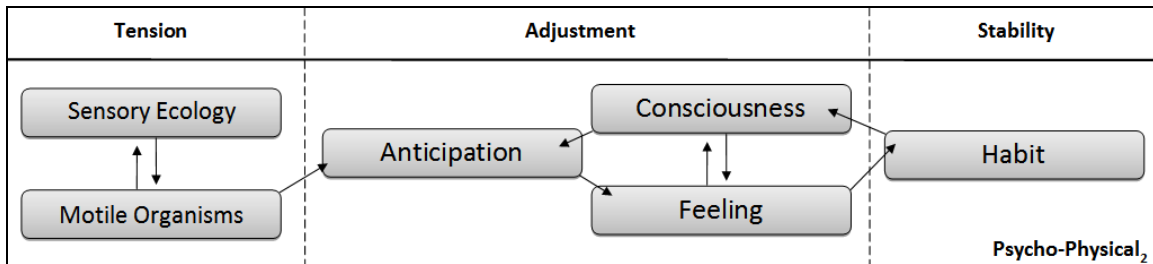

Figure 7. The Psycho-Physical$_2$ Level

From the familiar vantage point of an active sensor, the sensory ecology of the knifefish appears at first truly alien. Upon reflection, however, it is not so different from our own. For both active and passive sensing organisms, sensory information turns up in the form of variations within an otherwise invariant field. For humans, this is the field created by local ambient light rather than an energetic probe.[158] Gibson refers to this field as the *ambient optical array* – a volume of structured light that provides information about the environment in the form of disturbances caused by environmental surfaces.[159]

Disturbances in the anticipated structure of the array show up for the organism as disruptions in its habitual patterns of behavior. Becoming perceptually aware of something, for Dewey, always involves some disruption in the 'completely integrated function' that is characteristic of an organism whose habitual response patterns are in complete equilibrium with its ecology.[160] This breakdown of functional integration signals a tension, a problem that requires attention. Consciousness for Dewey thus represents a self-monitoring capacity

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of coupled organism-environment systems that emerges in response to a need for immediate readjustment somewhere within the system.[161]

Conservation of historical coherence within such a spread-out ecology depends upon an extremely complex network of relations, including those that are spatio-temporally distant. The wider structural qualities of the situation thus *matter* to the psycho-physical$_2$ system; they *make a difference* with regard to its historical development, in a much more direct way than for systems at lower levels. Such powerful qualities are of course always operative, but they may be frustrated in their manifestation by their relational situations. The apple is *trying* to be just as red when it is interacting with other apples as it is with regard to Bob and Alice. The difference is that redness is a quality of apples that does not, in general, make a difference with regard to their interactions with other apples, and thus it will find no cooperative dispositional partners there.

What must emerge at the level of the motile organism, with its spread-out ecology, is susceptibility to the qualitative features of such an environment. The precondition for such susceptibility is that the powers of the organism must be tuned to the cooperative manifestation of these sensible qualities. The redness of the apple then finds its cooperative dispositional partners in the powers of psycho-physical$_2$ organisms for whom it makes a difference and thus may become manifest.[162] As Dewey notes, the "difference [between red and green] is proleptically qualitative; it refers to a unique difference of potentiality in the affairs under consideration."[163]

Anticipation

As with the *interest-discrimination-sensitivity-satisfaction* circuit formed at the adjustment phase of the psycho-physical$_1$ level there is a corresponding adjustment circuit at the psycho-physical$_2$ level comprised by the circuit of *anticipation-feeling-consciousness-habit*. In the former level, this circuit was charged with regulating the adjustment phase towards the maintenance of a historical pattern of activity. So it is with the adjustment circuit at the psycho-physical$_2$ level. For psycho-physical$_2$ events however a new power, that of *plan-making*, is required in order for the successful manifestation of the evaluative power. This is because organisms at the psycho-physical$_2$ level are competing within an ecology that is extended in both space and time.

One of the more prescient and ingenious facets of Dewey's emergence model is the significant role assigned to the function of *anticipation* in psycho-physical organisms. In anticipating the potential outcome to some action or sequence of actions, the organism is considering relations that go well beyond the immediate contingencies of its present situation. This capacity thus involves not only the power to discriminate selectively between competing stimuli mentioned, but also a new power – the ability to infer from the events that are present to events that are not. This level of the model is thus individuated by the emergence of the subjunctive. Here, the organism gains the capacity to reason from the present to the future, and thus from the actual to the possible.

When the contours of an event's relational structure are temporally extended throughout a wide sensory ecology in this way, this temporal dimension shows up qualitatively in what Dewey refers to as the *sense* of the situation.[164] The anticipation of danger or satisfaction thus registers for the organism as a *felt* quality of its environment. Such feelings according to Dewey form the basis for *consciousness*.[165]

Dewey is not alone in associating the emergence of consciousness with the emergence of the capacity for imaginative planning. Bruce Bridgeman, professor of psychobiology at University of California Santa Cruz, for example defines consciousness explicitly as "the operation of the plan-executing mechanism, enabling behavior to be driven by plans rather than immediate environmental contingencies."[166] MacIver (2009) has suggested that "the expansion of the range with which animals can monitor external space, relative to their usual velocities, has been one – perhaps the dominant – driving force for the evolution for the ability to plan."[167] Thus planning emerges as a precondition for consciousness, and an extended sensory ecology emerges as a precondition for the capacity for plan-making. MacIver calls this the *buena vista* (or 'good view') sensing hypothesis.

The central claim of MacIver's model is identical in its broad strokes to that of Dewey's model: the expansion of the organism's sensory ecology into space is equivalent to its extension in time. The organism's sensory ecology opens a region of potential activity between the detection of an object and its encounter. Such a temporally-extended visual field forces the organism to weigh their actions against competing potential outcomes. This capacity, MacIver and Dewey both claim, is a necessary precondition for the development of counterfactual reasoning and thus for the capacity for planning.

Within the optical array, for example, there is typically a differential spanning several

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behavioral cycles between an organism's immediate surface and a detected object. This translates into a corresponding multiplication of the range of potential behavioral strategies available in response to the detected object. In the case of prey-capture activities, the organism would have the opportunity to deliberate between multiple potential paths leading to its target, some of which will be more effective than others. The organism that reliably selects the more efficient prey-capture and/or predator-avoidance strategies clearly has a tremendous advantage over the organism that does not.[168] An organism that can detect alternative possibilities for action within its environment and select appropriately between them will, *ceteris paribus*, out-compete an organism that cannot.

Various types of planning and anticipation may be either selectively reinforced or discouraged by their outcomes. Those outcomes that tend to either maintain or restore the organism to its habitual pattern of behavior feed into the structuring of the organism's historical pattern of activity. At this level, we can refer to this historical pattern as the *habitual mode of activity* of the organism. Reciprocally, the habitual structures that emerge restrict the choices that are available for the organism in terms of anticipation and planning. The organism is thus always making moves upon the board of habit, but the contours of the board are always shifting in response to the moves that the organism makes.

The Mental Level

Organisms at the mental level, as illustrated in **Figure 8** below, are language users reacting to the dynamic ecology of entrenched socio-linguistic habits known as culture.
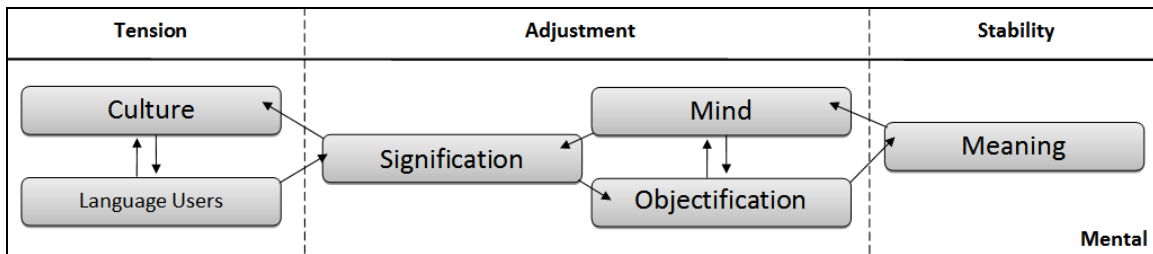

Figure 8. The Mental Level

By contrast to the *sense* of an event discussed above, an event becomes *significant* according to Dewey's model when it refers to, represents, or is used as a sign of another event. Once events are taken up as signs, they can be *objectified* as abstract tools of analysis and regulation. When sense and signification are both present, Dewey says, so also is mind.[169]

Mind, for Dewey, "is an added property assumed by a feeling creature, when it reaches that organized interaction with other living creatures which is language, communication."[170] Once languaged minds have objectified events by recognizing their immediate sense and potential significance, these significant objects may then be implicated in "making possible and fulfilling shared cooperation."[171] They thus acquire meaning, in Dewey's sense of the word, as a result of their assimilation into the shared world of linguistic communication. This shared, linguistically-mediated world is the tapestry of culture.

This is the only level with two interrelated circuits. The adjustment circuit of *signification-objectification-mind-meaning* creates the stabilized meanings that feed back into the tensional *culture-language user-signification* circuit. Thus the entire situation within which the event cycle initiates – a language user embedded within a culture – is dynamically modified by the events that occur. Culture is thus a far more unstable and dynamic beast than the dispositional, affordant, and sensory ecologies that mark the lower levels.

Meaning

In his problematic discussion of minds and meaning, Dewey opts for a model wherein the object of consciousness is always an 'object' in the sense of having been intentionally *objectified* within a language game.[172] An object for Dewey is an event that has been brought via inquiry into a meaningful cognitive relationship with other events. This is to say that we always perceive events under a meaning of one sort or another. What we grasp is therefore never a bare event, but always a refined *object of inquiry* that has been given meaningful structure via its functional role within a network of meanings. 'Event' in this sense has the connotation of *eventual* – events represent raw *becomings* not yet associated with a meaningful context. Dewey's direct realism thus comes qualified by the clause that "form, not matter, is the object of knowledge."[173]

Mind for Dewey involves a wide network of social meaning. Consciousness is that

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array of social meaning brought to bear upon a particular crisis. Unfortunately, by rendering both consciousness and perception in terms of the transformation of meaning, and by explicitly identifying meaning with human social practices, Dewey finally identifies consciousness and perception both with the norms of human discourse. The conclusion seems to be that only socially-embedded language users actually perceive anything, and that *what* they perceive is linguistically-determined mental forms. This view of meaning, Murphy complains, serves to "falsify the whole theory" of natural continuity.[174] It is certainly open to accusations of linguistic idealism, and in this case the charges appear reasonable.

But it doesn't have to work this way. There are tools consistent with the current ground-map that may be used to construct meaningful models that are less vulnerable to charges of idealistic backsliding. In particular, the tools provided by Gibson's ecological theory will again prove useful. Gibson, like Dewey, insists that it is meaning that is the object of immediate experience. It is, in both cases, the form of the situation, rather than its material content, that is the object of conscious apprehension.[175] What we perceive is not bare relations, vectors, or the quantitative values of variables; it is the *quality* of the situation. Unlike Dewey however, Gibson locates meaning directly within the organism's ecology. According to Gibson's model, the niche of an organism is directly meaningful *to* that organism because it affords possibilities of interaction *for* that organism.

Our experience, according to Gibson's model, is of a dynamic world of capacities for potential interactions. This world of possibilities is negotiated upon the basis of the objective values of competing affordances. The sparrow does not perceive the branch and then embark upon a series of explicit cognitive evaluations of the relative load-bearing capacities of particular arboreal species before making the determination to land. The fact that the branch affords the perching function for the sparrow makes the branch available to the sparrow as a possible locus of interaction. The sparrow not only directly detects the presence of the affordances within its niche but also directly detects the affordances *as meaningful*. Affordances in this way function as transparent attractors for the sorts of organisms for which they have value.

The qualitative dimensions of events thus do not emerge only relative to language-users; form and quality go all the way down, marking the contours of networks of dispositions and relations, individuating one event from another by virtue of its unique historical impact upon its situational ecology. Language users are of course able to *use* the

meanings of events in a host of new ways, outlined by Dewey, to facilitate possibilities of shared cooperation and world-building that are mostly closed to other agents.[176] This is certainly enough to mark off both the qualitative shift in functional organization and the emergence of new powers necessary to individuate the level of language users from lower levels. But the world would be *available* for such use even should no such language users exist, and this condition has certainly been the case for far longer than philosophers have been bartering linguistic tokens.

Dewey's objective relativism and pragmatism would both seem to resonate well with this model. The former, because it provides for the primitivity of directedness and perspectivity within the context of coupled organism-environment systems; the latter, because it recognizes the meaning of events to be inextricably bound up with their consequences. The significant individuating fact about an event is what it may become, what consequences may follow from its transactions with other events.[177] To grasp the structure of environmental relations is thus to gain direct insight into the evolution of events by grasping the potential forms they could enact as a result of their transactions.

Intelligibility

Dewey's linguistic version of this story does offer a number of important observations, not the least of which is the close relationship between meaning, experience, and intelligibility. Dewey insists that everything that exists "as far as it is known and knowable is in interaction with other things."[178] This observation is certainly correct. In order for something to be knowable it must make some difference, cause some change in the world. Unless quiddities are to be allowed, every existent must be in some sense causally relevant if it is to be granted a role within a responsible ontology. There is thus some parity between the existence and the *detectability* of events. Anything capable of making a genuine difference in the world is capable of being detected at least indirectly via that difference.

That a system is detectable testifies to the presence of some objective pattern emerging from the ongoing dance of regulative structural and unfolding process. The ontology outlined thus far, by virtue of its insistence upon the ubiquity of causal relevance and relational conditioning, is an ontology for a world that is in principle *experienceable*. Any real pattern, by virtue of its relations and the differences that they make, is open to direct or

indirect detection, as well as determinations as to frequency and regularity, robustness under different constraints, and all of the other practices that are the purview of the laboratory sciences.

Events *dispose* towards their detection by agents sensitive to their qualitative dimensions, and they do so regardless of the presence or even existence of such agents. The first hydrogen atom spit forth by the universe was capable by virtue of its causal-relational profile of detection and thus of entering into at least indirect experience. Considered in its relations to other events within a situation and thus from a perspective, the same atom enters into a wider structural profile that may be directly experienced by the right sorts of agents as the qualitative structure, felt or perceived, of its immediate environment.

From the fact that the world is experienceable it follows swiftly that the world is also *intelligible* and thus capable of being understood *as* meaningful and expressed as such to other agents. The world is *logiscible*, to use Dewey's somewhat unwieldy term.[179] Upon this point Dewey's linguistic understanding of meaning is sound. Events make differences, and differences are detectable, and, so detected, they may be transmitted as information. All meaning thus *is* linguistic, at least potentially.

But it is also more than this. I have, throughout this paper, been using the expression 'real patterns' to describe the various objective properties of events. The terminology comes from Daniel Dennett, who uses it in an epistemological sense to refer to information that is objectively specifiable within a given data set.[180] For example, if we wanted to send a digital image electronically, we could transmit a point-for-point bitmap that specified every pixel in the image. But this would be a very inefficient way to convey information. It would be far more efficient to *compress* some of the data within the original image. But what data should be compressed?

Suppose the original image is truly *random*. Dennett, following Gregory Chaitin (1975), notes that a random data set cannot be compressed without being destroyed. The point-for-point bitmap is the only version of the random set that may be transmitted. This is because a random set has no structure, there is no objectively specifiable pattern that may be isolated within the data. But this is not the case for a non-random set. A non-random set *is* structured, it contains at least one objectively real pattern. Should we wish to transmit the non-random image, we need only to isolate its salient patterns and screen off everything else. This in effect compresses the size of the data while preserving (or even enhancing) its

informational content.

It could of course be the case that there are many patterns that could potentially be identified within a given data set. Perhaps certain of these embedded patterns will stand out more strongly for agents from particular cultural backgrounds or with particular expectations or biases. If three different agents should identify three different patterns, which should we say is the 'real pattern?' All of them, says Dennett. Any pattern that may be objectively isolated via compression must be objectively present within the data set in the first place. The patterns are thus objectively identifiable from the relative standpoint of different observers, and thus 'real' by any useful meaning of the term.

Nature is full of such real patterns; this paper has largely been concerned with drawing a metaphysical ground-map that allows for them to be treated with the ontological seriousness that they warrant. It is certainly true also that detectable events may be compressed and transmitted in conformity to the syntactical patterns of language. But this does not necessarily exhaust their potential for compression and transmission. Information relating the location of a particular flower, for example, seems to be capable of meaningful and remarkably efficient transmission by means of the waggle dance of the honeybee.

Dewey at times would seem to discount such forms of non-human communication because they fail to conform to the socio-linguistic structure that he takes to be essential to the communicative act. But language is simply one way of compressing data among many others. Behaviors involving coordinated communication, tool usage, and the transmission of information across generations appear to be far more widespread among non-linguistic animals than initially thought in Dewey's time. It could very well be the case that, should Dewey have glimpsed the development of science in this area, he would have acknowledged a much more meaningful universe than his socio-linguistic interpretation of mind would seem to permit.

Notes

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[147] See Heft 2001 for a more complete analysis of this connection.

[148] LW1:194.

[149] LW1:195.

[150] LW1:162.

[151] See e.g. Martin 1986 and Chapter 8 of Mumford and Anjum 2011. U. T. Place and John Heil have also offered support for this position.

[152] Molnar calls this the 'Brentano Thesis,' after the work of Franz Brentano 1874.

[153] See Chapter 8, sections 8.7 and 8.8.

[154] Gibson 1986, p.128-30.

[155] LW1:194.

[156] e.g. sensitivity to environing conditions should sharpen discrimination, which should sharpen sensitivity to environing conditions, etc.

[157] Snyder et. al. 2007 and MacInver 2009.

[158] Apart from the lesser energetic cost paid by passive sensors. See MacIver 2009.

[159] Gibson 1986.

[160] LW1:237.

[161] LW1:236ff.

[162] i.e., to telereceptive organisms that register the color red.

[163] LW1:204.

[164] LW1:198.

[165] The emphasis placed upon feeling as a precondition for consciousness echoes contemporary work in neuroscience (cf. Damasio 1995).

[166] Bridgeman 1992, p.1.

[167] MacIver 2009, p.492.

[168] MacIver 2009.

[169] LW1:200.

[170] LW1:198.

[171] LW1:142.

[172] LW1:244.

[173] LW1:246.

[174] Murphy 1963.

[175] cf. LW1:240.

[176] cf. LW1 Chapter V.

[177] LW1:105.

[178] LW1:138.

[179] See especially LW12.

[180] Dennett 1990. See also Ladyman and Ross 2007 for an application of this concept to ontological concerns.

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