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Modern Science and the Sellarsian Worry

“Whether the adoption of the synoptic view would transform man in bondage into man free, as Spinoza believed, or man free into man in bondage, as many fear, is a question that does not properly arise until the claims of the scientific image have been examined.” –Wilfrid Sellars

I. Introduction

I take it that today in philosophy what I will be looking at under the heading of the ‘Sellarsian worry’ makes its appearance in the dialectic dispute between physical reductionists and anti-reductionists. However, my project will not be to step into these deep waters, but, rather, to provide a therapy for those who feel the weight of Sellars’ worry in *Philosophy and the Scientific Image of Man* (PSIM). In brief, his anxiety is that given theoretical science’s success in the domain of description and explanation, it seems ultimately theoretical entities must be those things considered ontologically fundamental—jettisoning the concept *person* from ontology. His expounded form of this worry in PSIM begins by bifurcating our understanding of the world into two *competing* images: the manifest and scientific images of man.

It is the former of these two in which Sellars believes we find conceptual thinking, and thus, it is impossible to conceive of a scientific image without first having the manifest image from which to burgeon. Ideologically, the two are coequal; however, the properties, patterns, and relationships they use to talk about the world imply disjunctive ontologies. There is a pervasive theme in Sellars’

literature to explain how the theoretical entities of the scientific image *redefine* the objects of the manifest image.¹ It is within this redefinition that Sellars sees us losing personhood—the metaphysical foundation of the manifest image. Now the questions arise: “What, if anything, is left of the manifest image once its objects are replaced by theoretical scientific objects?” and “In the end, is the manifest image merely an instrumental image to the insuperable scientific enterprise?”

In this opening précis, it is possible to see why a philosopher is left with an uneasy feeling when attempting to hold the manifest and scientific images together in one ‘synoptic view’. It is the manifest image that makes sense of our ability to abstract from one another’s knowledge claims (qua linguistic tokenings) and place them into a larger space of reasons, which is tantamount to our having knowledge in general; on the other hand, the most fundamental of those reasons – coming from science – lead us to believe that the manifest image is an ersatz image whose objects (including persons) are *actually* made up of scientific objects. If, as good intellectuals, we follow what science tells us, can we still be left with any grounding from which to understand *our* world?

Now that we have some footing to understand the stakes of the Sellarsian worry and the foundations it rests upon, I would like to introduce the paradox that led me in the direction of this investigation. Let me begin this exposition with a paradox Sellars recounts in PSIM:

...I want to highlight from the very beginning what might be called the paradox of man’s encounter with himself, the paradox consisting of the fact

¹ Though this will be explored in detail throughout the body of the paper, the notion of redefinition is most clearly introduced and delineated in Sellars’ papers *Counterfactuals, Dispositions, and Causal Modalities* and *The Language of Theories*.

that man couldn't be man until he encountered himself...its central theme is the idea that anything which can properly be called conceptual thinking can occur only within a framework of conceptual thinking in terms of which it can be criticized, supported, refuted, in short, evaluated.²

As Sellars points out, this paradox leads us to believe that there is an *irreducible* discontinuity when attempting to look at this difference (between man and his precursors) from within the manifest image. In the case of science, however, there is a reducible difference (e.g. the differences in physical, neurological processes between the two types of 'man').

In contemplating this passage, I had the inkling that there was another paradox lying dormant in the scientific image: if man qua person has now found out that he is not a person per se, but merely an amalgamation of scientific objects then, *de re*, we are saying that collections of scientific objects have 'realized' that they are such. Two questions are salient to me from this paradox:

- a) What sort of reduction could be done such that we could ever make sense of the discursive process of furthering science (or, of any normative manners that are intrinsically communal) in purely scientific terminology?
- b) Assuming we are just okay with the relegation of the manifest ideology (and normative practices, in general) to antiques or instruments, is science trending toward the identification of most-basic objects such that we have a graspable notion of metaphysics?

² Sellars, Wilfrid. *Philosophy and the Scientific Image of Man*. In the Space of Reasons. Harvard University Press: 2007. Brandom, Robert B. and Scharp, Kevin (Eds.) Pg. 374

We can reach (a) by semantically unpacking the word 'realized' in the above paradox and consider how scientific explanation alone could explain such a conceptual shift. On the other hand, (b) comes from contemplating the problem from a framework of modern scientific attitudes – where the classical idea of elements of physical theory having one-to-one correlations with elements of reality has broken down in many ways. It is in the pursuit of answers to these questions that I believe we can find a therapy.

Firstly, what the following meditation hopes to show is that much of the content of human life is outside the scope of scientific reinterpretation. And, further, that science itself is currently caught in a problem of discontinuity at the border of the classical and quantum. Even believing in a future unification of scientific ideologies may still leave us with no firm ground to talk about metaphysics as quantum mechanics does not suggest the same kind of discrete reality posed by classical physics. Thus, throwing our ontological anchor into the domain of science situates us in no less murky waters. Finally, as a diagnosis to the line of thought that leads us to the reductive temptation, I will end on a discussion of the differences between classical and modern perceptions of reality. While I believe Sellars' question is of the utmost importance to philosophers, I think his metaphysical worry is parasitic on a classical mindset regarding scientific realism.

Before moving into the terrain of reduction and the classical/quantum problematic, I will begin from the ground up, setting up the story that led Sellars into this tangle.

II. Two Images of Man

The first delineation must be to distinguish between the two images of the world Sellars sees us caught between. Originally, man found himself as a *person* in the manifest image³. Anything prior to the manifest image would be to point at a kind of human being that is not self-conscious—one that is working with non-conceptual patterns of behavior. The very idea of conceptual thought relies on a framework within which it is possible to make inferences. Therefore it is not enough to have linguistic tokenings, or mere communicative utterances, but a metalanguage that allows one to place an excerpt of language into a broader logical space where the truth and falsity of claims can be examined. To introduce the idea of man's encounter with himself in the manifest image, Sellars defines the landscape of a conceptual world by saying, "...anything which can properly be called conceptual thinking can occur only within a framework of conceptual thinking in terms of which it can be criticized, supported, refuted, in short, evaluated."⁴ It is an empirical fact that a canine can respond to a single command, like "sit", with a correlated behavior – physically sitting; however, we do not believe dogs have the ability to conduct a dialogue about the merits of dry versus wet food. Mental capacities aside, this fact comes from lacking a metalinguistic capability where one

³ Sellars makes a distinction between the 'original' image of man and the 'manifest' image, where the manifest image is a refinement of the original image. I will soon address this nuance, but for the broader discussion I will lump everything into two categorical forms: manifest and scientific.

⁴ PSIM, pg. 374

dog holds another dog accountable for a claim. As odd as this example may be, it is this difference Sellars is looking for between man and his pre-cursors.

The burgeoning of the original image begins with the concept *person*—the essential objects of the manifest image. Coining this concept, man cast a shadow of himself into his communal representations of the world; this essential feature of language will eventually allow for a pruning of the category ‘person’ that characterizes the manifest man: “...the refinement of the ‘original’ image into the manifest image, is the gradual ‘de-personalization’ of objects other than persons.”⁵ The refinement of the category person is a matter of empirical correlation. As time passes, the habitual behavior of objects will allow for both a narrower characterization of what it is to be a person as well as the arrival of new categories into which objects fit. Together man’s categorical refinement and empirical correlations are operationally similar to inductive inference.

This last piece of terminology, ‘inductive inference’, suggests a similarity between the manifest image and the scientific image. In fact, Sellars sees an important affinity between the two images’ pursuit of truth:

...the conceptual framework which I am calling the manifest image is, in an appropriate sense, itself a scientific image. It is not only disciplined and critical; it also makes use of those aspects of scientific method which might be lumped together under the heading ‘correlational induction’.⁶

Up to this point, we still have not found the defining feature that separates the two images; though, this can be suggested by taking seriously the idea of persons as being fundamental to the manifest image. Centering this image on personhood

⁵ PSIM, pg. 378

⁶ PSIM, pg. 375

defines the manifest image as one that is primarily concerned with what persons are and do. Essentially, the objects of the manifest image will be the objects of everyday life. The manifest image of man is the one we find ourselves in each and every day. In talking about why you like fresh-squeezed orange juice, your mother's tendency to bite her fingernails, or the possible ethical issues implied in not having intervened in North Korea – you are engaged in discourse that is part and parcel of the manifest image.⁷ This world, our world, is one that is concerned with human notions – emotional grievances, beliefs and desires, cooking, going to work, etc. The easiest place to find the distinction that will plague Sellars' desire to keep our world intact is to start considering our explanation of physical phenomena.

The kinds of things we see in our world have their own place in explanation. If I know that I am drinking beer rather than water and I begin to get dizzy, I can provide a simple, surface-level explanation of what is causing the dizziness: beer is a kind of liquid that causes humans to get drunk. What problematizes manifest explanations as being the best explanations is seeing where we go when a manifest explanation breaks down. In this same case, what happens if then a man asks me what it is about beer that makes it the kind of thing that gets you drunk? Of course, I can give the ostensive explanation of how my behavior will inevitably change; however, if the man persists in asking what it is about the beer that is causing the change in my behavior, I will be forced to move into a domain of unobservable (by

⁷ The aspect of this discourse that will become important in later discussion is that it is *normative* in nature. *Persons* are inherently normative objects who are held responsible to respond to rationality in its modal forms as well as its deontologic forms implying human-to-human relationships that cannot be reduced to non-normative vocabulary.

the naked eye) objects to explain the chemical affectation the beer is having on my bodily processes. It is this explanatory move that elucidates our problem.

Sellars explores this transition from observable to unobservable causal properties in his paper *Counterfactuals, Dispositions, and the Causal Modalities*. Here he explains how our explanatory framework ends up relying on imperceptible objects:

...the picture of the world in terms of molar things and their causal properties (a) points beyond itself to a picture of the world as pure episode, and (b) leads by its own logic, to the introduction of unobserved entities...For micro-theories themselves characteristically postulate micro-*thing-kinds* which have fundamentally the same logic as the molar *thing kinds* we have been considering.⁸

Our ability to explain events in our observation framework ends up being a matter of appealing to a framework of invisible objects that are the supposed building blocks of reality. The introduction of theories that attempt to explain how the macro-objects of the manifest image have the causal properties they do using a set of corresponding unobservable micro-objects is the bailiwick of the scientific image. We have finally arrived at the location of the line that divides the manifest from the scientific image: "...the postulation of imperceptible entities, and principles pertaining to them, to explain the behaviour of perceptible things."⁹

Intervening now into the view of the world built up around the activity of persons is a set of objects that are not found in our realm of experience. The explanatory success of these objects is what has cut the ribbon of the metaphysical

⁸ Sellars, Wilfrid. *Counterfactuals, Dispositions, and the Causal Modalities*. Minnesota Studies in the Philosophy of Science. Volume II. University of Minnesota Press: 1958. Feigl, Herbert, et al. (Eds.) §51 [CDCM]

⁹ PSIM, pg. 375

contest between two types of objects in the world. In the past one hundred years the challenge has become even more disconcerting as twentieth-century physics not only postulates the existence of a plethora of new unobservable entities, but also challenges our intuitions regarding classical notions of a fixed reality. Before dwelling on the new difficulties brought by modern physics, we must first get a grip on the nature of the relationship between the two images. Good physical theory should provide us with counterfactually robust ways of predicting future states of affairs from some initial datum.

What the theory does is provide us with a licence to move from statements in the observation language asserting the existence of a certain physical state of affairs at a certain time and place to statements asserting the presence of a group of molecules at that time and place.¹⁰

Obtaining this license allows one to transpose observable phenomena into a mathematical mode that mirrors the activity of theoretical objects. Access to these mathematical concepts has provided man with the ability to manipulate nature in his favor (e.g. engineering, the pharmaceutical industry, computer technologies, etc).

The scientific image of the world became a cynosure of the latter half of the twentieth century; however, it is not only instrumental questions that must be taken seriously, but also metaphysical ones. Our ability to reference a set of molecules in order to explain empirical laws has the further implication of redefining those very objects that are behaving in accordance with established laws. Thus, buying into the framework of micro-objects defined by the scientific enterprise we are forced to see

¹⁰ Sellars, Wilfrid. *The Language of Theories*. Science, Perception, and Reality. Ridgeview Publishing: 1963. Pg. 117 [SPR: LOT]

collections of these objects as *identical* with the objects of our manifest framework. Sellars articulates this redefinition as an abandonment of the layer-cake model of the world. That is, we must disabuse ourselves from the separation of the observation frame from micro-theoretic discourse. It is not as if there are phenomena that are happening on one level (activity of objects in our see-able world) that are distinct from phenomena on another level (interactions within the world of particles); rather, the two faux-levels are descriptive of the same one reality and should be combined such that we come to understand the objects of the manifest world in terms of their scientific descriptions.

Imbuing our notion of reality with these two kinds of objects into a manifest-scientific hybrid kindles a metaphysical tension that discomforts Sellars. His discussion of the manifest world turns pessimistic upon taking seriously the combination of our two images: “According to the view I am proposing, correspondence rules would appear in the material mode as statements to the effect that the objects of the observational framework *do not really exist—there are really no such things.*”¹¹ In the end, dispelling ourselves of the layer-cake model is a relegation of manifest objects from their former status as *the* objects of our world. However, the complexity of the revamp must be given appropriate attention—accepting a strict replacement would entail losing more than chairs, tables, vodka, and ice cubes, but the selves that are the centerpiece of the manifest image. There has been no lack in response to the idea of scientific reduction (cf. Block, Chalmers,

¹¹ SPR: LOT, pg. 126

et al.), particularly as it applies to the curtailment of minds; regardless, the *ontological* fear has shown no signs of abating.

Philosophy and the Scientific Image of Man exposes a genuine struggle Sellars has reached through his work in the philosophy of science. As the realm of explanation begins to be filled with scientific terminology, concomitantly descriptions of objects in the world are handed over to science. What will happen if science progresses such that the explanations regarding man's intentional actions are occupied with the syntax of neurophysiology, neurochemistry, and other elements of the brain sciences? The picture of man that spawned from the manifest image, our original conceptual image, will cease to be – rationality, intentionality, and normativity will be explained away by the brain-oriented objects of our successor science.

I seem, therefore, to be saying that man's conception of himself in the world does not easily accommodate the scientific image; that there is a genuine tension between them; that man is not the sort of thing he conceives himself to be; that his existence is in some measure built around error.¹²

An exposition of the two images – the two maps – we use as hermeneutics to cope with the terrain of the world paralleled with the truism that is science's efficacy in the domains of description and explanation naturally points to the Sellarsian worry: the concern that there is no need for *persons* in ontology.

Understanding the problem mounts an anxiety in those who read Sellars, and having framed the issue, I will now move into rearticulating the matter in a way that should begin relieving some of this concern. Though, prior to any therapeutic considerations, we first need to interrogate our duo and discern how we should

¹² PSIM, pg. 376

understand their entanglement. That is, beyond understanding how the scientific explanations fit into our manifest image – i.e. how theoretical language corresponds to and, subsequently, redefines observation language – we need to explore what dependencies the scientific campaign has on the manifest image.

III. A Scientific Image in a Manifest Frame

Representing our problem via identification of two discrete images is limiting in the sense that it does not fully appreciate the ways in which these images are bound to one another. A lacking account of the intimacy underlying the ostensive disunity between the two images is what I believe has left us in aporia. Initially, I want to highlight the ideological affinity that nests science into the dealings of the manifest. Though our worry is one of *ontology*, we must realize that this notion has no content without first pursuing the notion of *ideology*. The distinction being drawn here is between the categories or groupings in which we can place our objects (ontology) and what is true of those objects (ideology).

In what ways can we classify objects if we do not first have a definable realm within which we can talk about truth and falsity, properties, and relationships between objects? When considering whether or not we should countenance an object into our ontology there must be a sense in which we appeal to facts about the object that make sense of it in relation to other apposite objects. For instance, if I were to provide an ontology of governments I might list *monarchy, oligarchy, totalitarian, democratic, and socialist*. It is first important to notice that the way I am

able to make these categorical distinctions is by having known certain facts about these objects—having had a grasp of the differences between these kinds of government. Now if someone were to suggest that tribal societies need to be considered in my list, I will be required to make sense of the *kind* of thing a tribe (or tribal council) is. Is it a unique object in this domain? Does it fit into this domain at all? To answer this I will have to *describe* the object in accordance with its governmental properties – placing it in a space of implications. It is for this reason [placing it in a space of implications] that these properties “...describe at all, rather than merely label.”¹³ Thus, in my describing these objects, I will have to make counterfactual commitments that do not allow for pure, consequentially inert descriptions. Further, there is a reason why it does not make sense for someone to ask why ‘presidents’ are not being considered in my ontological investigation: this is a different sort of thing than what I am seeking to describe. Our modal language about governments will make for an inability to identify ‘presidents’ with objects such as a ‘monarchies’, ‘democracies’, etc. It is for these reasons we cannot conduct discourse about ontology without having first identified an ideology that provides the grounds for such a dialogue.

Having shown the nature of ontology to go hand-in-hand with that of ideology, our attention can now be diverted back to our two-image problem. Within the previous section, there was a tacit conception of ideology in the expression of the two images. The manifest image is primarily concerned with the objects and activities of *persons* while the scientific image is searching for the ability

¹³ CDCM, §108

to correctly describe and explain physical phenomena. Descriptions of manifest objects will be reliant on references to human practices – we understand these entities through their relationships to our lives. If I am asked to describe what a chair, coffee, a stereo, or a basketball is, the shape of my description will be crafted by how these objects participate in our existence (e.g. a chair is ‘a separate seat for one *person*, typically with a back and four legs’; coffee is ‘a *drink made* from the roasted and ground beans of a tropical shrub’, etc)¹⁴. Sellars’ use of the term ‘manifest’ has expressive power in that the objects of the manifest image are those that appear before our eyes – it deals with the world as pieced together from its ‘manifest’ appearance. Whereas descriptions of scientific objects are generated by quantifying physical characteristics that are knowable¹⁵ about an object and utilizing formulaic generalizations about the behavior of atomic and sub-atomic particles (or, in the case of classical mechanics, massive objects). The objects will vary pending what is germane to the phenomena being explained. Objects of classical mechanics are less foreign to those talked about in the manifest image (one *may* even suggest that Newtonian physics is, in fact, part of the manifest image); however, modern science works in parameters that are outside of the boundaries of human experience and strictly talks of the imperceptible objects with which Sellars was concerned.

¹⁴ These definitions are quoted out of the *Oxford English Dictionary*, 2008 [italics are mine].

¹⁵ Why I used the qualifier ‘knowable’ will become clearer later when analyzing the modern scientific image, but it has to do with the epistemic restrictions placed on experimental processes used to gain information about some system in question.

If we accept that the ideology of the manifest image is one that is concerned with our human world – i.e. what humans *do* – then, is the scientific enterprise not encompassed within the realm of the manifest? As a matter of fact, science is a practice that is carried out by communities of persons, and, therefore, is hard to make sense of without the manifest acting as a ballast. Sellars may remain stolidly unmoved in hearing this remark by pointing out that the outcome of *doing* science is a separate image that hangs together without talk of the persons participating in its creation (i.e. the ideology of modern science has an empty intersection with the ideology of the manifest leaving us with an ontology absent of manifest objects). Despite the scientific image's perpetuation being tied to the activity of persons, the ideology of modern science is better at describing and explaining physical phenomena, and, pulling from the discussion above, therefore implies an ontological commitment.

Pointing out the underlying relationship that ties the scientific image to the manifest does not abdicate science's authority in the domain of description and explanation; however, it alludes to an incompleteness in science's range of redefinition. If we admit that the production of the scientific image is a project mediated by persons engaging in meaningful scientific discourse and that the precipitant of this discourse is a new image of the world whose primary objects allow for better descriptions and explanations, then the very dialectic that is continually moving and refining our scientific theories will need to be palatable in scientific terminology if there is any threat of a purely scientific image of the world. Now, considering this in tandem with Sellars' conclusion in PSIM - joining scientific

terminology to our framework¹⁶ - the question becomes 'to what extent is the scientific image going to be able to reconstruct the manifest?'

From a distance, our dilemma has the imagery of one organism growing from inside of another. The scientific image sparked to life from within the manifest image and, from the inside expanding outward, has gradually metamorphosed many of our objects into alien conceptual structures. Slowly the logical architecture supporting our knowledge of the world requires less and less reference to the objects we are familiar with in our everyday existence. Are there any parts of our world that are immune to this process? How can science redefine our strictly communal concepts such as *president*, *mathematician*, *courage*, or *winner*?

In his laconic conclusion, Sellars shines light on the problematic of uniting the manifest with the scientific. He remarks on the incompatibility of such a union by making salient the normative nature of the manifest image.

To think of a featherless biped as a person is to think of it as a being with which one is bound up in a network of rights and duties. From this point of view, the irreducibility of the personal is the irreducibility of the '*ought*' to the '*is*'. But even more basic than this...is the fact that to think of a featherless biped as a person is to construe its behavior in terms of actual or potential membership in an embracing group...¹⁷

The ideology of the manifest image does not define its objects in relation to a single person, but a community of persons. So, in contemplating our redefinition, we notice that while our empirical concepts have contents that seem to be grounded in our perceptual experience of the world and open the doors for scientific

¹⁶ "Thus the conceptual framework of persons is not something that needs to be *reconciled with* the scientific image, but rather something to be *joined* to it." (PSIM, pg. 408)

¹⁷ PSIM, pg. 407 [italics mine]

translation¹⁸, others are more ethereal, lacking the physicality needed for science to step in. Diagnosing the possibility of losing our personhood is one thing, while a prognosis of when we can anticipate a scientific image that can accommodate the appropriate concepts needed to allow for a complete replacement of the manifest image has a chimeric feel to it. Sellars admits that, “We can, of course, as matters now stand, realize this direct incorporation of the scientific image into our way of life only in imagination.” That is, we are unable to comprehend the actualization of the Sellarsian worry insofar as today’s science does not have the vocabulary to deal with the vast majority of intentional, rational behavior.

As a preliminary move toward a therapy, I would like to start with a thought experiment. Before discussing the possible future trajectory of the scientific image, let us make the assumption that the coupling of computational neuroscience and quantum mechanics allows us to precisely map neural processes, and, combining this capacity of science with a future, idealistic hybrid of cognitive neuroscience and psycholinguistics, we hone the ability to interpret the holistic activity of a brain over some epoch and explain all of the non-intentional processes as well as parse out the concepts in activation (a neuroscientific assumption reminiscent of Rorty’s Antipodeans). In this future state of science we can hold a pink ice cube in front of a test subject and follow the activation of the optic nerve through the optic tract to the hypothalamus and the subsequent neurological processes being triggered.

Moreover, we are able to infer from these processes a physical pattern that is

¹⁸ Though I am construing a redefinition in an idealized way where scientific concepts have straightforward content in the world, an investigation that unveils the difficulty of this notion is Mark Wilson’s *Wandering Significance*. [cf. Wilson, Mark. *Wandering Significance*. Oxford University Press: 2006]

analogous to her thinking, 'pink ice cube'. We also have success at translating desires, emotions, and even private intentions. Now imagine it's the night of the presidential election and we bring the likely-to-win candidate into our lab. We can begin interpreting her brain processes and can translate her anxiety as being related to her thoughts about the election results and, as she watches the internet broadcast, we interpret thoughts of victory and defeat. We can even view her internal monologue about what it would be like to be the president. Then, it is announced that she has won the presidential election and, of course, the processes change, allowing her to feel happiness, relief, etc. However, what could we possibly look for in this brain data that would allow us to verify that she is, in fact, the president? Before she won the election we saw thoughts about her being president, but now there is a change in our world that will allow her to carry out presidential actions and move into the White House without being arrested.

This future state of science is quixotic, facile, and unrealistic in that interpreting minds from brain data in this way is absurd. My point here is to ponder what science could *ever* say about the concept president. While one may be able to prove that an individual's conceptual thinking has analogous brain processes, the concept president with which we are all familiar is difficult to imagine in scientific vocabulary. We can say whoever is president is also a physical mass, but no particular physical arrangement allows one to be president as that is only possible

through the community, state, or nation holding some individual responsible for carrying out actions that are inherent to that societal role.¹⁹

Of course, in the above case, I have accepted a certain ideology for talking about the president via community intentions. Trying to make sense of the notion 'president' that we are all familiar with – where some people respect the president, others despise the president, and some are indifferent, but, regardless, the president has access to a set of societal moves whose ambit is special to the normative status granted him or her – is done most robustly by sticking to the ideological framework of the manifest image. This does not mean to say that a reductionist, or any other champion of hard scientific realism, would not say there is an alternate construal. She may argue that we can cash out our concept 'president' as a behavioral disposition that is unique to a certain set of individuals of a certain space and time. What I have above deemed irreducible from the communal framework has a way to be transposed into scientific terminology. That, basically, the information of 'who the new president is' has diffused throughout this certain space (the United States) and from some perceptual means has affected the physical processes in the brains of a large percentage of the amalgamations of particles we call humans such that they

¹⁹ Latent in this thought experiment is an elucidation of a transformation in philosophers' understanding of the fundamental mind/body dualism. The traditional form of this problem is infected with a pseudo-scientific way of dealing with rationality: there is mind 'stuff' and body 'stuff', where the latter lies in physical reality and the former is non-mechanistic and unable to be interpreted as a physical system. Nowadays the dualism is better construed as human/person or physical/communal, where we are concerned with the rational patterns of humanity on a societal plane. In this way we accept science and the fact that man is a biological entity while also maintaining a space for discussing the intricate coordination of human action that can only be made sense of with concepts like *culture* and *language* – concepts precluded without talk of a social dimension.

have a disposition to utter 'president' when referencing a particular set of bosons and fermions and this causes that particular set of bosons and fermions to behave in a specialized manner. It just so happens that this unique disposition actualizes nominally, through our uttering the word 'president'.²⁰

Our reductionist's hope is that as science excavates deeper into the landscape of 'what is out there' that there will be a theoretical rope we can climb from the (eventual) bottom of the hole [the bottom-line of physics - our fundamental objects] back up to the surface [interplay of persons (macroscopic objects) in a culture/society]. Today's philosopher of science will interpret this question as one of the most perplexing problems of contemporary academics: how does classical physics (or, perhaps, general relativity) fit into quantum physics? I unveil this question as a way to transition the discussion into one of classical vs. modern conceptions of the world. As has been pointed out, Sellars recognized the essentially normative nature of our world while still feeling pressure from the advances of modern science to reclassify ourselves and our reality into a new basis – the elements of physical theory. The assumption here is that the objects of physical

²⁰ A reading of Sellars that was discussed in the seminar that prompted this paper follows from what has so far been expounded. We delimit the manifest image as the image of practical doings where we can coherently talk of concept-use and the normative activities that give legs to the scientific image. Then, the scientific image gains cognitive superiority insofar as its objects are able to describe and explain knowable phenomena in the world. Where these domains overlap, triumph is given to science; however, the manifest image is still intact as practical activity is understood in a normative dimension.

In general, I agree with and, obviously, have come to read Sellars in a similar light, but I will move further, beyond a way of reading the problem, into considerations that aid in dissolving the Sellarsian worry (or at least abating its fervor) in light of science's current trajectory and why this may hamper the desire to jump onto a hardline scientific realist bandwagon.

theory have a one-to-one correlation with objects in the world and it is only a matter of time until theory strikes upon the primary components of reality. At that point we will have no more reason to talk of primitive notions such as persons and can reconstitute ourselves in terms of these primordial inhabitants.

It seems to me that this worry is born out of approaching metaphysics from the framework of a classical scientist – a path that easily engenders an apostate attitude toward the manifest image. To begin feeling a therapy to the worry is to recognize that just as our manifest ideology is irreducible into a scientific ideology, scientific ideologies are internally irreducible (e.g. statistical mechanics to classical mechanics or classical mechanics to quantum mechanics). The classical ideology leads one to believe that there *is* a bottom to the hole we are digging, while the quantum makes it look more like an abyss. It is these two ways of thinking I would like to discuss in the final section of this essay with the hopes of bringing some mitigation to our worry.

IV. 'Reducing' Our Tensions

It will be simpler to introduce the classical/modern distinction by calling up the more familiar transition of traditional to modern society (or, similarly in biology and mathematics, typological to population thinking). The myriad of hermeneutic approaches to this topic makes any particular representation of the change worthy of an essay, but, for my purposes, I draw from the form I was privy to from Hegel. The 'one big change' moves us from a rational binding to the divine world of

absolutes to the normative world of cognitive practices. In short, norms went from being objective to subjective. Intertwining this thought with the typological/population shift, instead of norms being essential parts of our world that were fixed they became averages over some set of individuals.²¹

While traces of 'modern thinking' can be found throughout the history of intellectual thought, there was friction for many thinkers to assimilate to the new way of understanding their place in the world. An archetypal example of this is Dostoevsky's portrayal of the godless problem in *Brothers Karamazov*. He worries that without God there is nothing binding us to an ethical life and 'everything is permissible'. Now, from our modern vantage, this same scare is turned in the other direction. Take, for instance, Zizek's²² line: "...the lesson of today's terrorism is that if there is a God, then everything, even blowing up hundreds of innocent bystanders, is permitted to those who claim to act directly on behalf of God..."²³ Here the interpretation of Dostoevsky would be someone who was nostalgic for or stuck in a traditional way of understanding morality and responsibility.

Over the past one hundred years, breakthroughs in physics have lead us into a new way of thinking about reality that is counterintuitive to those accustomed to classical mechanics. The billiard ball model of particles bouncing off of one another is now an obsolete representation of fundamental physical interactions. By examining this systematic change, it becomes salient how approaching metaphysics

²¹ For a more thorough discussion on this interpretation see Brandom, Robert. *Untimely Review of Hegel's Phenomenology of Spirit*. University of Pittsburgh, 2008. <http://www.pitt.edu/~brandom>.

²² While Zizek has popularized this thought, for the sake of intellectual cladistics he points to Andre Glucksmann as the first to point out this line of thought.

²³ Zizek, Slavoj. *Violence*. Picador: 2008. Pg. 136.

with a classical eye makes an all-out redefinition of our world a reasonable suggestion. Just as the manifest image had a slow pruning of person, you come to believe that science is just going through a slow pruning of the mechanical objects that underlie all processes. In a certain capacity, this is correct; however, the possibility of a reduction from a macro-object to a micro-object is specious from a quantum-mechanical perspective. Not only is there an assumption that each level of reduction will carry over explanatory success of phenomena from the upper level to the lower level, but, to be a right-winged reductive physicalist, there is a further assumption that there will *be* a set of objects that unify our reductions down to one fundamental place. Without this location our ability to be realists about physics would loosen as we would have an 'angled approach' to ontology (i.e. what our fundamental objects are depends on what kind of phenomenon we are dealing with and what approach we take for mapping it out).

The problem of reduction also exists internally in the classical domain.

Taking a sample from a statistical physics textbook sheds some light on the difficulty of holding together even macroscopic phenomena in one image.

These *statistical laws* resulting from the very presence of a large number of particles forming the body cannot in any way be reduced to purely mechanical laws. One of their distinctive features is that they cease to have meaning when applied to mechanical systems with a small number of degrees of freedom...The importance of statistical physics in many other branches of theoretical physics is due to the fact that in Nature we continually encounter macroscopic bodies whose behaviour can not [*sic*] be fully described by the methods of mechanics alone...and which obey statistical laws.²⁴

²⁴ Landau, L.D. and Lifschitz, E.M. *Statistical Physics*. Course of Theoretical Physics. Volume 5. Pergamon Press: 1980. Sykes, J.B. and Kearsley, M.J. (Translators) pg. 19.

What holds these two levels of explanation together is what Robert Batterman calls asymptotic reasoning. It is only by making generalized assumptions at the boundaries of our explanatory domains that we are able to make sense of one level of explanation in terms of another. This leads him to suggest that “Explanation and reduction part company. The philosophical model that weds the two is simply mistaken.”²⁵ Sympathy toward Batterman’s position places pressure on the desire to redefine the manifest image on the basis of science’s *explanatory* successes. Giving science the ultimate claim to ontology leaves us in a similar bind regarding which ideological foundation to work from, particularly when they imply disjunctive ontologies (or, any ontology at all, in the case of quantum mechanics).

With this further investigation of reduction in mind, it seems that in certain ways Sellars’ tension has not been defused. The threat of losing properties like we see in the step from classical to quantum²⁶ is something Sellars is comfortable with so long as “...these properties are a matter of the parts having such and such qualities and being related in such and such ways.”²⁷ Where I see the classical mindset inherent in his understanding of science is when he makes suggestions that the bottom line of microtheory will be something firm:

Where microexplanation is called for, correct macroexplanation will turn out (to eyes sharpened by theoretical considerations) to be in terms of ‘statistical’ rather than strictly universal generalizations...for the distinctive

²⁵ Batterman, Robert W. *The Devil in the Details*. Oxford University Press: 2002. Pg. 134

²⁶ An example of this sort of ‘loss’ is Mark Wilson’s question in *Wandering Significance* (pg. 196) about how we can fit the concept *shape* into a quantum mechanical system: “At what length scale will quantum effects supply molecules with a sufficiently robust notion of *shape* that classical modeling techniques will begin to provide useful answers?”

²⁷ PSIM, pg. 394

feature of those domains where microexplanation is appropriate is that in an important sense such regularities as are available are not statistical *laws*, because they are unstable, and this instability is explained by microtheory.²⁸

From a contemporary standpoint, this quote raises questions like, “what about the instabilities of microtheory?” or “what about the fact that our most basic understanding of reality is inherently statistical?” It is still up for grabs whether or not there is a firm grounding in quantum mechanics on which to anchor ourselves. Advances like the Kochen-Specker theorem (that there are no hidden variables that explain the randomness of quantum mechanics) lead one to start considering that physics *may* not be headed in the direction of finding a definable bottom line. I find my own position to be in line with the skepticism expressed by Robert Brandom in his review of Mark Wilson’s *Wandering Significance*: “If even some of our best understood classical physics is like this [circling back on itself when trying to remove theoretical idealizations], I am not sure I understand Wilson’s confidence that a firm...footing could eventually be found in quantum mechanics.”²⁹

While I believe Sellars is correct in his belief that we need to collapse the levels picture of reality and synthesize scientific knowledge into our everyday understanding of the world, it is only in an idealized, and perhaps unrealistic, science that top-to-bottom reduction is plausible. The thought experiment in the last section problematizes the view that reduction will have much to say about normative attitudes that exist within social constellations. Assuming no practical constraints, the best that could be said is that if we reduced all individual mind

²⁸ SPR:LOT, pg. 122

²⁹ Brandom, Robert. *Platforms, Patchworks, and Parking Garages: Wilson’s Account of Conceptual Fine-Structure in Wandering Significance*. Philosophy and Phenomenological Research. Volume LXXXII. pg. 19

phenomena to definitive brain phenomena that it would be a matter of interpreting and integrating millions of these reductions to make sense of societal coordination. Even in this ideal-future case it would be hard to kick 'persons' into the domain of archaic concepts like ether or phlogiston as we have seen that moving between explanatory boundaries forces us into generalization and loss of the niceties provided by the other explanatory framework. The gullies separating the manifest from the scientific are *at least* as complex and problematic as the ones between the classical/quantum divide.

Whether or not you are ready to totally abandon the manifest picture of man depends on your views regarding the possibility of a unifying physical theory and the status of the objects countenanced by such a theory. A final parallel to consider before closing the discussion is the affinity we can see between Sellars and Einstein at the time of writing the EPR paradox. Attempting to disprove the completeness of quantum mechanical descriptions he sets up an axiom for comprehending a 'complete theory': "*...every element of the physical reality must have a counterpart in the physical theory.*"³⁰ He goes on to discuss the problem of noncommuting operators in quantum mechanics. This is the underlying issue that explains Heisenberg uncertainty, or the epistemic tradeoff between measuring position and momentum. Einstein believes that since we can interpret the state vector of our position operator *or* our momentum operator and calculate the corresponding quantities (P and Q in the paper) we have to understand P and Q as elements of reality. While quantum mechanics restricts us from simultaneously measuring

³⁰ Einstein, A., Podolsky, B., Rosen, N. *Can Quantum-Mechanical Description of Physical Reality Be Considered Complete?* Physical Review. Volume 47. Pg. 777

these quantities, the two wavefunctions *should*, he believe, both seen as a part of the same reality. Thus he takes quantum mechanical descriptions to be incomplete as they cannot describe simultaneous features of the same reality. Einstein argues, “No reasonable definition of reality could be expected to permit this.”³¹ His mindset of how reality was in actuality and, in accordance, how physical theory should be kept him from ever buying into quantum mechanics. Niels Bohr, five months later, responds to the EPR paradox by giving a sort of therapy. He provides a careful analysis of the double-slit experiment both highlighting the physical limitations of carrying out an experiment that simultaneously measures position and momentum and relates this problem of uncertainty to time-energy uncertainty. In the end he appeals to Einstein as someone who should realize the conceptual shift physics is going to have to take:

In fact this new feature of natural philosophy [quantum theory] means a radical revision of our attitude as regards physical reality, which may be paralleled with the fundamental modification of all ideas regarding the absolute character of physical phenomena, brought about by the general theory of relativity.³²

He does not propose an answer to the EPR paradox; rather, he supplies us with some relief that perhaps what we are caught in is a conceptual bind that is an outcome of still expecting physics to look as it did prior to the twentieth century.

Obviously we are still a long way off from having a full grip on what our codifications of quantum phenomena mean to our view of reality. However, it seems there is at least one takeaway message from looking at the quantum/classical

³¹ Ibid, 780

³² Bohr, N. *Can Quantum-Mechanical Description of Physical Reality be Considered Complete?* Physical Review. Volume 48. Pg. 696

and classical/statistical borders: there is no single *best* ideology for understanding the physical world. Sellars makes a concession to science in saying, “that in the dimension of describing and explaining the world, science is the measure of all things, of what is that it is, and of what is not that it is not.”³³; however, he does not confront the issue that scientific ideologies may *never* be consilient nor what to do if the ultimate pruning of scientific categories leaves us metaphysically unfounded. Having parsed out the details of the two images and surveyed the threat of a scientific replacement of the manifest, our worry appears to be founded on a very particular projection of where science is headed and a liberal view of reductive sanctions.

³³Sellars, Wilfrid. *Empiricism and the Philosophy of Mind*. Science, Perception, and Reality. Ridgeview Publishing: 1963. Pg. 173