Finding a Philosophically Naturalistic Account of Color

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In the Philosophy of Color, some theories appeal to science either as supporting evidence or as evidence against competing theories. No theory is as yet, however entirely supported by science. In this paper, I will examine three theories of color: Color Primitivism, Color Dispositionalism, and Reflectance Realism. Color Primitivism is the view that colors are inherent, sui generis, properties of objects located in the material world. Color Dispositionalism is the view that colors are properties of objects, which dispose us to a certain color experience. Reflectance Realism introduces Spectral Surface Properties, quantifiable physical properties which define the perceived color of the object. The goal of the examination of these theories is to discover which theory most appeals to Philosophical Naturalists, philosophers who believe that all phenomena are naturally occuring, and therefore nature is the ultimate reality. In the next paragraph, I will analyze the goals of the Philosophical Naturalists and identify what a satisfactory naturalistic theory of color should include. I will then examine Color Primitivism, as well as the scrutiny it receives from Naturalists. Then, I will put Color Dispositionalism and Reflectance Realism under the same scrutiny.

Philosophical Naturalism is a class of philosophy which aims to explain all phenomena in terms of naturally occurring causes and effects. Naturalists define nature as the ultimate reality, a powerful, indifferent force, responsible for all beings and events. This belief guides the naturalist to support a philosophy which bases itself on scientific observations, rather than supernatural hypotheses. If science cannot currently answer a certain question, the naturalist argues, it will one day be able to answer it, or, prove it to be a nonsensical question. Naturalism encompasses philosophies that adopt an ontological approach, generally appealing to scientific principles. In

the philosophy of color, a naturalist will specifically focus on Physicalism. Physicalism maintains that all phenomena can be explained by the principles of current physics, or by concepts which could fit into the framework presented by current physics. Within this broad framework, there are several nuanced ideologies. Reductive Physicalism, for instance, posits that all phenomena can be reduced to physical processes and properties. Non-Reductive Physicalism, on the other hand, allows for properties or phenomena, such as mental states, which are not reducible to physical qualities, but are still dictated by the physical world. A theory of color which will satisfy the Naturalists will be a reductive physicalist theory which provides empirical data defining the real property of color. An Anti-Reductionist view of color may be recognized by the Naturalists, but it must clearly map the relationship between the real property of color and perceived color experience. This paper seeks to discern which theory of color offers the most coherent and compelling Physicalist framework when viewed through the lens of naturalism.

Within the ideology of Color Primitivism there are two nuanced perspectives. Primitivists such as Campbell believe that color supervenes on physical qualities of objects. Campbell's theory posits that colors are indeed qualitative properties of objects, but are not necessarily physical qualities. Color Primitivist Watkins describes a non-reductive view of color, that is, colors cannot be reduced to other physical qualities of objects. Watkin's theory posits that colors could eventually be added to the framework of current physics, but will be added as unanalyzable primitives. Both of these perspectives unite in the main thesis of Color Primitivism, which is the "assertion that colors are sui generis, qualitative properties of objects that cannot be identified with any further microphysical structure" (Chirimuuta, 47). This thesis defines colors as their own primary property, essential in defining the appearance of an object. Both of these theories fall under Non-Reductive Physicalism, so in order to satisfy the Naturalists, they must

provide a framework for how to measure the primary property of color, as well as how that property translates to the perceived experience of color. Both strands of Primitivism are unable to provide a framework for how to measure the primary property of color or how that property translates to a perceived color. This inability is highlighted by the Interspecies Variation problem. To understand the Interspecies Variation problem, imagine a chair, which to the average human being appears blue. Now imagine a honey bee, equipped with more cones for color vision, observing the same chair as being covered in a swirling pattern of multiple shades of blue. In this case, what is the primitive color of the chair? A defendant of Campbell's theory may argue that there is a singular, real, primitive color property, a property which supervenes on the chair, and the bee and human's perceptual variation is to blame on their varying perceived color experiences. This is unsatisfactory to the naturalist because it fails to define what the real color property is, or explain how the real color supervenes on physical qualities of the chair. Campbell's defendant also fails to explain how exactly the varying perceptive faculties of the bee and the human result in different perceived colors. A defendant of Watkins would specify that colors are primitive properties, unanalyzable to any deeper extent than the fact that they are properties of objects. Therefore, this defendant argues, there is no further explanation due as to the specifics of the real color property or how it relates to the perceived color experience. This is once again unsatisfactory to the naturalist because no empirical definition of the primitive property of color is offered, and the variation in the perceived color is not explained. Both accounts of Color Primitivism argue that colors are unanalyzable properties of objects located in the material world. Both accounts argue that our perceptual machinery is relevant to the detection of these primitive qualities, but fail to detail the relationship between real color properties and perceived color experience. Because Color Primitivism defines color as a physical property, but

offers no explanation of that physical property, or how various perceptive faculties result in various perceived colors, Color Primitivism is inadequate to the Naturalists.

Color Dispositionalism posits that color is not a fixed attribute of objects, but rather a tendency to elicit specific psychological experiences in observers. Color Dispositionalism argues that colors are primary qualities which elicit, or dispose, the perceiver to a perceived color experience. Dispositionalism specifies, however, that the color property is indeed equal to the experience of perceived color under only standard conditions. For example, under standard conditions, the property of looking red and the disposition to look red are equal, the Dispositionalist claims. Dispositionalism's inadequacies in the face of naturalism are similar to those of Color Primitivism. Color Primitivism and Color Dispositionalism both fail to define the primary property of color; rather, they merely assert that this primary property of color is an inherent part of the object. Similarly to how the Primitivist lacks an explanation of how a real color property translates to a perceived color experience, the Dispositionalist lacks an account of how an object's real color property disposes the perceiver to a certain color experience. Although similar in inadequacy to the Naturalist, Color Dispositionalism arguably provides an even weaker defense to the Interspecies Variation problem than the Primitivist had. In response to the Interspecies Variation Problem, a Dispositionalist will reference the necessity for standard conditions when arguing that the property of color should equal the elicited color experience. The Dispositionalist could state that because the perceptive faculties of the bee do not constitute a standard condition, the mismatch between the color property and the color experience are accounted for. The failure to define exactly what constitutes a "standard condition" weakens the response to the Interspecies Variation problem. The Dispositionalist theory specifies that color experience is dependent on the object, the perceiver, and the surrounding conditions, but fails to

explain exactly how the elicited color experience relates to the object, the faculties of the observer, or what constitutes the “standard conditions” required to match a color experience to a real color property. The real color property which the Dispositionalist claims to elicit a color experience is abstract, undefinable and meaningless. Color Dispositionalism is a Non-Reductive Physicalist ideology that does not adequately account for the relationship between the real property of color and our perception of it.

Reflectance Realism asserts that colors are empirically trackable, objective properties of objects, determined by the way the object reflects light. Reflectance Realism posits that an object's perceived color can be determined by its spectral surface reflectance (SSR), which specifies the wavelengths of light that are reflected by the object. SSR data, Reflectance Realists claim, consistently maps to a perceived color experience under standard conditions. SSR data can be plotted on X and Y axes, comparing the proportion of light reflected off of the object on the Y-axis with the light wavelength on the X axis. Reflectance Realism, unlike Color Primitivism or Color Dispositionalism, is a Reductive Physicalist theory of color. Although not completely resolving the Interspecies Variation problem, Reflectance Realism provides a potential foundation for addressing it. A Reflectance Realist’s defense to the Interspecies Variation problem is similar to that of the Dispositionalist. The Reflectance Realist asserts that the chair possesses a specific, measurable set of Spectral Surface Reflectance (SSR) data, which determines its perceived color. The differing color perceptions between humans and bees arise from their distinct perceptive faculties, suggesting that the “standard conditions” for a consistent color experience are not fulfilled. This response is similar to that of Dispositionalism and is similarly critiqued for not clearly defining what entails the "standard conditions" necessary for a match between SSR data and the observed color. Although Realist Reflectance theory is also

challenged by the Interspecies Variation problem, it is an improvement from the prior two theories because it actually provides a meaningful, quantifiable definition of what the real property of color is. Reflectance Realism, by providing an empirical method to define the real property of color, aligns more effectively with the existing physics framework. This alignment is particularly appealing to Philosophical Naturalists, setting Reflectance Realism apart from the approaches of Primitivism or Dispositionalism. Reflectance Realism is a reductive theory of color which provides empirical data describing real color, making it more satisfactory to the Naturalists.

In this paper, I have examined Color Primitivism, Color Dispositionalism, and Reflectance Realism in order to find the most satisfactory naturalistic account of color. I had previously argued that a naturalistic account of color must be a Reductive Physicalist account, clearly defining what the primary property of color is. Reflectance Realism is a Reductive Physicalist theory which offers an empirical definition of the property of color, in the form of Spectral Surface Reflectance properties. I challenged Color Primitivism, Color Dispositionalism, and Reflectance Realism to the Interspecies Variation problem. No theory managed to escape spotlessly from this problem, all failing to define exactly how a single real color property relates to various perceived colors. Reflectance Realism, however, was the only theory to offer an empirical account of the real property of color, leading it to be the most philosophically naturalistic account of color.