The Necessity of Abstraction

Much debate has taken place over the abstract-concrete distinction and whether abstract objects can exist. In short, it is widely believed that there are two categories into which all things can fall. There are concrete objects, known as "concreta"; and abstract objects, known as "abstracta". The belief in (at least one) abstracta is a platonist position, and the objection to abstracta is a nominalist position. Concrete objects are said to be real material objects that exist in the external world. Examples include the laptop I used to write this essay, the place you are in as you read it, you as a person, etc. Concreta are specific objects which exist in space and time and can exhibit causality. Generally, abstracta are viewed as the antithesis, they are ideal and mental objects, which do not exist in space and time and do not exhibit causality. Numbers, beliefs, the name Peter (as opposed to a Peter you know), the colour red, are all said to be abstracta. While subtle variations of this have been drawn, the above explanation outlines the standard consensus on the topic. In this essay, I will outline how this distinction upon further evaluation is fundamentally incorrect in its presuppositions, and with the aid of a revised perspective illustrate the necessity of abstracta in our lives. I will draw on empirical findings from psychology and neuroscience to demonstrate that abstraction is a key feature of everyday consciousness which boasts numerous benefits in how we perceive and conceive of ourselves and the world, and I will ground these evidentiary claims in phenomenological theory.

The problem of abstracta has been greatly misconstrued by philosophers in recent times, in part because several methods have been employed, most of which have arguably produced a greater rift in the consensus. The Way of Negation is one method by which philosophers try to distinguish the characteristics of abstracta by what they lack in comparison to concreta (Lewis, 1986, p.83). This approach has met much opposition as it attempts to delineate the differential features of abstracta by the affixation of specific criteria. Causal inefficacy, non-spatiality and non-temporality, and mind-independence are offered as determinants of abstracta. If we take these to be the defining features of abstracta, then how can we explain that my knowledge of the Pythagorean theorem causes me to approach triangles with a particular perspective? The existence of this supposed inexistent object (the theorem) directly causes me to view triangles in a certain light. Furthermore, even if the theorem is an abstracta, it had to be first realized in a specific place (Ancient Greece) and at a specific time (c. 570-495 BC). Lastly, an abstracta must be mind-independent, this criterion is more difficult to refute. The typical argument against mind-independence begins with the thought-experiment: if every conscious being died right now, would the Pyhtagorean theorem still exist? One can argue that the theorem is one explication of a fundamental relation which is inherent in all right-angled triangles, or conversely, that the theorem outlines only a feature of our level of experience of right-angled triangles. I find this last criterion to be inconsequential, the metaphysical aspect of the theorem's existence is unknowable.

It falls into the common trap of positing a third realm, in which something ought to exist, yet the existence of such we can never hope to substantiate.

Take an orange and the evening sun, for example, they share a similar hue, we see them both to be orange and we intuitively categorize them as such. The problem of abstracta arises in its most impenetrable form when we consider that these two concrete objects, the orange and the sun, both exhibit the same colour because they share in an ideal orange-ness, a mind-independent universal which appears to be present in some objects (orange objects) and absent in others (non-orange objects). This approach can never yield results because it grasps at the unknowable, any claim for or against the existence of such an abstract object is pure conjecture. Does orange-ness exist if no one perceives it? You may think yes, no, or maybe; but the reality remains that it is irrelevant to whether my perception of an orange object is orange or not. I shall return to the question of universals later in this essay, for now let us limit our investigation of the abstract-concrete distinction to a consideration of conscious experience, a phenomenological inquiry, then we can begin to make evidentiary claims about abstracta for us as living, experiencing, thinking beings. By narrowing our focus, we can leave the metaphysical stalemate to one side and proceed with an investigation of abstracta as they appear experientially, and not as they ought to be in some lifeless world.

Franz Brentano reinvigorated the medieval concept of the mind's "intentio"; and deemed intentionality to be the defining characteristic of consciousness. This refers to the fact that all mental phenomena exhibit an 'aboutness', they are always directed toward something or other. To think - something must be thought about; to judge – something must be judged; to loathe – something must be loathed, and so on. Physical phenomena do not have this quality of directing the mind toward an object. Whilst physical phenomena can possess numerous properties (colour, depth, taste, volume) they are always self-referential, directing us back to the objective phenomena itself. They are within the limits of that object, whereas intentionality is the limit of all experience. Brentano's intentionality thesis outlines the projection of an act of thought to its intended object. Intentionality can thus be visually represented as an arrow emanating from the act and culminating at the object (Jacquette, 2004, p.101). This referential connection delineates what the thought is about, singling it out in one's awareness. This process can also be self-reflexive and involve a double judgement as when we think about something, we can also be aware of our own thinking of it. For Brentano, this seemed to suggest that intended objects are contained within their respective acts.

This is the immanence theory of intentionality. What Brentano meant by immanent object can be outlined as follows; should I desire a cup of coffee, and an actual cup of coffee is the intended object to which I am directed, this act also contains an inexistent object, in that the intended coffee does not need to be concrete. Whether, in my desiring, I intend toward a particular coffee before me, or to the category of coffee, is not important – my desire exists in either case. And, this latter

categorical intention is held within any specific desire for one instantiation of coffee. This thesis received much criticism and was later abandoned by Brentano for fear of espousing an epistemic idealism which did not conform to his revised reistic ontology. The main shortcoming of the immanence theory of intentionality is that its ambiguity culminates in a manifestation of the problem of "qualia". If intended objects are intrinsic to the mental phenomena by which they are intended, this presupposes that no two individuals can think of one and the same thing. Thus, we are struck by the adumbration that some unclarified process is employed through which an internal mental state extends to concrete objects in the external world.

Though Brentano eventually denounced the immanence of intentionality, the concept resonated with other philosophers who agreed that within intentional experience there can exist a kind of abstraction. Brentano's fault was locating the inexistent object within the act of thought itself. Twardowski and Husserl recognized this error and redefined what is meant by the act, content, and object so that intentional experience might be better investigated. In *On the Content and Object of Presentations*, Twardowski revises Brentano's thesis and reassigns the immanent component of presentations to the category of content, from that of object. With this amendment, Twardowski argues that the content of the presentation is immanent and located within the psychological state (1977, p.27). The object comes to be known through the content of the intentional act and remains: "transcendent… simply in the sense of being mind-independent, with an extra-psychological semantic and ontological status, whether existent or non-existent" (Jacquette, 2004, p.112). Similarly, Husserl restructured the intentional sequence to emphasize the content, which he relabelled the "noema". For Husserl, the content is what facilitates object-directedness, even if the object does not exist (Tieszen, 2005, p.186)

The Way of Abstraction, as outlined by Lewis (1986, p.85), boasts the greatest potential to finally put to rest the problem of abstracta. Abstraction is the mental process which facilitates the formulation of novel ideas through the consideration of various objects and ideas and the omission of their distinguishing features. In the same way that we derived the universal of orange-ness from the sun and an orange in the example above, one might abstract the idea of roundness from a football and an apple. Typically, this approach attempts to categorize an object as abstract if it has been constructed through abstraction, i.e., the object has been conceived through the deduction of a commonality among a group of distinct objects. This definition of abstraction can be elaborated upon to include perception itself, as we are constantly experiencing a huge variety of changing sensations at any given moment, yet from this vast influx of information we perceive distinct individual objects. Used in this way, Richard Tieszen has defined abstraction as "not attending to" something (2005, p.190), as sensory objects are instantaneously differentiated from one another without the need to pay attention.

Much of the criticism directed toward theories which incorporate abstract objects stems from a misconception about the abstract-concrete distinction. It is possible, with the aid of psychological findings to illustrate that the way in which we conceive of abstracta and the way in which we perceive concreta are not as dissimilar as we might presuppose. Concrete objects can possess a multitude of properties that may be perceived across sensory modalities. If we take the example of a bird in flight, a possible compilation of its attributable properties might begin as follows:

Shape, height, width, length, texture, and colour (of its body); volume, tone, and pitch (of its caw), speed, direction, position and angle (in space as it flies), etc.

This brief list excludes far more than it names and lists data that would be perceived by only two of our senses. Yet from this list, we can already begin to see the myriad of information that is contained in but a single instance of a concrete object. How our minds can perceive and extract all this information touches on another problematic topic in philosophy of mind - "binding". Every property of an object is perceived at different speeds by different senses and triggers firings in different neurons across a vast neural network. How then, do we manage to see a bird flying in a certain direction at a given speed and hear its distinct caw at a certain volume in a specific pitch? This is the binding problem (for a detailed review see Treisman, 1996), further consideration of which will prove particularly efficacious to our current objective. I will not stab a guess at what mechanism/s facilitate our formulation of an object, its properties, their characteristic conjunctions, and the negation of that object from other objects, but whatever mechanism is employed must surely be classed as a kind of abstraction. I do not deny that a bird I see exists, nor do I believe it to be advantageous philosophically to do so. Binding, however, affords us a crucial insight. We as conscious beings do not perceive objects as things immediately and passively, instead we conceive of an object by deducing its extrinsic properties and abstracting these properties into a unified object. An object which is a mental construction.

This view is held to be representationalist, insofar as we construct a mental representation of external objects when we perceive them. This claim is very much in line with psychological and neuroscientific research, but philosophers often refute representationalism primarily on the basis that no two people could refer to the same thing if everything we know is merely an imaginary thing in our minds. This familiar "qualia" argument falls short however, as it assumes that two minds using the same world as a referent would make dissimilar abstractions from the same objects. Ockham's razor would have us assume otherwise, and logically proceed from there. While Brentano's immanent objects placed a barrier between thought and reality, both Twardowski and Husserl's restructured intentionality theses allow for the explication of how contents are first derived from concrete objects in the world, but these contents can then be manipulated to form any number of inexistent abstract objects. The nominalist argument accuses platonists of unnecessarily positing a third realm in which

abstracta can exist, yet nomanilism itself unnecessarily presupposes that two individuals would not naturally arrive at a similar abstraction when presented with the same concreta, thus separating mind from matter indefinitely. I do not think that two people would make identical abstractions all of the time, but their abstractions need only be more similar than dissimilar for the qualia problem to dissolve. Contents (meanings) must be learned experientially, we are not born with qualities such as orange-ness and roundness fully realized *a priori.* We deduce such qualitative concepts from living in the world in which they are present. From objects we first learn of properties and contents, and we are typically equipped with the same physiological instruments and limits and the same kinds of object-interactions. The properties which are so often proposed as potential universals by Idealists are merely the contents of some objects which we have abstracted.

I can posit a category of chair-ness, the universal of all chairs, because I have deduced the intrinsic properties of the object in question and have sufficient experience to know what features are not necessary. I do not wish to claim that the chair-ness exists mind-independently, or even that any universals exist, I use universal here to define a specific categorical abstraction applicable to all objects/qualities which fall into that same category. Furthermore, I can imagine a chair, one which I have never seen before; a metal fire-truck-red one with a cheddar-cheese-orange leather seat and legs affixed with twisting rainbow coloured dragons. Such a chair is clearly a Frankenstein's monster of qualities stolen from other objects and experiences, but I can picture it, nonetheless, and the image you just formed of this chair must surely resemble my image of the chair somewhat, at least far more than it resembles an image of any other object that I did not describe. This sort of abstraction is possible as the properties we learn from objects are intrinsic to the world; green *is* green, flat *is* flat, and loud *is* loud, there doubtless exists some margin for subjectivity and idiosyncrasy and special cases where one may be far from the norm, but in general we can share in the image of this abstracta.

Concrete objects on the other hand, possess all of their defining features within themselves. Unlike the chair above, the perception of a concrete object does not need to be abstracted on so many levels, the referents are housed within the limits of that object, and our perceptions of that object will assuredly be more similar than the quasi-formed abstracta of the chair. A further elaboration of how perceptual properties are located within objects of perception is afforded by Merleau-Ponty:

> The excitations of one and the same sense differ less by reason of the material instrument which they use than in the way in which the elementary stimuli are spontaneously organized among themselves, and this organization is the crucial factor both at the level of sensible 'qualities' and at that of perception (Merleau-Ponty, 2005, p.86).

Our perceptions of external objects are thus more reliant on the clarity and organisation of the properties of the object itself and less so on the uniformity of perceptual processing. Concreta, as perceived, can accordingly be classed as products of discrete abstractions, but we need not stop there.

The ‘functional equivalence’ hypothesis was first posited four decades ago (See Finke, 1980) and refers to the insight afforded by neuroimaging studies that imagery processes share many mechanisms and neural pathway connections with motor preparation and production, and with perception in the same modality. In layman’s terms, this means that if I imagine throwing a frisbee, the same pathways in my brain that are activated when I throw a real frisbee, will also be activated when I imagine throwing a frisbee. Similarly, if I visualize an object, the same parts of my visual cortex (the area of the brain that is responsible for visual perception) will be activated as if I had just seen that particular object. Functional equivalence has long been taken advantage of by sports psychologists, as athletes can engage in the mental rehearsal of movements without the need to physically play the sport (for an in-depth review see Moran et al., 2011).

Functional equivalence holds that concrete and abstract objects are treated as one in the same in how they are processed by the brain. This equivalence is not exhibited at all levels of processing within the visual system, but is particularly associated with perception of an object’s identification through its characteristic features; shape, size, orientation, etc. These effects also hold for spatiality, as the time it takes someone to scan the distance between several concrete objects observed is directly proportional to the time it takes for someone to scan the distance between the same objects imagined (Kosslyn, Ball & Reiser, 1978). Similarly, visual after-effects can still present themselves whether an object is perceived or imagined as demonstrated by Finke (1980) who found that participants in imagery conditions would still report the exhibition of the McCollough Effect. This is the after-effect that upon presentation of an alternating set of black vertical bars on a single coloured background, and black horizontal bars on a background of a second colour for an extended duration one observes achromatic vertical and horizontal bar gratings to be faintly coloured with the hue of the colour complementary to those previously presented. These equivalences may seem arbitrary at first, but not only does they illustrate how abstract conceptions are rooted in processes that mirror and even compete with the perception of concrete objects, thus further grounding the claim for abstracta utilizing contents extrapolated from concreta. It also presents us with numerous advantages psychologically. The symbolic difference effect is the product of one of many advantageous implicit abstractions in normal waking consciousness. Studies have demonstrated that when presented with the names of pairs of objects and asked to identify which of the objects is larger or smaller than the other, individuals’ reaction times decrease as the size difference between the two objects increases (Moyer & Bayer, 1976). This effect suggests that when conducting size comparisons between known objects individuals create and compare mental images of them.

Another form of imagery; daydreaming, has been illustrated to possess numerous psychological benefits. Daydreaming has been shown to be predictive of personal growth and positive affect and allows the individual to stimulate their own emotional experience by simulating potential events and abtract objects (see Blouin-Hudon & Zelenski, 2016). Our self-preception can also be

classed as an abstraction. There is no paucity of evidence from which to borrow from psychology on this point. Full body illusions and self-related disorders afford us a glimpse into the ways in which we conceive of ourselves and demonstrate that selfhood is not confined to the limits of a body, and that our very notion of ourselves is the product of several abstractive processes. Mirrors and virtual reality devices have been shown to induce temporary alterations in self-perception and localization (Lenggenhager et al., 2007, 2009; Merleau-Ponty, 2005, p.88). Heautoscopy, provides a crucial counterpoint to the prevailing presupposition that a person/ego must always be rooted in their corporeal body (see Furlanetto et al. 2013). The appearance of several duplicates of oneself and the feeling that one's consciousness is located within one of the illusory doubles are characteristic heautoscopic experiences (Blanke and Mohr, 2005). These symptoms are hard to imagine, yet a similar bi-location of the self takes place in everyday waking consciousness in non-clinical individuals. When interacting with others, we implicitly adopt a type of mentality which enables us to account for their actions (Frith and Frith, 2006). Frith (2012) elaborates that in joint attention a modulation of shared objects and actions that occurs automatically. This bi-location represents an abstraction of the self to include the intentions and others, allowing us to empathize with, and predict the motives of others.

Intentionality permeates and facilitates all conscious experience, regardless of whether the object/event experienced is real or imagined and it is clear the abstract-object distinction has been muddled, confusing the metaphysical with the experiential. Abstracta play a crucial role in our thinking and experiencing and are no different from concreta in how they are processed. A revised abstract-object distinction is necessary and might be better conceived with the consideration of the object's embeddedness in the external world, and its abstraction through perception. While abstracta can be termed as emanating from within the mind, conceived from borrowed contents; and exhibiting causality, temporality and spatiality by virtue of the subject themselves.

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