

What Are Entities?

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Looking out into the world, it seems evident that it is composed of separate, persistent objects interacting with each other. Our very survival depends on our ability to identify these objects and then anticipate and use their patterns of behavior. Yet this very reliance obscures a more subtle ontological truth: these objects are not, in reality, separate.

In this paper, I argue that the division of existence into entities is a result of epistemological processes and is not intrinsic to existence. By detailing the nature of these epistemological processes, I also show that these divisions are objective rather than arbitrary or subjective.

To avoid immediate confusion, I do not hold that entities themselves are a result of epistemological processes, as in idealism. The physical content of what we call an entity exists independent of any conscious observer. What I will argue is far narrower: that which we call an entity is not actually separate in reality from the rest of existence—its isolation as *independent* is solely the result of epistemological processes.

The paper relies on Ayn Rand's theory of concepts specifically and on Objectivist metaphysics and epistemology generally; however, it deviates from certain of Rand's positions in significant ways.

Definitions

I will use the term *intrinsic* to mean "an aspect of reality that exists independent of any conscious observer," and *intentional* to mean "a distinction regarding aspects of reality that is dependent on a conscious observer." Some sources use the terms *metaphysical* and *observer-relative* to make the same distinction. Importantly, intentional

does not mean *independent* of reality nor does it normatively imply subjectivism. Properly formed intentional distinctions must comply with objective criteria.

A *physical existent*, as used here, refers to any finite portion of existence, including portions that are discontinuous, as well as those that span a period of time. In this paper, I usually intend the term to evoke common objects, such as a table or chair (either at a moment in time or for some duration), but it could also be applied to arbitrary regions, such as a specific square inch of ground or cubic foot of air, the western hemisphere of earth, or to a specific set of unrelated and distant subatomic particles. Physical existents are intrinsic and, as discussed below, have an identity.

As a consequence of being finite, a physical existent must have a well-defined border setting it apart from the rest of existence. I will refer to this border as a *boundary*. When we consciously consider a physical existent, there is necessarily an intentional boundary. In some cases, this boundary will clearly be intentional only and not intrinsic (e.g., a square inch of ground). In other cases, it also seems possible that there is an intrinsic boundary upon which the intentional boundary is based. We will consider the latter case in detail.

'Entities' in Objectivist Literature

Unfortunately, Rand does not provide a definitive explanation of the concept *entity* in her writing. Leonard Peikoff (1991, 12–13) states:

The concept of "entity" is an axiomatic concept . . . [s]ince it is axiomatic, the referents of this concept can be specified only ostensively, by pointing to the things given to men in sense perception.

Rand (1990, 15) does write that "entities are the only primary existents," although this is intended to distinguish them from attributes (264). She also discusses them extemporaneously at length (264–76), and although we should be cautious in placing too much

weight on her specific choice of words, we can certainly get a feel for her intent:

An entity is that which you perceive and which can exist by itself. (264)

Now, what is an entity? It is a sum of characteristics . . . Usually when I write I say the entity *is* its attributes. (266)

We call an entity that which is welded together physically and about which we can learn something, to which we can ascribe certain properties, as a whole. (268)

The concept of "entity" is an issue of the context in which you define your terms. So that an entity has to be a material object, but what you regard as an entity in any given statement or inquiry depends on your definitions. (269)

In this context, it is uncontroversial to point out that entities are a kind of physical existent. Based on a lecture series comment, Peikoff agrees: "An entity, in the primary sense, is a solid thing with a definite boundary—as against a fluid, such as air" (in Binswanger 1986, 146).

Rand also did not discuss explicitly whether entities are intrinsically separate or whether entity boundaries are intrinsic. Peikoff (1991, 54) touches on the issue:

Entities do not require inferential validation. The given *is* the perceptual level. This last statement does not necessarily mean that the entities we perceive are metaphysical primaries; as we have seen, that is a question for science. It means that the grasp of entities is an *epistemological* primary, which is presupposed by all other knowledge, including the knowledge of any ultimate ingredients of matter that scientists may one day discover.

So he leaves the question to science in each case, with the possibility (especially in the context of “entities are the only primary existents” as cited above) that at least some entities we perceive are in fact metaphysical primaries. But he does not specifically answer the question as to whether these “metaphysical primaries” are separate or have intrinsic boundaries, so a conclusion in either direction would be consistent with this.

Only recently has the question been examined in some detail (Jilk 1998; Ray and Radcliffe 2000). From the reaction to these papers and other informal discussions in which I have taken part, it appears that the intrinsic separateness of entities is uncontroversial among Objectivists.

Carolyn Ray and Tom Radcliffe make a case that boundaries (they use the term “edges”) are intentional, concluding as follows:

So it may seem to us, unreflectively, that any particular piece of reality that we want to call “entity” *was* separate—intrinsically, independently, and before we noticed it.

But to conclude that this is the case is to reverse cause and effect, in much the same way that the conceptual realist reverses cause and effect by looking for metaphysical essences to explain our use of concepts. It is the focus of a conscious subject’s attention on a given portion of reality that justifies and explains classifying that portion of reality as an entity, just as it is our active discrimination and mental integration that is the source of our concepts. (Ray and Radcliffe 2000)

Jamie Mellway (2001) posits that Rand specifically maintained separate theories for “metaphysical and intentional entities” and that those isolated by perception are intrinsic (he uses the term “metaphysical”):

What I am calling a “whole object” is whatever it is that we directly are aware of through perception. Our direct percep-

tion perceives existent objects as a whole thing—which has mind-independent identity. Since we perceive it as a whole, we can say that it has a unity-in-the-mind *and* a unity-in-reality. I am using the term “whole” to stress the unity, yet distinguish it from the unity-in-the-mind of Radcliffe and Ray’s intentional entities.

Oddly though, this approach to making the distinction *illustrates* rather than contradicts the idea that the separateness of entities is intentional. Reality and its behavior are not dependent on our perceptual system, nor does the specific mechanism by which we perceive necessarily identify the mechanisms through which reality operates.

The Problem

To see one of the greatest difficulties with intrinsic entity boundaries, let us consider one of the problems of intrinsicism with regard to concepts:

The Realist doctrine of intrinsically abstract attributes runs into all sorts of problems as soon as you start exploring it in depth. One classical problem is the problem of borderline cases. On the color spectrum, red shades into yellow. Now, if what is common to all shades of red is the feature redness and what’s common to all shades of yellow is the abstract feature yellowness, then at some definite, specific point redness must end and yellowness must begin; but it seems arbitrary to stipulate any one point where that happens. And if you try to solve the problem by saying “well, there’s orange in between”—so there’s red, orange and yellow—but then we have the problem about red and orange, you’re not going to solve it by getting narrower concepts. (Kelley 1988)

Now consider, analogously, a similar example in regard to entity boundaries: imagine an ice cube in a room temperature environment. At the everyday perceptual level of precision, the location of its

boundary is obvious. Upon closer observation, perhaps with appropriate instrumentation, we find that in actuality the ice is covered with a thin layer of water resulting from the melting of the outer layer of the ice. Just outside the water layer, there is a vapor layer caused by the evaporation of the water and the ice; the vapor concentration decreases gradually as distance from the water layer increases, until it reaches the same vapor concentration of the room. Confounding even this analysis is the fact that individual molecules are not necessarily clearly in one state or another, but simply have a thermal energy, and there will necessarily be regions within each layer that are in an ambiguous state. What initially appeared as a boundary is in fact a gradient. Although there are clear differences from point to point, there is no unambiguous boundary where the ice cube ends with certainty.

This example is not anomalous; rather, it is representative in that any apparently "solid" object in actuality has a gradient rather than a sharp or discontinuous boundary when examined at a fine level of detail. We will return to this example.

The Case for Entity Boundaries as Intentional

Those who assert the existence of a feature of reality must demonstrate it convincingly. If the opposite were true, one could assert the existence of God, goblins, and unicorns and challenge opponents to prove that they do not exist—clearly an impossible task. Thus, I do not have to show that entity boundaries are not intrinsic; rather, I only have to show that the arguments that they are intrinsic are unsatisfactory.

Unfortunately, I have never encountered a carefully constructed argument to that effect. In discussions, it seems that some Objectivists hold the position axiomatically, while others believe it is the province of science. In the following argument, I show that holding that entity boundaries are intrinsic cannot be justified axiomatically. I then argue that science shows us only gradients, not boundaries, and that an intrinsic boundary theory is unsatisfactory.

Can we justify the idea that intrinsic entity boundaries are

axiomatic? Peikoff (1991, 8) points out that "axioms are *perceptual self-evidencies*," and Rand (1982, 13) states "nothing is self-evident except the material of sensory perception." Let us examine whether this is in fact self-evident at the perceptual level.

According to Kelley (1986, 84): "The way an object appears is a joint product of the object itself and of the means by which we perceive it. But we have no *perceptual way* of distinguishing the contributions of these two causes." Because the perceptual system has an identity, everything we perceive is in a *form*, which consists of aspects of external reality, aspects of the perceptual system, and aspects of the medium in which the sensory information is carried. In my terminology, every percept has an intrinsic component and an intentional component. Since we perceive reality *directly* through perceptual forms, we are not aware at a perceptual level of the distinction between the intrinsic and intentional components—the form is simply how reality appears to us. Consequently, any assignment of aspects of the form to the intentional and intrinsic components must be performed at the conceptual level.

Color is an example of this point. Colors are a component of the perceptual form in which we see objects. We see the color as adhering to specific objects, and it is self-evident that there is some property of the objects that distinguishes them. However, it is not self-evident which aspects of the color inhere in the object and which are artifacts of the perceptual system. In fact, centuries of scientific inquiry were required to learn that light is selectively reflected by objects of certain composition and that the specific colors through which we perceive that light are a consequence of our having three different types of wavelength-sensitive photoreceptors in the retina.

Similarly, we perceive entities and boundaries directly through perceptual forms. We can conclude from this—self-evidently—that entities exist and that they have some property that changes where we perceive the boundary. It is not, however, self-evident which aspects of the boundary are intrinsic and which are intentional. Only recently has science discovered that the visual system has powerful detection systems for sharp light and color gradients, for example.

Consequently, the case for intrinsic entity boundaries cannot be

based on an axiomatic justification, because distinguishing between intrinsic and intentional components can never be self-evident.

We now turn to the inductive argument. Here, the issue of boundary ambiguity is critical in considering whether boundaries are intrinsic or intentional. Boundaries must be unambiguous; matter is either part of the entity or it is not, if the entity is to have an identity. If unambiguous boundaries are intrinsic, we would expect to find intrinsic discontinuities, rather than mere gradients, separating the entity from the rest of existence. It would also seem that as science becomes more sophisticated, we would be better able to discover these discontinuities, yet quite the opposite is the case—as science has examined matter at ever finer levels of detail, we consistently find that what was previously seen as a discontinuity is in fact a gradient where there is more than one possible location of the boundary. This would lead us to believe that intrinsic discontinuities cannot be discovered because they are not there to be discovered.

This is an important and controversial point that bears closer scrutiny. We saw in the ice cube example above that its apparent boundary is actually a gradient. If we insist on an intrinsic boundary, we must select some location on that gradient. Clearly there are a number of reasonable possibilities: including (i) where the solid ice meets the liquid water; (ii) where the liquid water meets the water vapor; (iii) where the water vapor first reaches the same concentration of the room. Further, because of ambiguity at the molecular level, it may be necessary to look at boundaries relating to the minimum, maximum, or average thermal energies, although these will lead to a very irregular shape. How do we choose?

The fact that this is fundamentally an issue of choice, and not of discovery, makes clear that the boundary is intentional. The gradient is present, indeed, in reality, regardless of any conscious observer. But the exact location of the boundary is not—that must be specified.

Suppose that we specify the boundary in our example to be a determinate surface that, as best we can measure, encloses the entire solid ice portion of the ice cube, perhaps with small amounts of the water layer included to keep the boundary smooth. The entity with its boundary specified thus has an identity, not only in terms of its

behavior, but also in regard to whether a given bit of matter is or is not a part of the entity. If we throw this entity across the room, it will interact with the water and water vapor surrounding it as well as with the air as it travels and with the wall as it makes contact. As an entity, it causes other effects through those interactions. It will also have internal behavior in regard to the liquid water inside the boundary as well as small fluctuations in the solid ice. Now, if we were instead to specify the boundary to include the entire water layer, and throw it across the room, we would characterize different internal interactions in the entity (there is more water to move around) and different interactions with the vapor and the wall. This different entity would cause effects outside its boundary that are slightly different than the effects of the earlier, smaller ice cube, *but the behavior of the system as a whole would be identical*. This is because the boundary is not part of reality: it is an artifact that the conscious observer constructs to more easily understand the behavior of the system.

One might argue that I have selected a boundary case (pun intended, as we will see), and I should have used an example with a clear boundary, such as a boulder. Is it possible that very solid entities have intrinsic boundaries and others might be less clear and require an intentional element? The density and phase-of-matter gradient is indeed much sharper around a rock, but it is nevertheless a gradient, and this is the case for any piece of matter. So we find ourselves with the need to create a “steepness of gradient” rule indicating which entities have intrinsic boundaries and which are intentional. Besides failing on grounds of parsimony, this approach ultimately runs into the same problem—where is the “boundary” in gradient steepness between intentional and intrinsic boundaries?

Consistency with Identity, Causality, and Objectivity

Having established that entity boundaries are always intentional, we might be concerned about the consistency of this conclusion with the axioms of identity and causality.

Discussions of identity in the Objectivist literature generally begin

with entities. That is our topic of discussion, however, so we must be circumspect about our starting point. Since the identity axiom can be viewed as another angle on the existence axiom, the most obvious point of departure is that existence as a whole has an identity, i.e., it is what it is and is not anything else.

Any physical existent, as a portion of existence as a whole, certainly has an identity internal to itself, as long as its boundary is unambiguous. The term "boundary" here is intended to include intentional boundaries, but the identity of the existent is not dependent on the presence of a conscious observer—rather the point is that this is true for any unambiguous boundary an observer might consider. Also because it is a portion of existence, the actions and interactions of a physical existent with the remainder of existence must also have an identity (also known as causality) or the whole would not. Since entities are also physical existents, they too have an identity, despite the fact that their boundaries are specified intentionally.

This is clearly in agreement with Rand—"since everything possesses identity, the universe possesses identity" (Rand 1990, 273) and "whatever you choose to consider, be it an object, an attribute or an action, the law of identity remains the same" (Rand 1957, 942)—despite the different approach. One could argue that Rand was speaking casually here in the way she uses the term identity, but my point is to show that Rand believed that both individual things have an identity and that existence as a whole (the universe) also has an identity. I am saying the same thing, but start with the universe. Therefore, our conclusion that entity boundaries are always intentional is consistent with the identity axiom.

This conclusion is also consistent with the axiom of causality, as it is a corollary of identity. However, the usual statement of causality refers to entities, e.g., "all actions are caused by entities" (962). Since all entities are physical existents, and any physical existent that causes an action certainly has an objective basis to be considered an entity, it would also make sense to say "all actions are caused by physical existents." This perspective is relevant when we consider the issue of separateness.

A second concern is that Objectivism as a whole might no longer have objective grounding. Rand demonstrates fairly clearly where this might lead:

You can consider [society] that way, but that doesn't mean you then consider human beings as dispensable cells of it, which is precisely the mistake all the collectivists make. You can discuss society as an entity, never forgetting that what you mean by "society" is a large number of human entities. . . . the priority here, metaphysically, would be determined according to which is essential. . . . You can't talk about "society" before grasping what a man is. . . . they're not all equal metaphysically. (Rand 1990, 271–73)

In regard to concepts, Rand's epistemology demonstrates that they are *objective*, in that they must meet certain criteria for validity. Her theory of measurement-omission and its adjunct constructs of the conceptual common denominator (CCD) and "Rand's Razor" are groundbreaking in that they establish a mechanism for concepts to be intentional without deteriorating into subjectivism. She says:

But, far from leading to subjectivism, the methods which [man] has to employ require the most rigorous mathematical precision, the most rigorous compliance with objective rules and facts—if the end product is to be *knowledge*. (8)

I will claim that, in an analogous fashion, entity boundaries can also be objective (where specified by higher-order cognition) or simply valid (where presented directly by the perceptual system). Although there may be more than one way to specify an entity boundary, there must be a valid purpose underlying any such specification for it to be rational and form a foundation for knowledge. Consequently, the epistemological foundation for Rand's ethics and politics remains sound and strong.

Separateness of Entities

We now consider my initial assertion that entities are not intrinsically separate from the rest of reality. This assertion hinges on whether we interpret the term "separate" as meaning "isolated" or "differentiated." Clearly, entities are intrinsically differentiated from the background by their characteristics and gradients. For entities to be intrinsically isolated, though, would require that they have an unambiguous intrinsic boundary, which we have already seen is not the case.

Consequently, we arrive at a view of physical existence where the whole is a unity, without intrinsically isolated parts. Rather, this unity has varying characteristics and gradients and an integrated behavior. We can impose an intentional partition of this unity that helps us to understand its behavior, but the partition is not intrinsic. In fact *any* partition, even if arbitrary (imagine a lattice of one-foot-wide cubes), can be imposed intentionally—the only effect of this partition is on the complexity of the analysis required to characterize the behavior, not on the behavior itself. In this light, we can see the point of stating the axiom of causality as "all actions are caused by physical existents."

In this context, separateness could be viewed as a graded phenomenon, with some physical existents exhibiting a high degree of differentiation and others not as much. A cloud is not as "separate" from the atmosphere as an ice cube or a boulder. In this sense, separateness is intrinsic. This is not the way the term is commonly used, however, and I will continue to use it as meaning "isolated," with the understanding that such isolation is intentional.

Once again, an analogy with the Objectivist theory of concepts is illustrative:

To a sub-amoeba living on the molecular level (if such an organism existed), a billiard ball would be a galaxy—an astronomically large, pulsating collection of entities. But what does that have to do with man? *Man's* concept of "sphere" refers to a human scale, the scale on which man

grasps and deals with reality.

All concepts, including the farthest reaches of mathematical abstraction, are derived from the perceptual level of man's awareness, and all standards of perfection must be consistent with this fact. (Binswanger 1981, 5)

Applying the same idea to the separateness of entities, our standard of separateness must also be based on intentional processes—we will not find the "perfect" entity boundary intrinsically.

Perceptual Specification of Entity Boundaries

The simplest form of entity boundary results from a percept, the focused attention of a conscious mind on a physical existent. In perception, we perceive entities and their boundaries directly—it is not necessary for the mind to make conceptual or subjective judgments about the entities identified by the perceptual system; that we see, hear, or feel them is sufficient to identify them. The perceptual system is a passive, automatic processor of sensory information and is not controlled by the cognitive mind or the will in any way. According to Kelley (1986, 49–50):

The perceptual awareness of entities is direct. Entities are *given* as such. The perceptual integration necessary to achieve this awareness is physiological. It does not involve, and should not be conceived on the model of, conscious processes of integration—association, inference, hypothesis, calculation, or computation.

For the purposes of justification, this is all we need to say. If we accept that our perceptual system is valid, then we accept that the way in which we perceive entities and their boundaries is valid. Boundaries are simply the form in which we perceive metaphysical gradients.

However, it is useful to elaborate on the purpose that this perceptual form serves: Why does the way in which we perceive a

boundary attract our attention so strongly? In general, conscious life exists because it has characteristics that allow it to survive, and species of life persist because they reproduce effectively and pass those characteristics to their offspring. The perceptual system is one such characteristic. It isolates objects in reality according to methods generated by trial and error through natural selection. By rapidly isolating solid objects such as trees and rocks, and focusing attention on moving objects such as animals or on distinctive sounds such as a lion's roar, the perceptual system is an epistemological pre-processor that provides a clear survival advantage.

Conceptual Specification of Entity Boundaries

Until the first flights into space in the early 1960s, no human had ever directly perceived the entire earth. This did not hinder us in treating the earth as a separate entity, however. When an entity is specified by volitional, conceptual processes, and its specification is therefore subject to error, how do we determine objectively whether such a specification is valid? In regard to concepts, Rand (1990, 63–65) states:

The essence, therefore, of man's incomparable cognitive power is the ability to reduce a vast amount of information to a minimal number of units—which is the task performed by his conceptual faculty. And the principle of *unit-economy* is one of that faculty's essential guiding principles . . . *concepts represent condensations of knowledge*, which makes further study and the division of cognitive labor possible.

An analogous rule of *epistemological economy* can be applied to the specification of entities. The purpose of specifying an entity is to reduce the amount of detail and calculation required to understand and characterize the behavior of reality. The boundaries that are objectively valid are those that best perform this role in the context in which they are needed. In a manner of speaking, those boundaries that “simplify the math” are best.

This rule is essentially an application of Occam's Razor at a very concrete level. We avoid the creation of needless (i.e., non-explanatory) entities and prefer the simplest specification of an entity that correctly characterizes the phenomena with which we are concerned. Viewed another way, objectively specified boundaries are based on essentials—what explains the most or the most important phenomena in which we have an interest.

For the same reason that it is not immediately apparent whether boundaries are intrinsic or intentional, most of the time the objectively valid boundaries are obvious, either as a result of perception or a steep gradient that allows us to place the boundaries with precision sufficient for our purposes. It is not typically necessary to question these “obvious” boundaries and the burden of proof falls squarely on a challenger to show that an alternative boundary is preferable in some way. At the other extreme, arbitrary boundaries explain nothing and provide no basis for further knowledge, rendering them objectively invalid.

Specification of Non-Physical Entities

The same approach can be applied to very complex entities, such as those that are non-contiguous (a pair of quantum-entangled particles); or incorporate some mental contents (a business); or consist entirely of mental contents (a fictional character). In such cases, there may be no physical boundary at all, so we can use the term *specification* instead, with the understanding that a boundary is a special case of a specification.

Since our purpose in specifying entities is epistemological economy, we must follow objective standards in such specifications. We specify the entity in such a way as to best explain the observed phenomena or to correlate with the specifications already apparent in the mental contents. The very complexity of these entities can cause uncertainty and debate as to the best specification for a given purpose, but this uncertainty is caused by a lack of information rather than a failure of objectivity. Even in these complex cases, not all specifications are equal, and arbitrary or subjective specifications do

not serve the required purpose of epistemological economy.

We can now apply the epistemological economy approach to our concern about the objective basis of Objectivism. Living things are objectively separate entities. They are contiguous, their boundaries are perceptually obvious, and the process that sustains the life is best explained by this same boundary. A society of living things, while complex, is also an objectively separate entity. Have we lost a strong case for individualism?

Although it is outside the scope of this paper to examine the question fully, the answer is a resounding "No." In essence, to justify individualism we must examine the nature of an individual human and contrast it with the nature of society—both objectively specified. Like all living things, a human is a process of self-sustaining, self-directed action. Humans interact with other humans in ways that serve their own purposes, and the humans along with their complex web of interactions is what we call society. The society is to some extent self-sustaining, but it is not self-directed and is not itself "alive"—rather it is a reflection of the purposes of the individuals that comprise it. The fact that the society is itself an entity and exhibits behaviors that we can study and characterize does not alter the fact that its existence is subordinate to that of its constituent individuals.

Ultimately, the case for individualism is stronger when we understand that entity specifications are intentional. Asserting that entity boundaries are intrinsic risks alternative arbitrary specifications with no basis for disputing the alternative. Instead, we build our knowledge atop a very simple, indisputable ontology, following objective processes at every step of the way.

Abstraction of Persistent Entities

We commonly consider certain entities as persistent, meaning that there is a sense in which an entity is the "same" over time and across multiple or even unlimited encounters. We indicate this persistence by giving the entity a proper name (e.g., "Earth") or referring to it by prefixing its category with the definite article and

adjectives sufficient to identify it uniquely in context (e.g., "the dining room table").

The sameness of an entity is also intentional rather than intrinsic, because it is necessarily preceded by the intentional specification of the entity at each encounter. Nevertheless, its sameness is based on reality: Physical existents tend to maintain their characteristics and their spatial relationships with other physical existents over time. I will show that the process of specifying persistent entities is objective.

If a conscious observer attends to an entity for some period of time, and then later attends to a very similar entity, he has two abstraction alternatives. First, he can treat the two entities as distinct units of a new or existing concept. Second, provided that he never encounters the two entities simultaneously, he can view them as instances of the same persistent entity, treating them as units of a "proper concept" (Jilk 1998, 2) or "concept of a particular." I use the term "proper" because proper names perform the same function with respect to concepts of a particular as words perform with respect to conventional concepts. I will refer to these as *p-concepts* and, for this discussion, to traditional universal concepts as *u-concepts*. A *p-concept* is a kind of concept because it is an abstract mental construct that is created through the same process as a *u-concept*.

According to Rand, *u-concepts* are formed by first isolating certain concretes from their background through a Conceptual Common Denominator (CCD). The concretes are then integrated by omitting the measurements of the CCD that distinguish them from each other.

A *p-concept* is formed in the same way. Its units are concretes that we have, in separate instances or circumstances, identified as entities. In typical circumstances, we have recognized these units as members of a conceptual category (a *u-concept*) that we have previously formed and identified. In this case, all the other members of the category function as the background. We differentiate the units of the *p-concept* from all other units in the category through one or more distinctive characteristics, which function as the CCD. These characteristics may relate to their perceptual appearance (a face with an unusual birthmark), location (a tree in the northwest corner

of my back yard), or context (a person often seen at cocktail parties).

For an adult human, nearly all entities are instances of known categories, although sometimes the category is fairly general. If the category is very specific (Dell Latitude laptop), for differentiation we must rely on an unusual characteristic unlikely to repeat (broken fan cover); if the category is general (animal), it is because there are characteristics (long snout) that exclude the entity from known specific categories, thus we rely on those exclusionary characteristics. A category differentiator is often combined with a location or context indicator to give us a confident basis for differentiation. Indeed, the genus/differentia description of a persistent entity is often given in this form (the red flower next to that tree).

Once the units are differentiated from the background of the category, they are integrated into a p-concept through measurement-omission. The perceptual appearance of the entity may vary slightly from instance to instance (the birthmark is larger when the person smiles) or its location may change within a range (the neighbor's car can be in the driveway or on the street). As with any concept, these measurements are in a much narrower range than for the background.

Since the process for creating p-concepts is identical to Rand's u-concept formation process, it inherits the objectivity of that process.

P-concepts are similar to sub-concepts, in that they narrow the range of a more general category through distinguishing characteristics. However, unlike the case of a u-concept, no two units of a p-concept can ever be apprehended simultaneously. A persistent entity, despite the fact that its specification may vary over time, is a physical existent with identity and therefore cannot be in two places at the same time.

P-concepts are another example of epistemological economy. Rather than treating every entity identified by perception as unique, we integrate these instances into an identifiable individual that has a determinate set of persistent characteristics. This allows us to encapsulate all past and future instances of the entity in the p-concept and accumulate knowledge about the persistent entity to which it applies.

A p-concept is abstract, because it refers to an entity that varies

more or less in a number of characteristics under a series of perceptions or encounters. However, unlike a u-concept, it is not universal, because it refers to a determinate, persistent physical existent.

This disconnect between abstractness and universality is disconcerting. It seems that the p-concept is not truly abstract precisely because it refers to a determinate existent with specific characteristics. The decorative boulder in the middle of the yard is there morning, noon, and night. It is made of the same materials and remains the same shape. And despite any minor erosion or changes in color, it seems that the existent is persistent. If this is the case, how can a mental entity that refers to this concrete existent be abstract?

A p-concept provides us with *epistemological continuity* regarding an entity, whether or not we currently perceive it and whether or not it changes. To accumulate knowledge and think about the entity requires that we have a mental construct that is continuously available. We do not want this mental construct to be unnecessarily fragile, requiring us to create a new construct in the event that there is some minor change. Consequently, in a p-concept, we omit measurements not only in regard to differences we have actually perceived over time, but also in anticipation of differences that may occur (someone may move the boulder), to give it an appropriate level of flexibility. These anticipated differences must be based on objective knowledge of the category. Since the p-concept integrates not only concrete, varying instances of an existent, but also the possible but unrealized changes in the existent, it is certainly abstract.

In some cases, persistent entities are identified pre-conceptually. The human perceptual system has faculties to identify and recognize distinct human faces. Certain animals, when they are born and first perceive their mother, "imprint" the perceptual identity of the mother so they can recognize her later. The flash of recognition provided by these perceptual faculties drives behavior and can provide support for later conceptual processing, but it does not in itself create a mental construct satisfactory for accumulating knowledge.

Conclusion

In this paper, I considered the question of whether entity boundaries are intrinsic. I showed that an axiomatic justification for this conclusion is not possible and that inductive evidence is against it. Because the burden of proof is on those asserting a feature of reality, I concluded that entity boundaries are intentional, with the consequence that an entity is not intrinsically separate from the rest of existence. I proceeded to show how the intentional specification of entity boundaries can nevertheless be valid and/or objective. Entity boundary specification can occur perceptually or through a rational process of epistemological economy. Further, we identify persistent entities through the use of "p-concepts," which are mental integrations of an entity as its specification extends and varies over time, providing us with additional epistemological economy.

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