

# Meditations

The Undergraduate Journal of Philosophy at UCLA

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Issue 3, Spring 2015

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# Letter from the Editor

Dear Reader,

The production of this journal has been both a rewarding and humbling experience for me. As the first non-founding Editor in Chief of Meditations, I saw it as my duty to uphold the vision of the founding members as well as reflect my own dreams for the journal. In this mission I relied heavily on the support of our editorial staff and advisors. Their guidance and hard work helped keep me on track and for that they have my gratitude. In particular, I would like to thank our Editor Emeritus Mariko Green for readily offering her constant help and support. Her wisdom has been my greatest guiding light. I would also like to thank our authors for working diligently with us to refine their papers. They truly embody the spirit of creativity and academic perseverance that drives this journal.

The Undergraduate Philosophy Club at UCLA has been a wonderful affiliate to this journal. Meditations grew out of the love and passion fostered in the Undergraduate Philosophy Club and the club still works closely with us today. Its board members: Axel Crossan (Co-President), Cedar Green (Co-President), Austin Beltrand (Vice President), and Erin Gerber (Treasurer) deserve our sincerest thanks for their support. Similarly, I would like to thank the Philosophy Department Staff for their reliability and help. Blake Livesay, in particular, was absolutely invaluable. Rachel Lee also deserves a fond mention for her constant help toward the Undergraduate Philosophy Club at UCLA and, through extension, toward Meditations.

It is my belief that undergraduate journals serve as an opportunity for students to express their unique ideas as they grow intellectually. I am very happy with the creativity exhibited in this issue and I hope this experience has been one of value to our authors. Choosing from our pool of submissions this year was challenging and I excitedly anticipate similar creativity and intellect from future submissions. It is, however, my hope that we will see more diversity of applicants in the future. Women, particularly, have been underrepresented in this journal and in the Undergraduate Philosophy Club at UCLA as a whole and I sincerely hope for a change in that trend.

With that said, I hope you enjoy reading the 2015 issue of Meditations!

Respectfully,

Sarah Rafiqi

Editor in Chief, Meditations

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# On Obligation

by Andrew Metz

In his “Does Moral Philosophy Rest on a Mistake?,” H.A. Pritchard notes that many students experience a sense of dissatisfaction when studying Moral Philosophy and proceeds to argue that the subject, as it is usually understood, rests on a mistake. In order to do so, he first elaborates on how this dissatisfaction with Moral Philosophy expresses itself as a problem in the lives of reflective individuals. Next, he examines the two answers given in response to this dissatisfaction, but argues that both answers are ultimately unsatisfactory and that they could not be otherwise because they are trying to answer an improper question. In the following essay, I will first seek to demonstrate why the two answers Pritchard provides in response to the question are unsatisfying. Subsequently, I will try to explicate a streamlined version of Christine Korsgaard’s argument<sup>1</sup> from *The Sources of Normativity* as to how we come to have obligations. In doing so, I will try to show how she successfully answers Pritchard’s question by solving what she calls “the problem of the normative” (Korsgaard 93).

The earlier-noted dissatisfaction with Moral Philosophy often manifests itself in the form of a question when we experience inner conflict between the force of some moral obligation and the disinclination to fulfill that obligation: “Is there really a reason why I should act in the ways in which hitherto I have thought I ought to act? May I not have been all the time under an illusion in so thinking? Should not I really be justified in simply trying to have a good time?” (Pritchard 21). Or, more simply, “Why should I do these things?” (Pritchard 22). In asking these questions, the skeptic not only asks, “Why ought I to fulfill my obligations?” but also comes into doubt about whether those actions previously considered obligatory really are obligatory.

In response, Pritchard claims, Moral Philosophy must produce one of two answers: (1) “we ought to do so and so, because, as we see when we fully apprehend the facts, doing so will be for our good, i.e. really... for our advantage, or, better still, for our happiness” or (2) “we ought to do so and so, because something realized in or by the action is good” (Pritchard 22). But these answers run into problems.

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<sup>1</sup> By offering a “streamlined” version of Christine Korsgaard’s argument, I will avoid the more Kantian parts of her argument where she refers to autonomy, maxims, etc. By doing so, I hope to avoid what might be considered more controversial parts of the argument. In the process, however, the argument will lose the conclusion that “autonomy is the source of obligation” (Korsgaard 91). This loss will not be significant for the task at hand, which is to simply establish that we do have obligations in an intelligible manner. What will emerge in its place is the conclusion that reflective capacity is the source of obligation.

By answering that we ought to fulfill our obligations for our advantage or happiness, the first answer only persuades us to want to fulfill our obligations. It tries to shift the “state of unwillingness or indifference towards the [obligated] action... into a condition of willingness” (Pritchard 23). At bottom, “it only makes us want to [fulfill our obligations]” by eliciting our desire to achieve our advantage or happiness (Pritchard 23). So the reason we ought to fulfill our obligations, according to this answer, depends upon our wants.

But if the only reason we ought to fulfill our obligations is because we want to, then it seems we have lost what we really mean by saying we ought to fulfill our obligations. If we are only supposed to fulfill our obligations because we want to, then when we actually don’t want to, and appeal to our advantage or happiness won’t persuade us to want to, we will no longer have a reason to fulfill our obligations. But even if we don’t want to fulfill our obligations, it seems we still ought to fulfill our obligations. Indeed that seems to be the point of the word “ought”: to remind ourselves and others that we have a reason, and a very important one, to fulfill our obligations even if we don’t want to. So this answer fails to capture what we mean by saying we ought to fulfill our obligations.

In order to avoid failure to capture the meaning of “ought,” the second answer proposes that the actions which we ought to perform are those which either (1) realize some good or (2) are in themselves good.<sup>2</sup> In this way, both forms of the second answer appeal to goodness as an objective standard that exists independently of our wants. The goodness of the action is supposed to function as a reason that properly explains why an action is obligatory. It is thus possible for both forms of the second answer to establish the proper meaning of ‘ought’ while avoiding how the first answer dissolves obligation into inclination.

However, in order for the instrumental good answer to reach the conclusion that we ought to perform those actions which realize some good, it requires the additional premise that “what is good ought to be” (Pritchard 24). If we simply agreed that there are actions that realize some good, we would have no reason to conclude that we ought to perform those actions. As Pritchard notes, “An ‘ought,’ if it is to be derived at all, can only be derived from another ‘ought’.” (Pritchard 24). And so the premise that what is good ought to be provides the necessary link between the premise that a certain action realizes some good and the conclusion that we ought to perform that action because it realizes some good. Such a premise also provides a reason why we ought to fulfill our obligations even if we don’t want to: because they realize some good and what is good ought to be.

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<sup>2</sup> When referring to each answer from now on, I will call the first form of the second answer the instrumental good answer and the second form of the second answer the intrinsic good answer.

Yet the premise that “what is good ought to be” is problematic because it implies that “something good which is not an action ought to be involves just the feeling of imperativeness or obligation which is to be aroused by the thought of the action which will originate it” (Pritchard 24). This implication, according to Pritchard, is clearly false. When we consider our obligation to pay our debts, Pritchard imagines, we do not feel an obligation to create some good for the creditor. Rather, we feel an obligation to perform the action itself. And so, in a similar vein, Pritchard argues, the “the proper language is never “So and so ought to be,” but “I ought to do so and so”” (Pritchard 24). Even if we sometimes say that something “is not what it ought to be, what we really mean is that... some human being has not made something what he ought to have made it” (Pritchard 24). And so the premise that what is good ought to be cannot provide the right answer to the question, “Why act as I previously thought I ought to act?” because it is so plainly at odds with our actual moral convictions.

Since the instrumental good answer fails to correspond to our moral convictions, it seems the only available answer to the question is the intrinsic good answer, which holds that “the intrinsic goodness of... an action is the reason why we ought to do it,” (Pritchard 23) but this form is also problematic. According to Pritchard, actions “which we should describe as intrinsically good are of two and only two kinds”: (1) “actions in which the agent did what he did because he thought he ought to do it” or (2) “actions of which the motive was a desire prompted by some good emotion, such as gratitude, affection, family feeling, or public spirit” (Pritchard 26). In this way, intrinsically good actions are either motivated by a sense of obligation or by some intrinsically good desire.

But the first kind of action is problematic in establishing what we mean by “ought” because it proposes an untenable circularity.<sup>3</sup> If we propose that an action is intrinsically good because it is motivated by a sense of obligation, then when we claim that an action is intrinsically good we are already presupposing what it is that we are obligated, or ought, to do. In other words, answering that actions motivated by a sense of obligation are intrinsically good does not demonstrate how the “recognition of the goodness of the act gives rise to the recognition” (Pritchard 26) that we ought to do it. Instead, “the recognition that the act is good” in such cases presuppose “the recognition that the act is” (Pritchard 26) what we ought to do. Put more simply, if the skeptic asks, “Why ought I do this action?” and we respond, “Because the action is intrinsically good.” then the skeptic will ask, “Why is it intrinsically good?” We will then respond, according

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<sup>3</sup> At least, from the point of view of the individual doubting that we ought to perform those actions which we previously considered as fulfilling our obligations.

to this answer, “Because it is motivated by a sense of duty?” then the skeptic will look at us in exasperation and say, “But that is exactly what I was doubting as a reason to perform this action to begin with! You cannot simply assume the conclusion as a premise in reaching the conclusion – that is begging the question!” Thus, the answer that we ought to perform those actions which are motivated by a sense of obligation because they are intrinsically good involves a circularity that is unsatisfactory to the individual doubting that we ought to fulfill our obligations.

The second kind of action is problematic in establishing what we mean by “ought” for the same reason that the first answer failed. If an action is to be considered intrinsically good because it arises from some intrinsically good desire, then the reason we ought to do it is that we are motivated by the right kind of desire. But this reason cannot establish the proper meaning of “ought” because in such cases we fulfill our obligations only because we want to do so as prompted by those desires (albeit a narrower range of desires), not because we ought to do so.

And so the question still remains: why ought we fulfill those actions which we previously considered morally obligatory? Pritchard’s Dilemma holds that we cannot appeal to the fact that we want to perform certain actions as a reason that we ought to perform them because the fact that we want to do so does not mean that we ought to do so. Nor can we appeal to the fact that certain actions are intrinsically good. Doing so either presupposes that we ought to fulfill them (in which case the circularity of the argument voids its validity) or proposes that they are done from some intrinsically good desire (in which case the argument also fails for the same reason the first answer fails). As the central question of Moral Philosophy “admits only answers that are either circular or irrelevant,” (Korsgaard 32) it rests on a mistake. Pritchard thus concludes, “The sense of obligation to do, or of the rightness of, an action of a particular kind is absolutely underivative or immediate” (Pritchard 27). Or, in other words, Pritchard thinks, “Obligations just exist, and nobody needs to prove it” (Korsgaard 32).

However, Korsgaard thinks this need not be the case. We need not simply accept obligations as unexplainable facts of human life. We can explain why we have obligations. Indeed, in answering what she calls the normative question – that is, “[W]hat justifies the claims that morality makes on us[?]” (Korsgaard 9-10) – she will also answer Pritchard’s question, “Is there really a reason why I should act in the ways in which hitherto I have thought I ought to act?” In doing so, she argues that “we have moral obligations, by which [she means] obligations to humanity” (Korsgaard 91).



Korsgaard begins her argument by considering what being human entails. She notes that humans possess a mind unique among animals in that it “is self-conscious in the sense that it is essentially reflective” (Korsgaard 92). When reflecting upon how to proceed in a certain situation, the individual considers a multitude of possible actions, each of which might be supported or discouraged by various perceptions, desires, or other mental items. In doing so, the individual calls into question each of these mental items and considers whether each is “really a reason to act” (Korsgaard 93). The individual thus faces the problem of how and why it ought to act or, as Korsgaard calls it, “the problem of the normative” (Korsgaard 93).

After facing the problem of how and why it ought to act, “the reflective mind cannot settle for perception and desire, not just as such. It needs a reason. Otherwise, at least as long as it reflects, it cannot commit itself or go forward” (Korsgaard 93). The reflective individual thus requires reasons in order to decide what actions to perform.

And the word “reason,” according to Korsgaard, “refers to a kind of reflective success” (Korsgaard 93.) If the mental items an individual considers when reflecting upon which action to perform can withstand reflective scrutiny, then that individual has reasons for action.

Korsgaard now runs into the problem of how exactly mental items come to have or become reasons for action. It is at this point that value comes into the picture. Since reasons can withstand reflective scrutiny, it seems they must appeal to some kind of value that allows them to do so. If reasons did not appeal to some kind of value, it seems they would lose their motivating force and we would be unable to weigh them against each other. Without an appeal to value, it seems reasons would not be able to withstand the question, “Why?”<sup>4</sup> Figuring out how reasons appeal to value, then, is where we can begin to address the question, “What justifies the claims that morality makes on us?”

In order to determine how reasons appeal to value, Korsgaard again considers the human mind. “The reflective structure of the mind is a source of ‘self-consciousness’ because it forces us to have a conception of ourselves” (Korsgaard 100). This, she reminds us, is simply “a fact about what it is like to be reflectively conscious” (Korsgaard 100). Furthermore, “[w]hen you deliberate, it is as if there were something over and above all of your desires, something which is you, and which chooses which desire to act on” (Korsgaard 100).

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4 It’s difficult to give a conclusive argument about why reasons must appeal to some kind of value in order to withstand reflective scrutiny without embarking on too large a task for the present project. But consider your reasons for action. Can you find any that can answer the question, “Why do that action” without ultimately appealing to some kind of value? It is my contention that you will not be able to do so.

This “something” which seems to stand over and above the mental items under consideration is an individual’s practical identity. Korsgaard identifies practical identity as “a description under which you value yourself, a description under which you find your life to be worth living and your action to be worth undertaking” (Korsgaard 101). According to this conception, there are many ways in which an individual can identify him- or herself: as a human being, a family member, a student of a particular discipline, someone’s friend, etc. “And all of these identities give rise to reasons and obligations. Your reasons express your identity, your nature; your obligations spring from what that identity forbids” (Korsgaard 101). Reasons thus apply to an individual insofar as they relate to the values determined by that individual’s identity.

This kind of conception of practical identity has implications for integrity as well. As Korsgaard notes, etymologically speaking, “integrity is oneness,” but “we use the term for someone who lives up to his own standards... because we think that living up to them is what makes him one” (Korsgaard 102). To really adopt a certain practical identity, then, is to act according to the reasons and obligations supplied by that identity. In situations where you act contrary to the reasons and obligation supplied by your identity, then you are “no longer... able to think of yourself under the description under which you value yourself” (Korsgaard 102). If you violate the reasons and obligations supplied by your identity enough times or violate them in a serious enough manner,<sup>5</sup> then you “lose your integrity and so your identity” (Korsgaard 102). But, one might wonder, “How exactly does one’s identity take on a moral dimension? And is this identity really any more important than our other identities?”

Korsgaard reaches moral identity by first considering “the communitarian’s point”: “[i]t is necessary to have some conception of your practical identity, for without it you cannot have reasons to act” (Korsgaard 120). Without some conception of his or her practical identity, an individual would have no values with which to evaluate mental items that support or discourage certain actions. Without values playing this buttressing role, an individual would no longer have reasons that could withstand the force of reflective scrutiny. As a result, “you [would] lose your grip on yourself as having any reason to do one thing rather than another – and with it, your grip on yourself as having any reason to live and act at all” (Korsgaard 121). And so now it is clear there is a reason to conform to a practical identity, but this reason itself does not come from a practical identity. Instead, it comes from what it means to identify as “a human being, a reflective animal who needs reasons to act and live” (Korsgaard 121).

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<sup>5</sup> Korsgaard concedes that it is possible to occasionally violate our obligations yet still maintain our identity, but that if “[we] always did this sort of thing [our] identity would disintegrate” (Korsgaard 102).

Insofar as we identify as human beings, we value ourselves as human beings. And given “the world we live in, the one brought about by the Enlightenment,” (Korsgaard 117) “to value yourself just as a human being is to have moral identity” (Korsgaard 121).<sup>6</sup> By valuing ourselves as human beings, obligations arise that we ought to treat ourselves as human beings, that is, morally. This might mean, for example, that we must always treat ourselves as ends, and not simply as means, because treating ourselves simply as means would degrade our identity and value as human beings. Thus, at the very least, we have moral obligations to ourselves.

And, Korsgaard argues, moral identity is necessary for practical identity. “It is because we are human that we must act in the light of practical conceptions of our identity, and this means that their importance is partly derived from the importance of being human” (Korsgaard 121). It is partly because we recognize our identity as human beings – as reflective animals who need reasons upon which to act – that we can recognize the value of practical identities. Without practical identities, we would have no reasons for action and so, because we are reflective, we would be unable to act. “Since [we] cannot act without reasons and [our] humanity is the source of [our] reasons, [we] must value [our] humanity if [we] are to act at all” (Korsgaard 123). Thus, moral identity is necessary in order to value and act. Accordingly, moral identity is more important than practical identity in many, if not most or all, cases because it provides the possibility for the latter.<sup>7</sup> But, one might still wonder, how do we come to have moral obligations to others?

Just as moral obligations to ourselves come about by acknowledging the value of our own humanity, moral obligations to others come about by acknowledging the value of their humanity. Korsgaard invites us to consider Thomas Nagel’s argument from *The Possibility of Altruism* which demonstrates that this is necessary for human beings:

“Suppose that we are strangers and that you are tormenting me, and suppose that I call upon you to stop. I say: ‘How would you like it if someone did that to you?’... I invite you to consider how you would like it if someone did that to you... You would think that the other has a reason to stop, more, that he has an obligation to stop. You make yourself [a reason] for others.” (Korsgaard 142-143)

In order to imagine the situation, we need to see something we have in common with Korsgaard. If we cannot imagine switching places with her, we would not be able to imagine the situation. But insofar as we

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<sup>6</sup> According to Korsgaard, the world brought about by the Enlightenment transformed how we understand “humanity.” Because of this cultural transformation, our relation to the concept of humanity has moral implications.

<sup>7</sup> However, the argument does not show that “moral obligations always trump others” (Korsgaard 125).

can imagine the situation, we assume an identity in common with her. That is, we take on the identity of just someone, that is, just some person who would not like to be tormented and thus as “one person among others who are equally real” (Korsgaard 143).

Korsgaard notes that the argument might fail if we could not see what we have in common with the person being tormented, but she notes that it “is nearly impossible to hear the words of a language [we] know as mere noise” (Korsgaard 139). Because of this, “in hearing [another’s] words as words, [we] acknowledge that [person as] someone” (Korsgaard 143). The argument also works in reverse. “In acknowledging that [we] can hear them, [we] acknowledge that [we] are [some persons]” (Korsgaard 143). Thus, by imagining this situation in regards to others and thereby assuming an identity as one person among other persons, we are forced to acknowledge the value of their humanity because of the values set out by such an identity. Accordingly, we become obligated to respect their humanity.

Thus, according to Korsgaard, in order to see how the claims that morality makes on us are justified, we must consider what it means to be human. In doing so, we come to realize that human beings are reflective animals and therefore need reasons in order to act. Since reasons are determined by the values laid out by our practical identities, we need to have a practical identity in order to have reasons. But, in order to have a practical identity, we must first identify with, and thus value, our humanity. And as a consequence of being human, we cannot help but recognize the humanity of others. We thus develop moral obligations to ourselves insofar as we value our own humanity and to others insofar as we value their humanity.

But how does this answer Pritchard’s question, “Is there really a reason why I should act in the ways in which hitherto I have thought I ought to act?” in a way that is qualitatively different from the two answers Pritchard proposed as the only ones possible? Doesn’t Korsgaard’s answer, after all, dissolve obligation into inclination in that, according to her answer, one might say that we only have obligations insofar as we want to maintain particular identities or think that they are good? Well, one might say so, but to do so would misunderstand the argument.

Korsgaard appeals neither to our own inclination nor to goodness itself as things that establish what we mean when we say that we ought to fulfill our obligations. Instead, she shows how moral obligations are grounded in what it means to reflectively understand ourselves as human beings and to live as human beings. Without understanding and valuing our humanity, we would be incapable of having reasons upon which to act. We would not be able to live rationally because moral obligations are fundamentally rooted

in how we make sense of the world and ourselves through reason. Thus, moral obligations are necessary in order to live a characteristically human life.

The point is not that we should want to understand ourselves rationally or that it is good to do so (although these may be true) in order to have moral obligations. The point is that once we come to understand ourselves in the world, we cannot live and act without moral obligations. And once we understand that we have moral obligations because of who we are, asking, “Why ought I fulfill my moral obligations?” means that we are misunderstanding the moral obligations set out by the values contained in our identities. And asking, “Is there really a reason why I should act in the ways in which hitherto I have thought I ought to act?” means that we are misunderstanding who we are. Otherwise, we would not need to ask why the obligations we previously believed in really are obligations.

So it does seem that, in some sense, Pritchard is right to say that moral philosophy rests on an improper question. The question, “Why ought I fulfill my obligations?” seems confused and incoherent because it misunderstands the meaning of “obligation.” Insofar as we recognize our obligations, we recognize that we ought to perform the actions that fulfill those obligations. That is just what “obligation” means.

But the question, “Is there really a reason why I should act in the ways in which hitherto I have thought I ought to act?” is not improper. This question amounts to asking why we have obligations, and Korsgaard certainly answers this question. Korsgaard develops an account of obligations such that if you are capable of asking this question and you demand a reason as an answer, then you recognize your need for reasons to determine questions that bear upon how you act. And since you recognize your need for reasons to act, you value your humanity and thus have moral obligations.

We began by asking, “Is there really a reason why I should act in the ways in which hitherto I have thought I ought to act?” Pritchard proposes two answers: either (1) because of our inclinations or (2) because the action is itself good realizes some good. The first answer turned out to be irrelevant, while the second answer, depending on its particular form, turned out to be either irrelevant or circular. We then turned to Korsgaard in hopes of resolving Pritchard’s Dilemma through her own answer to the question, “[W]hat justifies the claims that morality makes on us[?]” In answering that question, Korsgaard tells a story about the kinds of creatures human beings are and what is necessary for them to live their specific kind of life. She considers how human beings are reflective creatures who need reasons upon which to act. Accordingly, we must adopt identities in order to have values that determine reasons. And that identity which is most funda-

mental to human beings (and to our other identities) turned out to be moral identity. Thus, moral identity, and the obligations and reasons that go along with such an identity, is necessary for human beings. Without it, we cannot coherently live and act as human beings. The answer to Pritchard's question, "Is there really a reason why I should act in the ways in which hitherto I have thought I ought to act?" turns out to be, "Yes, because that is who we are." Recognizing ourselves as human beings necessitates moral obligations.

## Bibliography

Korsgaard, Christine. *The Sources of Normativity*. Ed. Onora O'Neill. Cambridge: Cambridge U P, 1997.

Print.

Pritchard, H. A. "Does Moral Philosophy Rest on a Mistake?" *Mind* ns 21.81 (1912): 21- 37.JSTOR.

Web. 16 Dec. 2014. <<http://www.jstor.org/discover/10.2307/2248906?sid=21104879596201&uid=3739776&uid=3739256&uid=4&uid=2>>.

## Acknowledgements

Pamela Hieronymi

# A Neuropsychological Account of Absorptive Mental States

by Austin Beltrand

## I. An Introduction to Absorption

A beautiful guy strolls my way. My heart flutters. Time seems to stand still. I can notice everything about him: his high-held cheek bones, his scarlet lips, his effortless demeanor. Then the world, striking me with its transiency, returns to figure and tasks; the guy who made reality immortal, if only for the time-being, has rounded the corner and disappeared.

It seems like a vacuous truism of the romantics--that a beautiful person of this kind can make the world seem like a memory. In his *Essay Concerning Human Understanding*, David Hume, however, suggests that this truism contains more than your usual metaphor. The truism reflects how the relevant difference between a recollection and an everyday sight<sup>1</sup> is the same kind of difference between an everyday sight and an incredible one. In this essay, I follow Hume in talking about this difference in terms of “vivacity” and, especially near the end, vivacity’s second component--”sharpness”. Readers probably have an intuitive understanding of what “vivacity” means already, but as Hume comments, truly describing the relevant differences between a memory and the perception of a beautiful guy is extremely difficult if not impossible. To preface, I will clarify our understanding of vivacity’s two components. This essay will then characterize vivacity as part of “absorption in experience,” explain the features of this absorption and their interrelation, and in the process contribute a deeper understanding of our perceptions of time and space. Furthermore, this project will keep in mind the possible neuropsychological underpinnings of perception as to incorporate both common-day and scientific observations while generating its own confirmable predictions.

In this essay, I focus on vivacity as it applies to only one kind of perception (namely, visual) while vivacity in reality applies to many perceptual modalities not addressed here. The set of these excluded modalities must include those of taste, touch, hearing, and feeling, because we can have recollections in these modalities that are less vivid than the perceptions being recollected<sup>2</sup>. I deal just with this one sense

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1 By “perception”, I roughly mean conscious intuitions of a sensory modality, operating within the realist framework of perception. This definition includes recollections, illusions and hallucinations as being perceptions. I do not use “perception” in Burge’s sense. For this paper, a perception is not representational. A “sight” is a perception created via the eyes and other associated structures.

2 However, I should qualify that a memory need not always be less vivid than the perception from which it follows. For example, patients with PTSD recount the everyday tasks that preceded a traumatic event in an amount of detail that would seem to betray the banal degree of vivacity that obtains during normal events. As one possible explanation, the brain might

due to a space limitation. This essay may still find it useful, however, to explore the relationship between sight and other senses in order to explain vivacity.

One can identify multiple ways in which the memory of watching of a sunset differs from the perception it records. First, the colors of the sunset are more lively in the perception than in the memory.<sup>3</sup> This difference characterizes the first part of vivacity. Indeed, the word's etymology evinces this fact since "vivacity" traces back to the Latin root for life--"vive". A conscious mental state is particularly lively iff it is particularly present to the mind. To be clear, I think that liveliness is a non-reducible and explanatory fundamental notion in phenomenology. Thus, my efforts here function to elucidate the referent of the word "liveliness" and not to reductively define. Additionally, a second manner of difference (and the final one classifiable under vivacity) can perhaps best be understood through analogy to the sharpness feature of photo-editing software. In this software, the sharpness of a photo is the degree to which it is detailed. For this essay, I treat our perceptions much like these photos. In the second half of this essay especially, I will attempt to reduce a specifically psychological notion of sharpness.

Let us first defend the boundaries of our concepts from confusion. In my usage, "vivacity" does not perform the same role as "brightness". After all, one need not always pay a high degree of attention to a bright light, and, by extension, not all bright perceptions must be particularly sharp or lively. This extension follows, furthermore, from how every degree of attention possible seems to accompany a particular degree of vivacity (and therefore, absorption in experience writ large) such that one can only have an extremely vivid perception while paying great attention or pay great attention while having an extremely vivid perception, to list one possible degree. Moreover, the set of all vivid perceptions is not co-extensive with that of all bright ones simply because, for example, a memory of a bright star may exhibit a measly degree of liveliness or sharpness. However, brightness may suggest a certain degree<sup>4</sup> of sharpness or even

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receive some sensory information that it does not use to form a perception while nevertheless encoding this information. If not followed by a traumatic event, the brain might then dispose of this information or keep it inaccessible. A more plausible explanation is that the brain imagines more detail into traumatic memories than usual since scientists have recently discovered a baseline of confabulation that accompanies all memories (Wiseman).

3 My wording here, as elsewhere, merely reflects convention. To be clear, a perception is the only proper subject of both components of vivacity. It is true that recollections, as a class of perception, can be vivid, but a memory, as well as physical objects, cannot be vivid. A vivid memory is only one which is recollected vividly. Furthermore, I may periodically seem to anthropomorphize the brain (e.g. in talking as if it "assumes"). This language is merely meant to most concisely communicate the natures of unconscious computational processes.

4 It is not the case that each degree of incident light amplitude strictly causes a certain degree of brightness through retinal stimulation since experiments have shown that the brightness of colors depends on--in addition to light amplitude--the identity of a second color with which the first is contrasted.



limit the sharpness of perceptions (as the essay will later explain in page 26).

With the terms defined, a case example will broaden the scope of our search. In the movie *Her*, the processing system Samantha and the protagonist Theodore undergo orgasms while having sex. Both characters simulate the sense of touch to compensate for Samantha's lack of a physical body. Samantha later reveals that during many interactions with Theodore she has simultaneously interacted with multiple other lovers. An orgasm, as one might know from experience, involves the absorption of oneself. All attention is invested purely in the sense of touch as we become enthralled in our experience and other senses fade into the background. A case like this one proves that (despite my studying vivacity one sense at a time) one can learn much from considering the vivacity of the senses in relation to each other. In specific, an orgasm seems to gain its appeal, at least partially, through the erasure of our pedantic thoughts. It is almost as if we ourselves no longer exist. Only the perceptions remain, and they seem to drag by as if time were a stream of honey. If Samantha had simultaneously interacted with others while undergoing the orgasm, then Theodore may justly worry about why all of her attention was not spent in the sexual activity. In virtue of this fact and the above considerations, her orgasm would be less ideal than possible in that case.

The mental state which Theodore enters during his orgasm--which I will call absorption in experience--involves reduction in other parts of consciousness, a heightened degree of vivacity, an altered sense of time, sometimes certain emotions, and possibly other features that seem intermeshed in causal relationships. Lastly, one other object of absorption exists exhaustively. This object is action. To elucidate, consider how I became absorbed in the action of writing this paper. I did not see the letters of the page or feel the keyboard in particular detail during this absorption because absorption in action, as opposed to absorption in experience, excludes sensory vivacity. One also reports a sense of flow or loss of time after being absorbed in action. This feature is further contrary to the "stream-of-honey" feature of absorption in experience. The two flavors of absorption are therefore co-exclusive since they necessarily involve features that cannot coexist (e.g. the slowing and quickening of time). To be clear, watching the movie "*Her*" involves not absorption in experience but rather absorption in action. The reason for this anomaly is that the sense of "watch" here is different than the sense used, for instance, in "watching" a sunset. This sense of "watch" implies activities directed at the object of attention (i.e. the movie) into which the audience can become absorbed (e.g. identification with the protagonist and anticipation). However, some movies may fail to evoke these activities and thus evoke absorption in action, either because they bore us to death

or because they intend, at least in part, sensory enjoyment through absorption in experience. The latter of this disjunction was largely the case with “The Tree of Life” (as evidenced by its stunning imagery). Finally, note that the features constitutive of absorption in action can obtain during periods of inactivity. However, periods of inactivity do not count as featuring absorption in action since these features are not caused by concurrent engagement in some action. The presence of these features during a period is a necessary but not sufficient condition for that period being one of absorption in action.

## II. Subjective Time Dilation

I will now move on to explaining the existence or nature of each feature of absorption in experience. The first feature seems easy to explain; reduction in other parts of consciousness occurs simply as a result of attention being removed from other matters and relocated towards the object of absorption. Secondly, we will investigate the connection between one’s sense of time and absorption. To begin, consider how a person intuitively knows when listening to a steady beat that the amount of time in between the first beat and the second is the same as the amount in between the second beat and the third. Some experiments have yielded evidence in support of the hypothesis that the brain forms this knowledge in part through the use of an internal clock. I will preface by explaining the concept of an internal clock in a philosophical level of detail. This paper will then briefly recount one such experiment. To begin, the internal clock is composed of at least one process that a) reinitiates (i.e. ticks) immediately after being completed and b) always takes the same amount of time to complete. In this picture, the process has property (b) due to the predictability of its constitutive biochemical interactions.

An elaboration of this hypothesis will require two separate notions of time. Firstly, external time is the time studied by physics--in other words, the time measured by a standard clock within a particular region of space-time. For example, my heartbeats each last two seconds just because a standard clock proximal to my heart ticks exactly two times during one of my heartbeats. Secondly, intuitive or internal time is the time intuited as passing by me and depends on facts unique to my neuroanatomy. According to the internal clock theory, the brain constitutes temporal intuitions such that one always intuits the same amount of time<sub>i</sub> as passing in between two process completions. Now, we typically intuit a certain amount of time<sub>i</sub> as passing per every click of a proximal, standard clock. In other words, a certain relation between time<sub>i</sub> and time<sub>e</sub> typically obtains. However, this particular relation may change. For instance,

imagine that one can take an imaginary drug that gradually causes oneself to intuit a tick of a standard clock proximal in space-time as lasting what seems like an eternity. It seems to a person under the effect of this drug that the world is running in “slow-motion”. He or she can think extremely long thoughts in an abnormally small amount of external time. In other words, this drug increases the ratio of  $time_i$  to  $time_e$ . Now, continue to imagine that I consume this drug as I watch the completion and renewal of the biochemical process constitutive of my internal clock on an MRI output screen. If in this case I were to intuit the representation of my internal clock along with the rest of external reality as beginning to move slower and slower, then the internal clock theory would fail, because my intuitions about time and the ticking of my internal clock would not be in sync. After all, the internal clock theory predicts that I should intuit the same amount of time as passing between each tick of my internal clock, but in reality, this amount of  $time_i$  becomes longer as the drug takes its effect. To prevent this result, I must therefore adapt the theory to this case (as scientists have done) by revising condition (b) such that the  $time_e$  it takes to complete the process shortens as I begin to perceive the world of my senses as moving slower and slower. It would shorten just enough such that I would intuit the amount of  $time_e$  in between the ticks of my internal clock (displayed on the MRI output screen) as being static even though the rest of external reality would seem to slow. Furthermore, the posit that the biological process constitutive of my internal clock is part of my perceptual system accounts for how this process has the property of always being caused to quicken by the imaginary drug and all similar drugs. After all, the sensory areas of my brain would likely have to work faster in order to perceive faster. Thus, psychologists hypothesize that the perceptual faculty uses at least one process characterized by properties (a) and (b’) (i.e. an internal clock) in constituting perceptions such that a constant amount of  $time_i$  is intuited as passing between each completion. The rarity of the clock’s changing pace contributes to the veridicality of these intuitions. Furthermore, our attributing to a recent temporal period the property of it lasting some amount of  $time_e$  seems to rely upon 1) the retention in memory of information about how many times one’s internal clock ticked during this period (i.e. about how much time was intuited as passing) and 2) the use of a particular  $time_i/time_e$  relation to convert the amount of  $time_i$  retrieved into an amount of  $time_e$ .<sup>5</sup>

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5 Consider the proposition: “an internal clock should run at some particular pace during a period of time in order for judgments based on the temporal intuitions that are reliably formed from this clock to veridically represent the amount of  $time_e$  that passes during this period.” I assert that this proposition lacks truth unless one presupposes that a specific  $time_i/time_e$  relation is used in these judgments. Furthermore, a person can proposition with truth that he or she intuited a period of time as being of a short duration, for example. After all, this proposition would be supported by the observation that his or her internal clock ticked only a few times during this period. However, it is onerous to assert the possibility of success in attributing to a

What then about the question that prompted our considerations? A brain similarly forms knowledge of two periods lasting the same amount of time, in part through computing that a similar amount of internal ticks elapsed during the two periods. Psychologists have uncovered strong evidence in support of the hypothesis that the brain forms this knowledge in part through the use of an internal clock. In a 1988 experiment, scientists statistically modelled how an internal clock would behave with a computer simulation. They then played an audio track of clicking noises to research subjects at different frequencies. The internal clock simulation predicted that the pace of one's internal clock may be altered in systematic ways by such sensory input as the auditory clicking. These psychologists found that the subjects' judgements about the amount of time that elapsed in between consecutive ticks varied in a way that fit the statistical simulation. This evidence supports the claim that auditory clicking interfered with the pace of their internal clocks (Treisman). Although other factors may still affect our judgements about the durations of time periods, the internal clock theory is thereby largely verified.

With this foundation, I will now segue into an investigation into the nature and causal underpinnings of changes in one's sense of time. The technical term in Psychology for these changes is "subjective time dilation" or just "dilation" for short. A period of dilation is one in which time seems to "fly-by" or "run-like-honey". The use of descriptions such as these in the lay-person's recounts of absorptive experiences evidences how a concept of dilation is commonly had. According to this concept, a necessary condition of subjective dilation's being the case over a period of time is that either a 1) larger or 2) shorter amount of time fits inside this period than typical. (1) and (2) correspond to the types of dilation that occur in absorption in experience and absorption in action, respectively. If such a necessary condition does exist, then there must be some manner by which this condition is fulfilled during a period of dilation. Furthermore, this manner must be one which fits our concept of dilation. I exhaustively identify three processes which could fulfill the necessary condition--the quickening, slowing, and stopping of one's internal clock. However, do these processes fit with our concept of dilation?

To begin, what if the necessary condition was fulfilled during a period of dilation through one's internal clock ticking at an abnormal pace during this period? If this were the case, then a period of dilation would either resemble that caused by the drug previously imagined or by its opposite (i.e. one which elicits a perception of the external world as "fast-forwarding"). However, imagine that you impa-

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period of time the property of it lasting some amount of time, objectively--regardless of any being that intuit. This attribution is like the attribution of the property of being a round square. It reflects a misunderstanding of definition.

tiently watch a clock tick as you await the end of a class. In this case, even if time seems to pass-by as if a “stream-of-honey” (i.e. even if this case were one of dilation), you would not perceive the clock as ticking in slow-motion. Nor would one perceive the clock as “fast-forwarding” if time were seeming to “fly-by”. Thus, this alteration to one’s internal clock does not fit with instances of our concept. Alternatively, perhaps one’s clock fully stopped for part or all of this period. The stopping of one’s internal clock corresponds not to an alteration to our intuitions about the passage of time but instead to annihilation of any such intuition whatsoever (as to cause unconsciousness). However, it again seems that intermediate or total unconsciousness does not occur during periods of subjective time dilation. Additionally, this explanation could not account for the particular type of dilation that constitutively figures into absorption in experience (i.e. time “running-like-honey”). In summation, no possible explanation of the nature of subjective time dilation is to be found; there are no acceptable alterations to our internal clock that can satisfy the necessary condition of this dilation being the case. As a last resort, the following couple paragraphs will explore the possibility of dilation being an illusion of retrospection, i.e. a fault in our memories. This possibility has not been sufficiently considered within Psychological research. Most scientists seem to assume that an alteration in internal clock rate is solely responsible for subjective time dilation (Joshua) despite this explanation’s jarring incongruity with our concept of dilation. I concede that the pace of one’s internal clock may change some during dilation since the Treisman experiment showed that certain factors do affect this pace. However, a change in this pace cannot be the major explanan of dilation.

One might start an investigation into the causal underpinnings and nature of this illusion by using the limited knowledge of this issue that experience already imparts--namely, knowledge of how subjective time seems in retrospect to dilate in opposite directions during absorption in action and absorption in experience; perhaps something about absorption that is deficient in one of its flavors but abundant in the other accounts for both this dichotomy and the illusion in general. I identify one such something to be the encoding of memories. After all, the brain encodes memories frequently during absorption in experience since a higher degree of vivacity involves an abundance of sensory information for possible encoding--information towards which attention is directed. On the other hand, absorption in action only involves the encoding of information useful to the end of engagement. This sort of information occurs less frequently. Therefore, the gaps in between the memories of a period of absorption in action are typically longere on average. Now, recall that the brain forms recollections through 1) tallying the timei encoded and then 2)

converting the tallied amount of  $t_{mei}$  into an amount of  $t_{mee}$  with a  $t_{mei}/t_{mee}$  relation. (To get this relation, it either assumes that the recollected period lacked any “fast-forwarding” or “slow-motion” effect or notes this lack of an abnormal  $t_{mei}/t_{mee}$  relation from the content of the memories used.) Thus, when the brain performs (1), it likely does not include in its tally the time previously intuited in the gaps such that it underestimates the  $t_{mei}$  that passed during the period. We merely recollect the passage of time wrong when we believe that what we recollect is a period of dilation.

As a result of this process of recollection, the constructed memory of how long the period lasted consciously conflicts with higher-order knowledge about the actual length of the period. The hippocampus (an ancient part of the brain involved with memories (Tulving)) may help to construct this faulty memory while the cortex contrarily produces the veridical belief--perhaps with the aid of an external clock. One thus recalls either after or during dilation that a shorter amount of  $t_{mei}$  fits within a period of  $t_{mee}$  than usual without venturing for an explanation of how this purported fit obtained. The lay-man’s concept of dilation is accordingly unclear. Its mere existence is mistaken. Finally, note that one usually recalls with accuracy all the time that one intuited as passing during a period of absorption in experience whenever so recalling such that this recollection actually suffers no illusion of dilation. As an illusion, dilation is qualified by getting something wrong about the world. The process of recollection detailed above only allows for error in underestimating the amount of  $t_{mei}$  that passed during a period. While the “stream-of-honey” metaphor communicates a legitimate feeling about the passage of time, this feeling is therefore not part of the illusion of dilation but instead coincides with veridically recollecting how much  $t_{mei}$  passed. Similarly, recollections on everyday periods of time involve a degree of illusory dilation intermediate between the degrees exhibited by the two different flavors of absorption (i.e. between a high and a low degree). A small degree of illusory dilation, for example, obtains when recollecting laying on the couch engaged in no action since one does not typically encode all the time one intuited as passing during such a period. Without a healthy dose of absorption in experience (or indeed, a healthy memory), the age-old proverb will thus prove true, and one’s life will fly before one’s eyes.

### III. Sharpness: A Reductive Definition

In this section, we will begin by attempting to dissect vivacity and then transition into an investigation of its causal underpinnings and relation to absorption. I clarified its first component--liveliness--as

well as I could in paragraph 4 of section 1, but our concept of sharpness remains obscure. To begin, consider that a “simple” detail is a detail that does not contain further details. For example, the simple details that constitute my perception of a sign at a distance are the perceptions of its individual letters. If I were to move this sign close enough under normal conditions, then I could also distinguish simple details inside these letters (e.g. the perceptions of ink blots and uneven surfaces). At first, it seems as if the amount of simple detail present in a visual perception determines the sharpness of that perception, but this definition does not fit with our previous example. Imagine that my perception of the sign remains the same as it moves closer to my eyes (except in that this perception changes size) such that I never at any point begin to distinguish the ink blots or uneven surfaces of these letters. In this case, instinct suggests that the sharpness of the perception of the sign does not remain constant even though the amount of simple details it contains does remain constant. In truth, the sharpness of the perception of the sign gradually decreases. This very decrease accounts for my failing to distinguish the ink blots as the sign moves closer. How then can we in turn account for the decrease in sharpness? Only the size of the simple details that constitute my perception of the sign changes in the imaginary scenario. Therefore, one must reference this size in defining sharpness (at least w/r/t visual perceptions) in order to fit the definition of sharpness with our instinct. We will thus expand on our initial assessment of sharpness by defining again one’s perception to be particularly sharp iff one concurrently distinguishes simple details of particularly small size such that during maximum sharpness one distinguishes simple details of the smallest size that one’s particular eye-sight allows. However, how do we go about specifying the size of details? A consideration of the sensory system will start our trajectory towards answering this question.

As one possibility, we might specify size through analogy to a measure commonly used by ophthalmologists at checkups--the Snellen Eye Chart Test--which measures the ability of one’s eyes to view things from afar as to diagnose any possible myopia or hyperopia. This test itself relies on the fact that a certain object will become too blurry to distinguish at a constant distance from a pair of eyes assuming static eye-sight. For example, the letter A becomes illegible for me at a distance of about twenty feet if sized appropriately for the first row of the Snellen Eye Chart because of my myopic (i.e. near-sighted) eye-sight. We will thus follow the eye-chart test by defining the size of details through reference to the physical size of the distinguished physical object and its distance from the perceiver. This definition of detail size prescribes a test for determining sharpness. Although analogous, this sharpness test differs from

the Snellen test since it implies consciously viewing details while the Snellen test does not. If I were to take the Snellen test while distracted by thoughts about philosophy, for example, then I might mindlessly read off the letters and still score the same as if I had paid attention since what the test measures--the behavioral ability to report the identity of the letters--does not necessarily involve the consciousness of the action like sharpness does. However, this sharpness test fails to account for the determinate sharpness involved in looking through a kaleidoscope, since this test requires a mind-independent object of sight with which to measure sharpness, but no such object exists in this case (and indeed, all cases of non-purportedly objective perceptions) due to how the kaleidoscope has “scrambled” the light-rays. Therefore, sharpness does not seem immediately related to the worldly objects that only sometimes exist in relation to our visual perception. Indeed, only a definition that does not reference any physical cause of perception can suffice since one can logically conceive of a visual perception that does not occur in conjunction with physical cause. If this argument does not persuade, then also consider how recollection occurs at a determinate degree of sharpness without much of these physical causes. The causes that do remain such as the electrochemical patterns in the brain do not seem immediately relevant to a definition of sharpness.

In considering more closely the notion of a simple detail, I realize that the words refer not to physical objects but rather perceptions, which in the case of sight compose the visual field itself (i.e. the overall visual perception) and only sometimes are purportedly objective. However, I do not “distinguish” details as the preliminary definition of sharpness on page suggested, since one does not perceive one’s visual field, although one may distinguish the physical objects that objective sensory perception represents when perceiving in this way. A perception thus seems to be particularly sharp iff it involves simple details of particularly small size--that is to say, iff the brain constitutes this perception as exhibiting simple details of particularly small size. This definition seems final to me. In order this definition to be complete, we must also find some manner by which to define the size of details. However, above considerations have removed all objects that reside outside of perception as candidates. A further limitation also applies: specifying a spatial or temporal property of a perception or period of perception (size and length, respectively) can only be achieved by first specifying a perception or period that at least partially has this property. In other words, one simply could not explain to someone who had not had the relevant perceptions what it means for a perception to be large or for a period of time to be long,--no more than one can explain color to the congenitally blind. These properties are simply too fundamental to explanation of



the mental. A prominent way of directly specifying these intuitions or periods to another involves using counterfactuals about what one would perceive under certain circumstances given sufficient similarity of perceptual neuroanatomy. For example, I earlier communicated the length of a period of internal time by suggesting that one could think a multitude of thoughts during this period. This method of communication proves effective because many similar thought processes--even if affected by either of the imaginary drugs which alter one's  $time_i/time_e$  relation--are presumably intuited as taking the same amount of  $time_i$  throughout all persons and throughout all of these persons' mental states. These thought processes provide a point of comparison. For our definition of detail, I will thus define the size of details relative to an arbitrarily specified visual perception--the smallest detail one can constitute. The size of this detail is constant across all persons due to sufficient similarity of perceptual neuroanatomy. This smallest possible detail is not to be equated with the smallest possible visual perception (if such a thing even exists). Thus, if a perception is of low sharpness, then the size of the smallest simple detail it actually exhibits may be specified, for example, as being roughly 40 times greater than that of the smallest possible detail.

One might wonder how we define the word "detail". Since any perception can be assessed as having a degree of sharpness, nothing inessential to perception must be considered in such a definition. This fact leaves merely the content of perception at our disposal. I will thus define "detail" as an area of one's visual field differentiated from the surrounding area through the homogeneity of its content. This definition implies a couple of interesting facts. First, details gradually "drop-off" in cases in which the brain moves from constituting a more sharp to a less sharp perception. For example, imagine that in aesthetically appreciating the penmanship of a book, I perceive the ink blotches that form the letters of its pages. If I were to begin reading the pages, the perceptions of ink blotches would disappear. My brain would constitute in their place a relatively unvariegated perception--in this case, of solid black. In other words, my perceptions of the letters would become "cartoonized". This process could occur by the brain "filling" in the shape of the letters in a similar way to how it routinely fills the hole in our visual field called the blind spot. Now, one might wonder why introspection would not immediately evince the "cartoonization" of perceptions. To explain, it seems that a reduction in the degree to which we attend to our perceptions (e.g. by applying concepts to them or encoding them into memory) always accompanies a reduction in vivacity. For example, in talking with a friend, I might perceive the color of her blouse but nonetheless fail to attend to this perception due to its low vivacity. In such a case, I would not immediately forget its color

but indeed would never form any belief about the blouse in the first place.

#### IV. Modulations on Vivacity & Concluding Remarks

Now that we have inspected the notion of sharpness, I will explore its causal underpinnings and how this notion figures into absorption writ large by first organizing this exploration through a fresh round of underlined enumeration. Since the particular sharpness of a sensory perception depends solely on its content, the factors that determine this content will in turn modulate sharpness. In the case of optical perception, all of these factors seem to be properties of retinal information, or how the brain uses this information, since retinal information directly feeds our visual perception. Here, the term “retinal information” signifies information about incident light sent from the retinas to the occipital lobe. To clarify, the quantity of this information remains constant regardless of whether or not I’m wearing contacts,<sup>6</sup> for example, although the brain may not use all of this information to constitute my perception. The content of the information merely differs depending on the presence of these lenses. Retinal information causally suggests a lower degree of sharpness whenever its content is less pragmatic (and vice versa), since a myopic person, for example, would not usually pay much attention to what the eyes perceive, given that myopic eyes do not pragmatically perceive. Thus, the pragmatics of retinal information is our first factor. Furthermore, the degree of variegation in retinal--our second factor--sets an upper-limit<sub>A</sub> to sharpness, although not to liveliness. For instance, the total lack of variegation in the retinal information resulting from looking at a black, un-textured wall (or a similar wall of any other solid color, for that matter) would preclude the possibility of perceiving this wall with any degree of sharpness. As an entailment of this factor, an extremely high or low amplitude of light incident on the retina decreases the possible sharpness of the resulting perception since the mediating retinal information begins to resemble that of the previous case (i.e. the case of looking at an unvariegated wall). Thus, brightness suggests a certain degree of sharpness. Similarly, myopia may actually decrease the upper-bound of sharpness to the degree that it decreases the variegation in retinal information by “blurring” instead of “scrambling” light.

An elucidation of the subsequent two factors will require two different concepts of resolution--optical and retinal. Optical resolution is the degree to which the eyes focus light upon the retina as it should.

A change in optical resolution modulates vivacity through factor number 2. Retinal resolution is itself

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<sup>6</sup> Given that a photo-receptor stimulates the occipital lobe to the degree to which it detects light, an operable photoreceptor is always sending the same amount of retinal information to the occipital lobe regardless of how much it stimulates the occipital lobe since each degree of the absence of light makes for just as much information as each degree of its presence.

broken into two further types each of which is a further factor. The first of these types is a physical property of the retina that as such does not depend on whether or not the retina is currently operating. A retina has this sort of retinal resolution (hereby abbreviated PRR for Physical Retina Resolution) in virtue of the number of its operable photo-receptors. This number (i.e. PRR) is our third factor which modulates sharpness. It provides an upper-limit<sub>B</sub> to the quantity of retinal information the occipital lobe can receive and therefore to the sharpness of the resulting perception. After all, if an occipital lobe has little information with which to constitute a perception then it could not possibly constitute features of any significantly small size since the information that describes these features does not exist, and the occipital lobe needs this information to so constitute. As follows, an increase in the number of available photo-receptors allows a more vivid visual perception (and vice versa).<sup>7</sup> Indeed, this observation helps to explain the low upper-limit<sub>B</sub> on the sharpness of our peripheral vision relative to the center of the visual field since the center is more densely fed by photo-receptors. Finally, note that the upper-limit<sub>B</sub> is always above or level with upper-limit<sub>A</sub> but never below any other limit. The second sense of retinal resolution, furthermore, concerns the number of photo-receptors the occipital lobe actually processes (hereby abbreviated ORR for Occipital-Retina Resolution). The brain, for instance, might neglect most of the information sent from the photoreceptors in a relatively mundane situation. In this case, the remaining number of photo-receptors that it actually processes would correspond to its ORR. This negligence--our fourth factor--causes a particular degree of sharpness and figures into explanation as to why it obtains rather than other degrees of sharpness.<sup>8</sup> However, it provides in general only a small part of the overall story. To elucidate, the

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7 Our faculties of recollection and imagination form perceptions. These perceptions nonetheless pose no contradiction to PRR's limiting a perception's sharpness. As John Locke suggested, these perceptions depend for their formation on the use of perceptions formed by a third faculty- i.e. the use of perceptions of objects present at the time of perception. These primary perceptions act as building blocks for other perceptual faculties. Thus, all perceptions connect back in some way to the eyes such that the constrictions on sharpness applied by the retinas carry over from primary perceptions to perceptions involved in imagination or recollection.

8 This essay treats two different kinds of memory: short-term and long-term. The latter kind undergoes the normal process of encoding and retrieval. All memories referenced in this paper are long-term unless otherwise stated. The former kind is like the after-glow of perception. It lasts for just a while. It may be that short-term memory is used in the active processing of reality; our brain could play around with sensory information long after its arrival, cutting back on processing needs by avoiding having to start from scratch. According to this hypothesis, much of the perceptions which you might believe your brain is constituting from a direct sensory feed to the world were actually constituted from relatively old information. To a degree, we recollect our short-term memories when seeing. Scientists have experimentally shown that THC and synthetic cannabinoids stunt theta wave oscillations (in the four to 12 hertz range) critical to short term memory (Lee) through impairing glial astrocyte cells. Salk researchers (Biello) also found that rats spent significantly longer looking at familiarized objects due to short-term memory impairment. These findings fit with the above hypothesis; it could be that THC thereby forces the brain to constantly refresh perception with sensory information due to its impairment of the short-term memory input such that the vivacity of perception increases. After all, this behavior mirrors the visual stagnation caused by highly vivacious and stunning visual perceptions in humans. The prescribed relationships among ORR, attention, and sharpness may therefore begin to loosen due to the supplementation of retinal information by short-term memories at low degrees of vivacity. Thus, my theory

position of a dial might cause the particular temperature of a stove, but it itself says little (although something) about how the temperature change occurred. One would have to gut the stove in order to provide this explanation sufficiently. Similarly, how the occipital lobe gets from retinal information to the perception remains largely a mystery.

With all this established, it still remains to be shown why absorption in action excludes sensory vivacity. It may help to further inspect the causal underpinnings of absorption. It all begins when the occipital lobe (here focusing on sight) receives sensory information from the retinas and uses this information to constitute a visual field whose sharpness is determined by the manner of constitution (specifically, by the portion of sensory information actually used). In the case of absorption in action, sensory areas of the brain then send the information they have newly formatted to other parts which use this information as a means towards performing activities directed towards some object of attention. For example, my frontal cortex may go about understanding a lecture through using the information it receives from the auditory cortex. Since absorption in action demotes sensory information to a mere means towards the end of engagement, the brain therefore only needs to constitute as much detail as would prove necessary to further its ends. This amount proves small enough as to ensure the low vivacity of the produced perception. After all, one doesn't need to see every follicle of Joaquin Phoenix's mustache in order to engage in the movie "Her". In principle, the brain could have the capacity to constitute these details even despite their uselessness towards the ends of engagement (e.g. enjoying the movie). My repeated introspection evinces that this capacity does not exist at least for sophisticated ends of engagement such as reading. Neuroscience may help to explain the lack of this capacity. As Rosen notes in her article (Rosen), the brain's ability to multitask is largely a myth. In reality, the brain simply switches from task to task when seeming to perform multiple higher-level processes simultaneously. In some cases, this inability may be due to different higher-level processes requiring the separate use of a single part of the brain. The processes of constituting high vivacity perception and engaging in sophisticated ends each cost much attention and qualify as higher-order. I thus believe they cannot be done simultaneously.

Part of the value of knowledge in philosophy of mind is that it facilitates our mastery over our own cognitive faculties. The theory of absorption, for example, entails that if attention shifts away from

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of the modulations on sharpness should be viewed as an approximation for vivacity's upper degrees, and indeed, these are most important for considerations of absorption in experience. Another essay would be required to account for the sharpness of memories and their supplemental role.

the senses to the pleasure resulting from absorption in experience, then absorption in experience will diminish due to the diminishment of what it requires--namely, attention to the senses. As the source of pleasure diminishes, the pleasure will, by extension, also diminish proportionately. Therefore, absorption in experience is most pleasurable and long-lasting when done for itself, and knowledge of this fact is a helpful means towards the end of pleasure. Additionally, note a quirk of the example of absorption I first gave in this paper; in sex, one processes sensory information as a means towards the action of producing further stimulation for both partners although both the initial and secondary stimulation are also paid attention as ends in themselves. It was just established, however, that one cannot pay a high degree of attention to one's senses while engaged in higher-order actions due to neurological limitations. Therefore, sex must switch in between the different types of absorption temporally in order to exhibit both. This "switching" could play-out as a sort of tag-teaming whereby each flavor accentuates the other in a way similar to how I often find it pleasurable to indulge the senses after having worn-out my frontal lobe by engaging it in the action of reading a difficult book. Thus, sex seems to be one of a special class of dual-natured activities.

I have here distinguished the parts of vivacity, pried apart our notion of vivacity from similar concepts, inspected the features of absorption as first intuited, and explored the causal relationships between these features. Herein, we described the mechanisms by which we intuit time and determined that subjective time dilation occurs as illusory effect of variations in memory encoding. Finally, we clarified our concept of sharpness, found four modulating factors, gestured at how it might be that absorption in action excludes high sensory vivacity, and found practical applications of absorption. Thus, a comprehensive picture of absorption emerges. Though it sets aside yet another portion of the brain's mystery, only a gain in our understanding results, which, lent by the brain itself, should only inspire yet more awe.

## Bibliography

- Biello, David. "Marijuana's High Times Not Memorable with Neurons Out of Sync." *Scientific America*. 20 Nov. 2006. Web. 11 Mar. 2015.
- Hume, David. *An Enquiry Concerning Human Understanding*. Vol. XXXVII, Part 3. The Harvard Classics. New York: P.F. Collier & Son, 1909–14; Bartleby.com, 2001. [www.bartleby.com/37/3/](http://www.bartleby.com/37/3/).

- Joshua J. New, Brian J. Scholl; Subjective time dilation: Spatially local, object-based, or a global visual experience?. *Journal of Vision* 2009;9(2):4. doi: 10.1167/9.2.4.
- Lee, H. S., A. Ghetti, A. Pinto-Duarte, X. Wang, G. Dziewczapolski, F. Galimi, S. Huitron-Resendiz, J. C. Pina-Crespo, A. J. Roberts, I. M. Verma, T. J. Sejnowski, and S. F. Heinemann. "Astrocytes Contribute to Gamma Oscillations and Recognition Memory." *Proceedings of the National Academy of Sciences* (2014). Print.
- Rosen, Christine. "The Myth of Multitasking." *The New Atlantis* 20 (2008): 105-10. Winthrop University. Web. 15 Feb. 2015.
- Treisman, Michel, Andrew Faulkner, Peter Naish, and David Brogan. "The Internal Clock: Evidence for a Temporal Oscillator Underlying Time Perception with Some Estimates of Its Characteristic Frequency." *Perception*. 1990 ed. Vol. 19. Pion Limited, 1990. 705-743. Print.
- Tulving, E., and Hans Markowitsch. "Episodic and Declarative Memory: Role of the Hippocampus." *Hippocampus*. 3rd ed. Vol. 8. Wiley-Liss, 1998. 198-204. Web..
- Wiseman, Michael C. "Confabulation, Repression, and Memory Replacement: Remembering Creatively ." *Student Pulse* 2.10 (2010). <<http://www.studentpulse.com/a?id=300>>

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# Francisco Suárez's Defense of Substantial Form and the Reification of Matter

by Garry Moore Soronio

## Abstract

The paper will explain Francisco Suárez's substance ontology, and maintain that his defense for Scholastic metaphysical principles of substantial form and matter was successful against detractors. First, I will lay out the objections against and Suárez's rigorous defense for the existence of substantial form. Second, I will provide Suárez's sophisticated exposition of substantial form and matter that is faithful to the general understanding of these concepts in Scholastic worldview, yet modified to avoid the objections mentioned above. He particularly reified matter and introduced more ontological density to it. Third, I will explain that for Suárez, substantial mode of union is the principle of unity for matter and form, rather than existential union as a consequence of his modification. Finally, I will sketch a brief evaluation regarding the success of Suárezian substance ontology in salvaging Scholastic intrinsic principles without compromising them to mechanist detractors.

The Silver Age of Scholasticism had its apex in the Iberian Peninsula having for its premier champion, the Jesuit "Doctor Eximius" (Excellent Doctor) Francisco Suárez (1548-1617).<sup>1</sup> Suárez advanced Scholasticism systematically, modifying some of its fundamental metaphysical notions like form and matter to make Scholastic metaphysics more robust and formidable against detractors.<sup>2</sup> Scholasticism became

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1 Francisco Suárez, a leading figure in the School of Salamanca, is one of the first Scholastics to write a systematic exposition of Aristotelian metaphysics that is not in a form of commentary to Aristotle's *Physics* and *Metaphysics*. It is a nuanced and sophisticated account that has its pros and cons, one of the cons would be that readers need not look for the original accounts and primary sources of Aristotle, et. al. because issues are explained comprehensively without much recourse to them. Reading the original accounts would permit a more lively and different interpretation than the one presented, and gives the notion of Scholasticism as being less dogmatic than it is accused of. His fifty volumes of *Metaphysicae Disputationes* (Metaphysical Disputations 1597) among many publications became very influential and widespread, even as textbooks in universities.

2 Aristotelian hylemorphic substance-based ontology was adopted by the major philosophers in the Middle Ages, and an entire philosophical system was built from it: Scholasticism. Aristotle sought to break the counterintuitive impasse in the Eleatic school, particularly of the clash of views between Parmenides and Heraclitus. For Parmenides, being is permanent, for if there is already existence, then anything that comes to be, will be; but there is already being, so it already is. Hence there is just one being that is permanent and change is illusory. Heraclitus on the other hand claimed that everything just is in constant change, hence he is known for claiming that you cannot step on the same river twice. A universal flux theorist would side with Heraclitus into denying permanence, for what is constant just is change. Aristotle avoids the fork and claims that the basic ontological units of reality, substances, are composites of the principle of permanence and the principle of change, whereby, in a change, there is the instantiation of form (*morphe*) and the suppositum of change is matter (*hyle*). While there is a persistent existing principle throughout the change, there is a change that occurs, and that is the cessation of instantiating a particular form (substantial or accidental) and an instantiation of another form which was once a privation or absent to the substance. In determining therefore what reality is constituted, Aristotle's answer would be substances, made up of matter and form unities, hence the name hylemorphism.

the main school of philosophy in universities throughout Europe (hence the name Scholasticism). It was only challenged with the rise of Humanism in the Renaissance and the developing mechanistic worldview outside of the universities in the early modern era. The Silver Age of Scholasticism in the seventeenth century was followed by a revolution of the mechanistic philosophy and enmity against Aristotelian system.<sup>3</sup> Whereas the Golden Age of Scholasticism in the thirteenth century was followed by enthusiasm for rediscovering the original works of Aristotle and building up a system from its inspiration, even synthesizing all Western patrimony around it, as its paramount expositor, the “Doctor Angelicus” (Angelic Doctor) St. Thomas Aquinas (1224-1274) did. But the attacks that were supposed to deliver the death blow to Scholastic metaphysics were thoroughly dealt with by Suárez. Most of these are aimed to reject the reality of its major distinctive principle: the substantial form. Although in order to avoid the problems raised by the opposing side, he re-conceptualized matter and form. Suárez refuted the most serious objections against the existence of substantial form, expounded a modified notion of composite substance by reifying form and matter, and advanced the notion of substantial mode to account for the essential unity of the composite substance to uphold the truth of Scholastic metaphysics.

In this paper, I will map out Suárez’s account of the intrinsic principles of a material substance and maintain that his defense for Scholastic metaphysics was successful against detractors. First, I will lay out the objections against and Suárez’s rigorous defense of the existence of substantial form. Second, I will provide Suárez’s sophisticated exposition of substantial form and matter that is faithful to the general understanding of these concepts in the Scholastic worldview, yet modified to avoid the objections mentioned above. He particularly reified matter and introduced more ontological density to it. Third, I will explain that, for Suarez, essential unity is the principle of unity for matter and form, rather than existential unity as a consequence of his modification. Finally, I will sketch a brief evaluation regarding the success of Suárezian substance ontology in salvaging Scholastic intrinsic principles without compromising them to mechanist detractors.

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3 The Golden Age of Scholasticism in the thirteenth century dominated the universities of Christendom, of which the primary concentrations are in Paris, Oxford, Cambridge and Rome, while the Silver Age of Scholasticism during the Counter-Reformation is concentrated primarily in the Iberian belt of Salamanca, Alcala, Coimbra and Rome. For a thorough distinction of the two ages of Scholasticism, see Trentman, John “Scholasticism in the Seventeenth Century,” p. 818-837, Cambridge History of Later Medieval Philosophy, ed. by Robert Pasnau, Anthony Kenny, et. al.



## I. Preliminary: Scholastic Metaphysics and Mechanistic Metaphysics

Before diving into the debate on substantial form and matter, let us first understand the basic principles of Scholastic metaphysics which Suárez is defending in his day. This will help us compare its basic commitments, in contrast with the mechanistic metaphysics of early modern philosophy.

What is reality constituted of? What are the basic furniture of reality? There are three main ontologies: nihilistic, whole-oriented or giving priority to the whole, and parts-oriented or giving priority to parts. Ontological nihilism posits that reality does not exist or there is nothing at all. This is a very counterintuitive position and it makes sense to say that one would only be a nihilist if the other alternatives fail or do not make sense. The ontology that puts logical or ontological priority to parts has two main systems. The bundle theory and the bare substratum theory. The bundle theory posits that a thing just is the bundle of sets or properties that it has. Hence it is called ultraessentialism since if a thing just is a bundle of properties, then every property which constitute the thing is essential to it. If individual X is just property X<sup>1</sup>, property X<sup>2</sup>, and property X<sup>3</sup>, then every property is essential to its identity. If it changes one of its properties, X<sup>1</sup> to X\*, then it is not individual X anymore because it is a collection of different properties. That makes my black hair as essential to my rationality, which is counterintuitive. Among the objections to this that James Van Cleve raised is that this position is committed to Leibniz's Principle of the Identity of Indiscernibles (PII) to be a necessary truth.<sup>4</sup> But there are conceivable counter examples like Max Black's universe where two black iron balls indistinguishable from each other exists.<sup>5</sup> Bare substratum theory on the other hand suggests that concrete things have within itself a basic substrate which it retains when denuded of all properties; this bare entity underneath which literally bears all other properties but has an identity independent of them. It is lacking any essence. The bare substratum is not affected by the attributes that hinged on to it; hence all clinging attributes are extrinsic to the core of the object. Substratum theory, in maintaining that nothing of the properties and attributes are essential to object's function, is antiessentialism. But an objection looms in that, bare substratum is just another bundle theory, for the bare particular is just another property—the property of holding other properties together. As such, it ultimately reduces to bundle theory, and it will be as vulnerable to the same objections against bundle theory. The common sense view is the ontology that gives priority to wholes, which is the Aristotelian-Scholastic

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4 Van Cleve, James, "Three Versions of the Bundle Theory," 96, *Philosophical Studies* Vol. 47, No.1, 1985.

5 See Black, Max, "The Identity of Indiscernibles." *Mind* Vol. 61, No. 242, Oxford: Oxford University Press 2010.

substance ontology. The position does not claim that there are no parts, but that the parts presuppose the whole, and parts are parts of a whole—the substance. This is called essentialism. and this is the ontology that we will discuss.

Scholastic metaphysics sought to provide an account of what reality is by knowing its causes, and the most distinctive feature of this substance ontology is that matter and form are the constitutive causes of substances. For a Scholastic, as for Aristotle, substances are the basic ontological unit of reality. Substances are particular wholes like you, me, my mother, your hippopotamus, this oak tree or that giraffe—in a word, sortals. In general, substances are those beings that do not depend on anything for their existence, in contrast to beings that belong to non-substantial categories, e.g. accidents, which rely on or depend on substances for their existence. Standard Scholastic ontology builds on the Aristotelian framework that there are four causes that serve as explanans for the being of a substance: efficient, material, formal and final causes. A mechanistic worldview reduces the final and formal causes into efficient and material causes.<sup>6</sup> Hence the formal and final causes are distinctive features of a Scholastic worldview.

Basically, a Scholastic ontology is hylemorphist: hylemorphism is the view that substances are composite unities constituted by matter (material cause) and form (formal cause) as their metaphysical parts. A mechanistic metaphysics rejects the existence of form, but claims that a corporeal being is only matter in motion. To represent the Aristotelian-Scholastic view in contrast to the mechanistic, I will use Aquinas (whom I choose because Jesuits have a mandate from their order to specifically and solely endorse Thomism).<sup>7</sup> Matter is the principle of potentiality, while form is the principle of actuality. Form gives being (*forma dat esse*) to something. Substantial form is that which gives substantial being to something. A form therefore is that which channels being to matter (pure potentiality), and gives it an act of existence. That matter and form are the two-fold composition of substances does not mean that substances are “complexes of two or more actually existing components, but rather complex entities made actual by the presence of form to something otherwise existing merely in potentiality, namely matter.”<sup>8</sup> Substance as

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6 Each mechanist thinker in early modern philosophy has his own account of reducing form and finality (teleology) to simply matter in motion. For a survey of mechanist philosophers, from Johannes Kepler, Galileo Galilei, Rene Descartes, Thomas Hobbes, Robert Boyle, Isaac Newton, et. al., see Burt, E. A., *The Metaphysical Foundations of Modern Science*, New York: Dover Publications 2003.

7 The superior generals of the Jesuits (Society of Jesus) decreed as a rule for Jesuits to teach and propagate exclusively and proactively the teachings of Saint Thomas Aquinas. See Ariew, Roger, “Descartes and Leibniz as Readers of Suárez: Theory of Distinctions and Principles of Individuation” in *The Philosophy of Francisco Suarez*, ed. by Benjamin Hill and Henrik Lagerlund, Oxford: Oxford University Press 2011.

8 Shields, Christopher, “The Reality of Substantial Form: Suárez, *Metaphysical Disputations XV*,” p. 44, in *Interpreting Suárez: Critical Essays* ed. by Daniel Schwartz, Cambridge: Cambridge University press 2012.

a hylemorphic composite can have integral parts therefore, which are the corporeal constitutive parts that build up the physical body of a substance.<sup>9</sup> The oak tree, for example, has integral parts (in contra-distinction to its metaphysical parts of form and matter) like the branch, trunk and leaves, and the leaves can still be composed of lesser integral parts of blade, veins, stipules and petioles.<sup>10</sup>

The tendency of the mechanistic position is to identify the principle of matter with the integral parts of the material substance, as though matter is the principle of corporeality. Later, it will be seen that Suárez's account of matter seems to make the transition of matter as the principle of potentiality to become more like the *res extensa* of Descartes, hence the allegations of the Thomists that Suarez provided the occasion to usher in the mechanistic philosophy. But such an accusation seems unfair to Suárez, who had exerted every effort to uphold the flagship of Scholasticism at the most crucial time. His reputable works on metaphysics defended among others, the reality of substantial form as we shall see, at an age most hostile to it.

## II. Suárez's Defense of Substantial Form against Objections

Suárez debunks the problems forwarded to discard the Scholastic enterprise; rather, he in fact provided far more rigorous objections against the existence of substantial forms and disarmed them with sophisticated rebuttals. Many of the detractors of the Scholastic *weltanschauung* simply deny the existence of substantial forms with outright snobbery without a clearly robust jab. René Descartes, for example, admits that he lacks knowledge regarding the theory of substantial forms, and without any sign of remorse for the ignorance, seems dismissive of it as dubious.<sup>11</sup> He posits a stronger objection in *Le Monde* that heat can be accounted for by the extended matter that produces fire, hence to posit a substantial form would point to a case of double causation. John Locke on the other hand merely repudiates substantial forms as a confused idea and at best, unintelligible.<sup>12</sup> Others simply dismissed them as occult. But Suárez posited the three most serious and primary arguments against the existence of substantial forms.

### A. First Objection: Substantial Form is Non-Observable and Superfluous

The first reason to doubt the existence of substantial forms that Suárez accommodated is that they

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9 Pasnau, Robert, *Metaphysical Themes 1274-1671*, p. 7, Oxford: Oxford University press 2011.

10 Joseph Bobik asserts that the downfall of Aristotelian natural philosophy or science does not necessarily point to the downfall of Aristotelian metaphysics, because a science grounded on empirical and observable data, which is a study of the structure of integral parts, is complementary to Aristotelian metaphysical framework. He even harmonize Aristotelianism with quantum mechanics. See Bobik, Joseph, *Aquinas on Matter and Form and the Elements: A Translation and Interpretation of the De Principiis Naturae and the De Mixtione Elementorum of St. Thomas Aquinas*, p. 12-14, Notre Dame University Press 1998.

11 Descartes, René, *The Philosophical Writings of Descartes Vol. III*, trans. by Jon Cottingham, p. 122.

12 Locke, John, *An Essay Concerning Human Understanding*, bk 3, ch 6, s 10, Oxford: Clarendon Press 1975..

cannot be known from experience and are not necessary to give an account for the changes we perceive in things.<sup>13</sup> (This sounds like the Cartesian objection above.) This can be divided into two separate arguments. One is that, there is no reason to believe that there are substantial forms because we have no experience of them, or experience that is sufficient reason to establish that they exist. Unless a positive case is made for the existence of something, then that thing does not exist, for “they should not be posited without sufficient reason.”<sup>14</sup> The argument goes as follows:

1. The existence of something is established, only if there is a positive case to be made for its existence based on experience.
2. There is no positive case to be made for the existence of substantial forms based on experience.
3. Therefore, substantial forms do not exist. (1, 2 MT)

Premise 2 depends on the availability of data from experience in order to ascertain the existence of substantial forms. But one can discern an Achilles’ heel in P2. It assumes that only those which can be perceived directly, or those which are tangible, exist and are real. But this assumption can be denied, for many entities can be contended to be real even though they are not directly perceived, like knowledge, virtue, numbers, and the like. Tangible entities can be known not by sensations. Hence Suárez denies the aforementioned assumption in order to argue for the existence of something that is not directly experienced and perceived—the substantial form.

Suárez argues for the existence of substantial forms as inferred entities; though they cannot be directly experienced, they can be inferred.<sup>15</sup> Of this, he provided demonstrations for the existence of substantial forms. It is enough to reproduce one to make the point that non-observable entities can be known to exist by reasoning. He argues based on the existence of corporeal beings with privileged unities, i.e. substances that are united per se, or essentially, so that a corporeal thing is not merely a collection of different properties, but must have a principle to account for the unity that holds all properties together.<sup>16</sup> Suarez claims that to speak of a substance like a human being as “an aggregation of many accidental faculties or forms... is not enough to constitute a natural thing.”<sup>17</sup> He continued, “In addition to these

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13 Suárez, Francisco, *On the Formal Cause of Substance: Metaphysical Disputation XV* (Disputationes Metaphysicae XV), s.1, 1, p. 18, Wisconsin: Marquette University press 2000.

14 Ibid.

15 Shields, Christopher, “The Reality of Substantial Form: Suárez, *Metaphysical Disputations XV*,” p. 53-54, in *Interpreting Suárez: Critical Essays* ed. by Daniel Schwartz, Cambridge: Cambridge University press 2012.

16 Suárez, Francisco, *On the Formal Cause of Substance: Metaphysical Disputation XV* (Disputationes Metaphysicae XV), s.1, 6, p. 20, Wisconsin: Marquette University press 2000.

17 Ibid., p. 21.

accidental forms there is required a form to rule, as it were over those faculties and accidents and to be the source of all actions and natural changes of the human being and the subject in which the whole variety of powers and accidents is rooted and unified in a certain way.”<sup>18</sup> Different properties have different determinations. For them to congregate together and produce one thing to be essentially, needs a principle that unifies—tradition calls the principle, a substantial form.

The second point from the first objection is that it is otiose and redundant. Given two principle, if one of the two is sufficient to account for the explanandum, then to confirm the causal agency of the second is superfluous. And if the existence of the latter is inferred on account of its causal efficacy, then the grounds for believing in the existence of the form is removed. The argument runs thus:

1. If the “actions and differences we perceive in things”<sup>19</sup> can be accounted sufficiently by matter, then the reasons for inferring the existence of substantial forms are eliminated
2. The “actions and differences we perceive in things” can be accounted sufficiently by matter.
3. The reasons for inferring the existence of substantial forms are eliminated. (1, 2 MP)

The second premise mechanists affirm, hence there is no function left for the role of substantial forms. And by the principle of parsimony, it is unnecessary to posit another principle; otherwise, we might end up affirming an anomaly, double causation: matter and form producing the same effect. But premise 2 is denied by Suárez, for matter alone, as the principle of potentiality does not have sufficient ontological density to give an account for the essences of different things. If things merely consist in matter and there is no form that provides the determination of what a thing is or will be, then there is not much difference from what we suppose as one kind of thing, in comparison to another kind of thing. It is the form that informs the subject of change or matter, in order for there to be a change of one thing into another. Substantial forms permit for there to be different kinds of things in reality. For substances like human beings’ “composition from matter and substantial form shows that there is in natural things a certain substantial subject [matter] fit by its own nature to be informed by some substantial act.” Suárez proceeds to affirm the privileged unities from human beings to other substances as well. He concluded, “All natural things, therefore, which are composed of matter as their subject are also composed of a substantial form, actualizing and perfecting that subject.”<sup>20</sup> Suárez reaffirmed the necessity of substantial forms to have a com-

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18 Ibid.

19 Ibid., p. 18.

20 Ibid., p. 21.

plete explanatory account of the changes and different essences of things. While effectively responding to the first objection, this response will shape his account of matter and form as incomplete substances.

## B. Second Objection: Concept of Substantial Form is Twice Contradictory

The second reason against the existence of substantial forms is that the concept involves a contradiction twice over. Since the substantial form is that which gives being substantial being to something and while having its own being, is “both informing and substantial,” and such a notion is incoherent.<sup>21</sup> That which is substantial does not need a sustaining subject, and does not rely on another to receive something. And that which informs another, inheres in its subject in some sense (as informing matter), and therefore is accidental. What is accidental is not substantial, and vice versa. But the concept combines both. The argument goes:

1. A substantial form is substantial or subsistent in itself.
2. If a substantial form is substantial or subsistent in itself, then it does not need or rely on another thing for it to exist.
3. A substantial form does not need or rely on another thing for it to exist. (1, 2 MP)
4. A substantial form inheres in a subject to inform it or give it being.
5. If a substantial form is inheres in a subject to inform it or give it being, then it is accidental.
6. A substantial form is accidental. (4, 5 MP)
7. If something is substantial, then it is not accidental.
8. A substantial form is not accidental. (1, 7 MP)
9. If something is accidental, it is not substantial.
10. A substantial form is not substantial. (6, 9 MP)
11. If something is both substantial and not substantial, then it has contradictory or incoherent nature and does not exist.
12. If something is both accidental and not accidental, then it has contradictory or incoherent nature and does not exist.
13. A substantial form has contradictory or incoherent nature and does not exist. (1, 10 ADD 11 MP) and (6, 8 ADD 12 MP)

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<sup>21</sup> Ibid., 18.

The nature of a substantial form therefore is contradictory and coherent twice over, hence it is impossible for it to exist. But Suárez reconfigures the concept of substantial form in order to deny that it inhering in a subject is accidental. He avoids the source of contradiction in affirming that it is both substantial and inhering in a subject. His substantial forms are subsistent so that they need not inhere, and so avoid the objection of twice contradiction. It is subsistent and the model is that of the rational soul. Simultaneously in doing so, he changed the conception of matter too, which will reify it just a little short of making it the actual corporeal “matter” of modern science.

### C. Generation of Substantial Form is Problematic

The third objection is that how will one explain the phenomenon of change in a thing, unless the substantial form comes into being from nothing.<sup>22</sup> Aristotle stated that when change occurs, the form instantiated by the substance is replaced with a new form which it has a privation of at a prior stage. A change consists of three elements: a) the form which the substance has and is going to be replaced, b) the matter which is the subject of the change and survives the change, and c) the privation or lack of form which it now instantiates in place of the previously exemplified form. So how is a form generated? Suárez explained the possibilities when a form is instantiated. Either (i) the form exists even before it is generated, or (ii) part of it exists already even before it is generated, or (iii) it is generated ex nihilo (from nothing). If (i), then an infinite number of substantial forms exist, and they are ready to exemplify themselves at any point in order to cause a change. But there is no genuine change unless there is a privation of that form that will be instantiated by the substance. Nothing new comes into being, hence not genuine but only an illusion of change. If (ii), first, it is impossible because substantial forms are indivisible, and parts of them cannot reside without the rest. Second, if form is divisible, then the other half will still inherit the same question whether it will be generated ex nihilo. So (iii) seems to be the last option, but generation ex nihilo would be “absurd and exceeds the power of natural agents.”<sup>23</sup> The substantial form discussed here is substantial form qua corporeal objects and not that of immaterial entities like angels or the human soul which he permits to be created ex nihilo.<sup>24</sup> This is the significance why he stressed the addendum that generation from nothing exceeds the power of natural agents for he is referring to material substantial forms and not immaterial or spiritual substantial forms.

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22 Ibid.

23 Ibid., 19.

24 Ibid., 51.

Suárez escapes the main thrust of the attack by positing that substantial forms are educed from matter, or brought about from the material cause of the substance. The source of the being of substantial forms is its education in matter. The material substantial form is brought into being by the bringing about of the matter and form composite, not from the matter but in the matter. Analogously, roundness is brought about when the round clay is produced not from clay but in clay. The changes from Aquinas's conception are discernible: whereas for Aquinas, matter is pure potentiality and is totally dependent on substantial form, Suárez makes material substantial form in need of correspondence with its matter, for it to be led to come about. The theory of the education of substantial forms in matter is a brilliant move of re-thinking the nature of matter and form. But in making both substantial and therefore incomplete thing-like parts, there is a price to pay. He seems to direct substance-based ontology towards the preeminence of the physicality of entities, which seems to signal a partial vindication of mechanism.<sup>25</sup> But not so, for the two intrinsic principles perform different causal explanations, which only when posited together provides a sufficient picture of essentially-different substances.

We have seen Suárez's vigorous defense for the existence of substantial forms. Let us see my observation that he was influenced by the objections so that he procures a more nuanced and distinct account of traditional Scholastic concepts. His systematic defense for it is a hoorah for Medieval Scholasticism. But the reification of substantial form and primary matter seems to provide a transitional move for mechanists. But unlike them, he saves the substantial form, which is no small matter, for by retaining it, he is salvaged from problems of mind-body interaction, diachronic and synchronic identity, Humean causation—all of which are problems that arose in modern philosophy by rejecting Scholasticism.

### III. Suarez's Reification of Substantial Form and Matter

Suárez introduced a reification of the composite intrinsic principles of a material substance. He underscores prime matter and substantial form not as principles but as incomplete parts of a substance with respective acts of being. Aquinas deems prime matter as the principle of pure potentiality of a substance, and substantial form is the act of being of prime matter, or that principle which gives being to the substance, producing a composite substance of matter and form.<sup>26</sup> Suárez on the other hand posited matter

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25 Hattab, Helen, "Suarez's Last Stand for the Substantial Form," p. 101-102, in *The Philosophy of Francisco Suarez*, ed. by Benjamin Hill and Henrik Lagerlund, Oxford: Oxford University Press 2011.

26 This is the interpretation of Joseph Bobik in his translation and interpretation of Thomas Aquinas's *De Principiis Naturae* (*On the Principles of Nature*), in *Thomas Aquinas, Aquinas on Matter and Form and the Elements: A Translation and*



as that incomplete “part” of a substance that accounts for its potentiality, but with its own act of existing to be an entity (entitative act). From matter, the substantial form is educed. The substantial form is the act of being of matter, in the sense that it makes matter fulfill its function and together with it constitute a composite substance.<sup>27</sup> Whereas for Aquinas, matter and form are intrinsic causes or principles that explain how a material thing or substance is generated; Suárez considers matter and form as like incomplete substances that together constitute a whole substance.

#### A. Matter with Ontological Density

Suárez gives matter ontological density, because it does not completely depend on substantial form to actualize it so it can have being. He disagreed with Aquinas that prime matter is pure potentiality; it is not. It is pure potentiality in its absolute sense as in-formed being, or pure potentiality qua absolute act of being. But it is not pure potentiality in relation to its specific function, or pure potentiality qua entitative act. It possesses being *secundum quid* (in relation to) its role.<sup>28</sup> Suárez clarifies its entitative act as, “That act does not provide matter with any sortal mark, but only enables it to perform its receptive function.”<sup>29</sup> This notion of prime matter falls in line with the broad understanding of matter that Aristotle referred to, “that from which, as from something innate, a thing comes to be.” It remains to be the suppositum of change and the subject that constitutes with substantial form the compound substance. Because prime matter is not absolutely dependent on the substantial form but has its own entitative act of being, it has more ontological density than the Thomist version. While Aquinas claims that even God cannot sustain prime matter in existence without the form, Suárez permits “any possibility of the substitution of a supernatural action for the substance’s formal cause.”<sup>30</sup> But giving more function and ontological mass to matter changed it enough to be the “bearer” of the accident of quantity. The causal power of God can replace the causal power of substantial form. If this is the case, it comes so close to the extended substance (*res extensa*) of Descartes, whose essential attribute is extension, and of which Galileo postulates that such a concept presupposes essential kinetic-geometric properties.<sup>31</sup> It seems like a bridge towards the edifi-

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Interpretation of the *De Principiis Naturae* and the *De Mixtione Elementorum* of St. Thomas Aquinas, p. 12-14, Notre Dame University Press 1998. In addition, M. B. Ewbank’s “The Route to Substance in Suárez’s *Metaphysicae Disputationes*,” in *The Metaphysics of Substance*, ed. by Dahlstrom D. O. makes the same claim of Suárez’s distinctive notion of matter and form in contrast to Aquinas.

27 Heider, Daniel, “Suárez on Material Substance: Reification of Intrinsic Principles and the Unity of Material Composites,” 423-427.

28 Ibid., 425.

29 Ibid.

30 Ibid., 427.

31 See Descartes, Rene, *Meditations on First Philosophy, Meditations II and IV*, and Galileo, *The Assayer*, p. 274.

cation of a matter in motion that can do the job which substantial form is supposed to fulfill. But Suárez cannot be accused of preparing the mechanistic rejection of substantial forms in favor of keeping matter alone in the picture. For Suárez, matter cannot cause the accident of extension outside the composite. For “it is the composite that receives quantity, though the reason of that reception is matter;” in the same way that the whole person is denominated as “intellectual” although the cause of the denomination “intellectual” is the soul.<sup>32</sup> The entire material substance can only have essential unity at the union of its two incomplete and substantial parts: matter and substance.

## B. Substantial Form that Gives Being to the Composite Substance

Suárez’s substantial form is the giver of existence to compound substances but not of prime matter. Substantial form is “a simple and incomplete substance which, as the act of matter, constitutes with it the essence of a composite substance.”<sup>33</sup> It is an incomplete simple substance, distinct from the composite whole of which it gives substantial being. It is the complement of prime matter. As substantial, it is not inhering in a subject as the problem earlier alluded to; and as incomplete, it preserves the dual composition of a substance by being oriented to giving an absolute act of being to matter. The point that it is an incomplete substance, like the prime matter, is to distinguish it from a complete substance that is the composite material thing. There is also a distinction between an immaterial substantial form like the human soul and the material substantial form as mentioned above. Suárez clarified, “It is true and peripatetic view that among the substantial forms some are spiritual, substantial and independent of matter though they truly inform matter, while other forms are material and so inherent in matter that they depend on it in their being and their coming to be.”<sup>34</sup> While he conjectured that immaterial substantial forms may be created directly by God *ex nihilo*, material substantial forms are educed in matter and are reliant on it for its material cause. Hence, he makes an account of how matter and form come to be united by education.

As regards the origin of substantial form, it is a false trilemma to posit whether it comes from nothing, from something simpliciter, or from something partially. Material substantial form, for Suárez, comes in something. It is educed in matter when the matter is ready. Education is the process by which material substantial form F comes into being in matter M, after sufficient conditions A are present to dispose M for the bringing about of F. It is not the bringing about of F from nothing, nor the bringing about of F from

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32 Suárez, Francisco, *Metaphysical Disputation XIV*, 3, 13.

33 Suárez, Francisco, *On the Formal Cause of Substance: Metaphysical Disputation XV (Disputationes Metaphysicae XV)*, 5, 1, Wisconsin: Marquette University press 2000.

34 *Ibid.*, 2, 10, p. 51.

something S simpliciter.

#### IV. Unity per se is Essential Union

Suarez argues for matter and form a different principle of unity as a consequence for his modification. He proposed that substantial mode of union is brought about by essential unity rather than existential unity.

Suárez advances that the union of matter and form is union per se, which for him is essential unity. There are two kinds of unity. Unity per accidens is only an analogous union. It is a loose aggregation of different entities or beings with distinct, unrelated features. An example of union per accidens is a pile of Lego blocks grouped together as one but each member has its own distinct essence. Unity per se, for Suárez is the type of unity found between matter and form. It is a union which constitutes one essential being with one identity, where every proper part is oriented to the existence, (life,) and identity of the whole. For Suárez, the union per se of form and matter does not constitute one existential union as Aquinas would put it, i.e. the existence of one act of being, by a composite substance. Rather the union of both is an essential union, where prime matter may have an entitative act of its own, and informed by the absolute act of the substantial form so that both acts together form one essence.<sup>35</sup> “Essential unity is a unity which possesses all that is necessary for having one integral and complete essence of a thing.”<sup>36</sup> Essential union permits for there to be incomplete substantial matter and form creating one essence. The mode of union of the two is a substantial mode.

Suárez also explains the causal relationship of matter and form to each other by virtue of the axiom that causes can be mutual causes—“*causae esse sibi invicem causae.*” Since matter and form are intrinsic causes, they are capable of bringing about causal efficacy to each other: form causes matter and matter causes form.<sup>37</sup> Causes in a single thing can mutually cause each other two ways: a) with respect to a single aspect or with respect to many aspects. If the causes mutually cause with respect to a single thing, then it is symmetrical causal reciprocity; if the causes mutually cause with respect to different aspects,

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35 Heider, Daniel, “Suárez on Material Substance: Reification of Intrinsic Principles and the Unity of Material Composites,” 430.

36 Suárez, Francisco, *On the Formal Cause of Substance: Metaphysical Disputation XV (Disputationes Metaphysicae XV)*, 4, 3, 4, Wisconsin: Marquette University press 2000.

37 Suárez, Francisco, *On the Formal Cause of Substance: Metaphysical Disputation XV (Disputationes Metaphysicae XV)*, 8, Wisconsin: Marquette University press 2000.

then it is asymmetrical causal reciprocity.<sup>38</sup> For Suárez, the mutual causation of form and matter is asymmetrical because while matter causes the material substantial form absolutely, prime matter only depends on the form informing it conditionally.

## V. Evaluation of Suárezian Substance Ontology

Let us evaluate Suárez's route briefly. In substantializing form and matter, he was alleged of permitting the separability of matter and form, as to make them almost independent of each other. Thomists perceive this as ushering in matter as a thing in its own right. Such a mutual "alienation" of its dichotomized parts seems to have similar strokes with Descartes's two substances, as though vindicating his mechanism. The thinking substance and extended substance are like analogues to the substantial form (for a human being, the soul) and matter with the accident of quantity. But in Suárezian ontology, this would not make sense because the substantial form is oriented towards informing the matter to produce the composite substance, and remains incomplete until it informs matter. This finality or directionality of substantial form geared towards giving being to the compound substance seals its nature to be inseparable from matter to create an essentially unified substance. The mechanist therefore is not justified to do away with substantial forms, so that Descartes himself retained it as *res cogitans*. Substantial forms cannot be divorced from matter and yet create a being with a complete unified essence, for "only by being the actuality of some matter does substantial form constitute along with the matter (*cum ea*) the essence of a composite substance."<sup>39</sup>

To a certain extent then, his metaphysical system possesses the best in both worlds. On the one hand, his substantialized matter has the strength of the mechanist matter for having more pronounced actuality. John Kronen claims that Suárezian influences were not only restricted to the Scholastics, but also to the "main currents of modern thought" in Descartes, Gottfried Wilhelm Leibniz, Christian Wolff, and even Immanuel Kant, so much so that Alasdair MacIntyre thought it fitting to assert that it is not Descartes but Suárez who "was the first truly modern philosopher."<sup>40</sup> He was truly modern not because he was a mech-

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38 Heider, Daniel, "Suárez on Material Substance: Reification of Intrinsic Principles and the Unity of Material Composites," p. 429.

39 Shields, *Ibid.*, p. 45.

40 Alasdair, MacIntyre, *Three Rival Versions of Moral Inquiry*, p. 3. And also Suárez, Francisco, *Metaphysicae Disputationes XV: On the Formal Cause of Substance*, trans. by John Kronen and Jeremiah reedy, intro. by John Kronen, p. 7. Although, Roger Ariew would not agree that Descartes was influenced by Suarez, Descartes nonetheless referred to Suárez repetitively. Furthermore, Ariew argued that while Leibniz was heavily influenced by Scholasticism in general and Suárez in particular, it was only in his early writings. See Ariew, Roger, "Descartes and Leibniz as Readers of Suárez: Theory of Dis-

anist, for he was the hero of Baroque Scholasticism. He was truly modern in being a monumental figure who provides a rationale for thinking that matter should have a stronger actuality, which the mechanists took to the extreme by identifying it with corpuscles. But he also saves the substantial form, which when rejected as mentioned earlier, leads to a fecundity of metaphysical horror and perplexity that the early modern philosophers grappled with.<sup>41</sup> Like Pandora's Box, problems arise from mind-body interaction, synchronic and diachronic identity to causation, of which David Hume is the culmination. Hume is the reductio of the rejection of Scholasticism.

Since the substantial form is the principle of unity in the substance, it does not matter whether the substance can lose or gain accidents. The substance maintains its identity synchronically and diachronically. Hylemorphic substances therefore avoid the identity problems of mereological wholes, bundle theory and substratum theory. The hylemorphic unity where the soul is the form of the body, avoids the interaction problem of substance dualism. Even Descartes realized this. Traditional morality and natural law ethics is also grounded on this metaphysics, hence essential in moral philosophy, philosophical anthropology and political theory where rights are grounded on human nature and essences of natural institutions as the family. It will have a bearing too in epistemology such as issues in externalism, and can serve as theoretical framework of classical theism in philosophical theology and philosophy of religion. Much can be said about the merits of Scholastic metaphysics but that is beyond what this paper covers.

Granted, some Suárezian notions may have served as elementary materials that could be developed by a mechanist, but that does not diminish the nuanced and robust account of Suárez in refuting the main thrusts of the opponent's objections with his modified Scholastic ontology. He sought to buttress the Scholastic framework, and his sustained erudition garnered for him a more impressive system. If he lost the fight in upholding the Scholasticism of his days, it is not in the merits of the intellectual rigor of his system. It just became out of fashion in a more empirically obsessed world of empirical science. But the success of the Scientific Revolution does not mean mechanistic metaphysics is true; that's a non sequitur.

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inctions and Principles of Individuation," p. 38-56, *The philosophy of Francisco Suarez*, ed. by Benjamin Hill and Henrik Lagerlund.

41 Ed Feser argues in *Scholastic Metaphysics* for this point that the rejection of Aristotelian-Scholastic metaphysics led to a horrendous horde of problems in metaphysics like the one mentioned. This is paralleled too in philosophy of religion, where the repudiation of Scholastic/Thomistic philosophical theology ends up in bizarre notions of God in theistic personalism, according to Feser in *The Last Superstition*. The jettisoning of Aristotelian-Thomistic ethics too, according to Elizabeth Anscombe in "Modern Moral Philosophy" and Alasdair MacIntyre's *After Virtue*, led to crisis in ethics. Ed Feser quips in Aquinas, "The fact is that a myriad of philosophical problems—indeed, many problems that have misleadingly come to be regarded as 'perennial' or 'traditional' problems of philosophy—arose only after and because of the early modern philosophers' abandonment of key Aristotelian and Scholastic notions" (Aquinas, 42).

Scholastic metaphysics can very well be equally employed in contemporary science.<sup>42</sup>

## VI. Conclusions

Rarely is there a figure that influences both sides of opposing worldviews, as Francisco Suárez did. He launched a bid for an eximious exposition of Scholastic metaphysics by a thorough defense of the three major objections against the existence of substantial forms. In doing so, he reformulated the conception of the intrinsic principles of substances. He posited how matter and form, as incomplete substantial parts of a substance, are essentially united. Suárez makes an excellent bid to salvage substantial form from being eliminated by the ontology of mechanistic metaphysics.

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In primis tibi, Domine Deus noster, omnium nostrum dator finisque noster gratias agimus. Tibi omnis gloria. Agimus quoque gratias Beatae Mariae virgini, sedi sapientiae, imperatici cordis nostri, patronaeque philosophiae. Parentes Marie Magdalene et Edgardo et sororem Mylène semper confirmantem honorificamus. Bono amico fratrique James Johnson, in studio philosophiae socio et in via veritatis cooperatore, gratias agimus, et aliis amicis et sociis propter orationes et beneficia innumerabilia, et magistro Calvin Normore, qui splendores philosophiae mediaevalis nos docuit. Omnes cum Petro ad Iesum per Mariam!

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<sup>42</sup> To offer a promising account of how Scholastic metaphysics can be espoused with modern science is beyond the scope of this paper. But contemporary philosophers of science and Medievalist philosophers are working on it. Joseph Bobik, (et. al.) provides an account of how prime matter and quantum physics are compatible, while Nancy Cartwright, (et. al.) are resurrecting the need for final causes or teleology in the sciences and William Wallace and David Oderberg are showing how Aristotelianism can explain contemporary sciences.



