“How Can Sense-Data Processing Generate Perception?”

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DEDICATION

Dedicated to the soul of my grandmother, Aida Naguib Kostandy, who passed away while I was writing these words. During her long life, she was a loving wife, mother, grandmother, and great grandmother. She taught me moderation, faithfulness, and patience and set an example for dedication and hard work.
I owe this work to twelve years of studying Neurological Sciences. Most of the study took the form of independent research, this fact, at different times, presented me with challenges that I happily accepted. Then came the challenge of writing a relevant thesis in Philosophy. Philosophy offered me a platform to reassess information that I never dreamed of doubting. The skeptical and argumentative process that accompanies philosophical writing comes to mend the assertive attitude that Science sometimes takes. I, therefore, am deeply grateful for the opportunity I was given by the Department of Philosophy to compile this work.

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Introduction

Sensory perception is an experience that we get on a continuous basis. We live through the experience, we get introduced to things that we consider completely different from ourselves, we get through the event and sometimes recall the features of the entities that we encounter but at other times, we don’t. The study of sensory perception interests diverse disciplines and is a concern of epistemology, or the theory of knowledge. The question of if and how sense perception yields reliable knowledge has been a main subject matter in the study of knowledge throughout the history of philosophy. Different epistemological traditions grappled with this question, empiricism is one school that is positive about this inquiry, it was “expanded by Locke in the seventeenth century”\(^1\) and under David Hume in the eighteenth century. The two famous figures developed arguments to admit of knowledge that is achieved using the senses and to combat a rationalist “commitment to ideas or concepts which are themselves not acquired from sense experience.” Their call for admitting the possibility of empirical knowledge was met with criticism and skepticism. The skeptic views emerged equally from within the empirical tradition as in Hume’s skepticism and from the rationalist tradition. The skeptical puzzles were presented mainly by “René Descartes in the seventeenth century and David Hume in the eighteenth”\(^2\) and continued to influence the epistemological tradition that many philosophers such as “Leibniz,

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\(^2\) Ibid, 3.
Bayle, Voltaire, and Kant” and later “Mill, Mach, James, Russell, Moore and Wittgenstein”\(^3\) had to “deal with problems which can be traced back to Descartes and Hume.”\(^4\)

The Twentieth Century was a time when empiricism re-emerged despite the opposing tides. Some answers were given to address these skeptical worries, appealing to ordinary language was one of these answers, this appeal came from “philosophers as Wittgenstein, Austin and Ryle,”\(^5\) who decided “that the correct approach in epistemology lies in appealing to the ordinary use of the terms of epistemic appraisal.”\(^6\) Other endeavours focused on analysing sense perception. Proponents of this analytic method were philosophers, like Bertrand Russell and A. J. Ayer, who paved the road for the logical positivist school of Vienna. The term “sense-data” was introduced by William James in 1890 and was adopted by “Russell and Moore… retaining a central place in the vocabulary used by philosophers of perception ever since.”\(^7\) Paul Snowdon suggests that sense-data theory had three different models in the twentieth century: (1) what he calls the dominant model, which is a strict model that takes sense-data as real and extra objects involved in our perceptual experience, (2) a weaker model, where G. E. Moore was investigating with great uncertainty the kind of objects which sense-data are, and (3) a model proposed by A. J. Ayer, where sense-data were assigned the function of being just a linguistic use.\(^8\) The interesting thing about these models is that they represent a metaphysical study of sensory perception. The interest has thus shifted from discussing the epistemic justification of sense


\(^4\) Ibid.

\(^5\) Ibid, 15.

\(^6\) Ibid.


\(^8\) Ibid.
perception to the metaphysical question of the nature of sense perception. I follow this line in the current thesis, the aim is to understand the process of experiential occurrences that come to the mind during the process of sensory perception. I explore what kind of object comes to the mind of the perceiver within sensory awareness and the nature of that object with which the perceiver gets acquainted. The discussion might be related to its epistemological background, but there will be no consideration of the epistemic aspect of the topic and the latter will be left to the reader’s judgment and for future inspection.

The work is a defense of sense-data as real entities, sense-data are real objects without which a lot of sensory phenomena will not be explicable, they are private subjective entities that exhibit the qualities perceived during a sensory experience. In the first chapter, I argue that sense-data are real and that they bear the perceived qualities by presenting the Argument from Hallucination and the Argument from Illusion, I thus refute the naive realist account of perception and its related disjunctivist view that is being used in some naive realist positions to explain the phenomena of hallucination. A disjunctivist view seeks to explain hallucinations without introducing extra entities like sense-data and I refute this position. In the second chapter, I argue that sense-data are the only objects of perception, but that they aren’t the only objects that exist and thus, I differentiate between the concept of perception and the concept of existence and accordingly refute a phenomenalist or idealist account. I rather defend a representative account of perception which differentiates between two sorts of existing objects, mind-independent and mind-dependent objects, of whom only one is perceived. In the third chapter, I suggest that a causal relationship holds between these two kinds of object, i.e. the mind-independent and mind-dependent, and I argue that covariance of perceived sense-data of the two suggest this causal link. The aim of this thesis is to defend a representative, but all the same, physicalist account of
perception. The account admits that (1) the process of perception involves mind-dependent objects, and (2) that these objects, or sense-data, are different from the mind-independent objects and (3) that they are physical.
Chapter 1. Sense-Data are Real and Possess the Perceived Qualities

In this chapter, I will defend the existence of intermediate perceptual entities that stand between the perceiver and mind-independent objects. In the theories of perception, entities, perceived or not, can be described according to the relation of distance they bear to the perceiver’s mind. Because sense-data are proposed to exist between the perceiver’s mind and a claimed mind-independent existence, they are known immediately, hence the term “immediate givens.” Other entities, which these immediate entities represent, are considered to be distanced from the perceiver’s mind and hence the term “mind-independent.” So in relation to the mind, sense-data are immediate and in relation to the world, perceived sense-data are representations.

In the first section, I follow the traditional argument in favor of sense-data, the so-called “Argument from Hallucination,” which argue for the existence of sense-data on the grounds that they are necessary to explain the phenomenon of hallucination. The section also includes a response to Direct Realism and Disjunctivism, two philosophical positions that purports to refute the Argument from Hallucination. In the second part of the chapter, I will ground the Argument from Hallucination in the scientific and causal argument of perception. Howard Robinson’s causal argument reflects the physical constitution of the perceptual system. The perceptual system has two ends—a proximate and a distal end—and perception needs to be seen as a causal process which starts at the distal end of the system and only comes to (the perceiver’s) realization at the proximate end. The causal argument discloses the process of perception, thus the immediate entities, whose immediacy is initially thought to be unique to hallucinations, will prove to be the building block of all kinds of perception. In the third section, I will present the Argument from Illusion, and demonstrate by example that, if we follow the causal process
behind the illusion of the crooked or bent pen, the perceived conflicting appearances in the illusion can be grounded in differences of sense-data.
1.1 A Discussion of the Argument from Hallucination: The Argument from Hallucination as Commonly Presented in the Philosophical Literature

The Argument from Hallucination is often presented as an argument to the conclusion that sense-data are the constituents of every perceptual experience. The argument’s formulation involves two main steps: (1) the specific or base step and (2) the generalizing step. D. M. Armstrong in his book, *Perception and the Physical World* presented this argument under the name, the Argument from Illusion; yet within the argument he discusses hallucinations, this is possibly because the same argument can be equally applied to cases of sensory illusions: “Suppose, e.g., I am suffering from auditory hallucinations and I wrongly think I am hearing a sound...” The argument—an argument which he describes as “powerful and persuasive, and deserves to be taken seriously”—purports to show that in cases where we are said to “have sense-impressions which fail to correspond to reality,” despite the common belief, we are actually perceiving. The argument objects to thinking that in the case of having the so-called non-veridical perception, it is “as if we perceived.” It is rather that we really perceive and that this perception does include an immediate sense-impression. Armstrong builds on this idea to designate to these impressions the status of always being the immediate givens—even in a non-hallucinatory experience. He argues as follows:

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10 Ibid., 27.

11 Ibid., 24.

12 Armstrong would reject a representationist theory of perception. For him, sense-impressions are immediately perceived and through them the belief, true or false, can be mediated. A perception is a belief and not a sense-impression. So a hallucination and veridical perception may share the same sense-impression but not the same belief.

(1) Immediate sensory illusion\textsuperscript{14} does occur

(2) When we are subject to immediate sensory illusion we are immediately perceiving a sense-impression

(3) Immediate veridical perception is indistinguishable from immediate sensory illusion

(4) Therefore, “my immediate object of perception in the illusory case would have been a sense-impression, so my immediate object of perception is always a sense-impression.”\textsuperscript{15}

In this conclusion, Armstrong registers a specific case, i.e., the illusory case, to every other perceptual one and hence the last step’s name, “the generalizing step.” Interpretations of the argument that are in favor of sense-data theory take that (1) and (2) make up the base step as in them the description is restricted to the false case of perception; whereas in (3), the immediate perception of sense-impression extends to include veridical perception such that sense-impressions become the only possible mean for every perception to take place; so (3) can be seen as the ground on which the argument’s disputed conclusion is based.

This conclusion is expressed in different interpretations or formulations for the Argument from Hallucination. While explaining the argument, A. D. Smith concludes that, “even in veridical perception, we are directly aware only of sense-data.”\textsuperscript{16} Georges Dicker in a dedicated chapter on the topic of hallucinations offers a reformulation of the argument that concludes that, “the immediate object of perception is of the same kind in both hallucinatory and non-

\textsuperscript{14} Armstrong calls the argument “The Argument from Illusion,” yet; he refers to hallucinations in his discussion.


hallucinatory perceptual experiences.”¹⁷ And that “the possibility of hallucination shows that even normal perception always involves sense-data” is indeed the belief of some sense-data theorists such as Howard Robinson and Frank Jackson.¹⁸ Two opposing views are therefore in play. On the one hand, the indistinguishability claim is to some sufficient to ground the generalizing step which states that “one is not perceptually aware of ordinary objects in veridical experience;”¹⁹ and on the other hand, objections to the Argument from Hallucination claim that the indistinguishability, on which the generalizing step rest, is either not justified or doesn’t provide enough support for the argument’s expansion.

So can the indistinguishability claim really ground this generalization from the base step (where the specific case of perceptual hallucination is the only matter of concern) to the generalizing conclusion (which applies to every possible perceptual experience)? The claim of indistinguishability is, claiming that two different perceptual experiences, i.e., on the one hand, a hallucinatory non-veridical experience and, on the other, a non-hallucinatory veridical experience, share the same phenomenal properties, such that the subject fails to distinguish between the two instances. The phenomenal features of an experience can be defined as the intrinsic properties of the objects of this perceptual experience.²⁰ The ontology of these objects can be determined since the phenomenal properties of an experience are instantiated in the


relation between them and the mind. According to common-sense, a veridical perceptual experience is thought to be the product of the mind being directly acquainted with mind-independent material objects where the phenomenal character of the experience gets instantiated; however, and according to the Argument from Hallucination, if these “phenomenal features are sometimes instantiated even when no material object is being perceived” and if they are reported in such unusual cases of perception to be indistinguishable from the ordinary cases, then, either the phenomenal features do not instantiate in the relation between the experience’s object and the mind in a veridical perception or the experience’s phenomenal characters can no longer be identified with the object of a veridical perception. Seeing that the phenomenal properties of an experience can no longer be identified with the object of veridical perception, it has been proposed that objects of different kind, i.e., sense-data, may constitute these properties to the degree that these new objects become the only objects of perception and hence the generalizing step in the Argument from Hallucination.

Sense-data can play both a metaphysical and epistemological role in the process of sensory perception. The epistemological role portrays them as objects of immediate awareness, objects through which an access to a mind-independent reality can be realized or denied. A metaphysical role, on the other hand, portrays sense-data as the “objects that constitute the phenomenal character” and thus the nature of an experience. Arguments from false perceptions

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21 Ibid.

22 “Object” here is used according to the common sense of the word. Yet in referring to mind-independent existence in the context of sense-data theory, I will use a term like “mind-independent entity.”


24 Ibid: conclusion.


26 Ibid.
like hallucinations pertain more to a metaphysical role for sense-data without excluding the possibility of an epistemic one: they introduce sense-data as candidate objects in place of the ordinary objects in order to explain the misperceptions under discussion. Where sense-data assumed a metaphysical role, the argument from hallucination will essentially be a metaphysical argument against naive or direct realism and whenever the phenomenal character of the object of perception will be considered, a “Common Kind Assumption” can be made or refuted to respectively unite hallucination with or split them from veridical perceptions. A common element assumption is to claim that a highest common factor between misperceptions and their veridical counterparts is behind them having qualitatively indistinguishable phenomenal character. It is based on the indistinguishability principle discussed above, so one way to refute the argument from hallucination is to attack this common factor assumption.

Snowdon thinks that a perception describes a state where a perceiver “directly perceives an external object,”

27 therefore, a hallucination “is not an event with that nature.”

28 This is because, a hallucination, according to the common sense view, is an experience where the external object doesn’t exist. In other words, a Naive Realist can argue the following:

1. A perceived object conditions the phenomenal characters of an experience
2. When one hallucinates, an object doesn’t exist
3. Therefore, a hallucination doesn’t possess the phenomenal characters of a perceived object

In (3), a Naive Realist concludes that a hallucinatory experience cannot have the phenomenal properties that an object would normally contribute to an otherwise veridical perception and as a result the assumed common element between the two experiences can be easily blocked (they

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28 Ibid.
aren’t really indistinguishable). A Disjunctivist can offer a similar story on non-veridical perception but with explicitly denying that “veridical perceptions, illusions and hallucinations are conscious events of the same fundamental kind.” The central theme of Disjunctivism is the negation of the common kind assumption, it aims at disproving that veridical and non-veridical perceptions can have the same intrinsic nature, while being neutral on the identity of the object perceived. One can therefore be a Disjunctivist without (or with) a commitment to the principle which states that ordinary objects are themselves the objects of perception because “the denial of the common kind thesis does not entail naive realism.” Disjunctivism was introduced by Michael Hinton (1973) and usually formulates an experience in disjunction as either veridical (the good case) or a mere appearance (the bad case). These positions refute the argument from hallucination by shaking the grounds of its conclusion.

A different approach to refute the argument is to simply replace the objects in question with intentional non-existent, yet representative, objects; these new objects can follow objects like desire or fear in being unreal but all the same experienced, they share with sense-data their representative characteristic, nevertheless they commit to considering mind-independent objects the objects of perception. The introduction of these intentional objects would block the Argument from Hallucination right at premise (2), because then, veridical-perceptions and hallucinations may share an intentional content without representing the same state of mind. This content either represents a property that the real world has (the good case) or represents the

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world as having that property (the bad case).\textsuperscript{32} Intentionalism proposes non-existent (unreal) objects in its discussion of hallucinations, a position that would not be favored by a physicalist account of perception, which treats the objects of all perceptions as real and existent.

1.2 Reinforcing the Argument from Hallucination: A Causal Argument of Perception Justifies the Indistinguishability Claim

In this section, I will defend the Argument from Hallucination and its conclusion by firstly, refuting the naive realist position on the argument and, second, by defending and reinforcing the Argument from Hallucination drawing on, Howard Robinson’s causal argument. A discussion of sense-data terminology will follow at the end to clarify the different terms in use.

As mentioned in the previous section, a naive realist identifies the phenomenal properties with properties of an invariant real external object, thus a successful perception is necessitated by the presence of such an object and its particular properties. However, this notion faces a problem: when this allegedly external object will be absent in the non-veridical case of hallucination, “what will these phenomenal characters be referred to?” One may ask a Naive Realist this question and receive no answer. Naive realism cannot offer a positive account on hallucination simply because it is a theory that identifies being aware of certain properties with being in direct contact with a mind-independent entity that presumably carries these properties. The failure to account for hallucinations becomes especially clear when evidence of experiencing definite phenomenal properties such as color in a hallucination is considered. 33 Here, disjunctivism comes to the rescue of the theory: when “the naive realist takes on a disjunctivist theory,” 34 it becomes possible “to make room for a Naive Realist theory of veridical experience.” 35 By denying any commonality between a hallucination and a veridical perception,

i.e., by denying the common kind claim, and by detaching the former case from the latter (disjunction), a naive realist can retain an account of perception that is direct—at least for perceptions that are veridical.

Two proposals were made to deny a greatest common factor in support of naive realism. One of these Disjunctivst views is from Mark Johnston’s “The obscure Object of Hallucination” (2004) and another view is from John McDowell’s in “Criteria, Defeasibility and Knowledge” (1982). Johnston presents a distinction that renders hallucinations a lower perceptual order. According to this account, ordinary things and their features are disclosed to the perceiver in the veridical case, whereas hallucinations are a special case in which “the same qualities also figure (but) in an un-instantiated profile,”36 because, according to Johnston, the particulars are not disclosed during a hallucination. In effect, such a move might seem attractive; however, it cannot reflect well all cases of hallucination since that a hallucination can be elementary, “resembling a basic element of a given sensory quality, that is, hearing a tone or seeing a bright spot,”37 or, quite complex, “for example, hearing somebody talking or a beautiful melody or seeing whole visual scenes, and they can also be accompanied or dominated by emotions.”38 So particular instantiations will be disclosed—at least in the complex type—so this disjunctivst argument might not really hold. McDowell’s position is one that “can allow what is given to experience in the two sorts of case to be the same in so far as it is an appearance,”39 nevertheless, such appearance “can be either a mere appearance or the fact that such-and-such is the case making

38 Ibid.
itself perceptually manifest to someone.”⁴⁰ Yet this “mere appearance” or a similar simple disjunctive claim would obviously lump all the bad cases together (i.e. the defective perceptual cases in which the properties of the object are not realized) and as a result would treat an illusion as a case of hallucination which is certainly erroneous and not at all the case—the difference between illusions and hallucinations will be clarified below. So abandoning the common kind assumption will not provide proper differentiation of different kinds of experience in the way this move was designed to do, and perceptual experiences will continue to overlap, albeit this time in a different way. In order to distinguish between a hallucination and a veridical perception, the Disjunctivist instead enlisted hallucinations and illusions under one category and A. D. Smith and Howard Robinson have ridiculed this view. So even if a Disjunctivist approach manages to solve the Naive Realist problem by saying something on hallucinations, it “doesn’t yet tell us much about illusion.”⁴¹ To escape this issue while staying consistent with a naive realist view, a disjunctivist might need to permit illusions a veridical status: discrepancies in veridical perception are allowed—and can be explained—in accordance with variation in the experience’s conditions.

However, this particular argument (from perceptual relativity) can in effect weaken naive realism and is commonly used in favour of a sense-data theory as I will be discuss in the next chapter.⁴² It is also not clear whether every case of illusion can be solved—and thus be

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⁴⁰ Ibid., 472.
⁴² The Argument from Illusion will be discussed in the next section, the point of bringing up illusions in the current chapter is to show that/how an illusion might differ from a hallucination.
categorized as veridical—by merely considering the conditions of the experience, or if some illusions will eventually be treated as hallucinations, i.e. bad cases of experience.\textsuperscript{43,44}

Naive realism and disjunctivism are positions that counter the arguments in favor of sense-data existence but their attempted refutation of the Argument from Hallucination fails.

So far, I have discussed two problems with a Naive Realist/Disjunctivist account of hallucinations: one problem is that a Direct Realist theory of experience fails to give a positive account of hallucinations; another problem is that Disjunctivism doesn’t specify the error behind different perceptual instances that may be considered unsuccessful and as a result, the position assimilates hallucinations and illusions together under the umbrella of non-veridical perceptions which opens the concept of non-veridicality to many possibilities.

Now the challenge for a Sense-data Theorist is not to just refute Naive Realism but to also offer a positive account of veridical perception, because as much as Naive Realism fails to provide a well-formed account of hallucinations, sense-data theory keeps silent on veridical perception. Sense-data theory maintains that a hallucinatory and a non-hallucinatory experience are indistinguishable (the common kind claim) but doesn’t explain how the two might differ despite the indistinguishability. The latter theory, and arguments like the Argument from Hallucination, is rightly criticized as arguments that support only the negative claim, i.e. the claim that even an ordinary perception lacks a property, the property of being (directly) acquainted with an external object.\textsuperscript{45} In that regard, I seek to redefine hallucinations. On


\textsuperscript{44} This is in hallucinatory cases that are more illusions that hallucination or vice versa. Examples are distorted size/distance perceptions: misperceiving things as smaller or larger/nearer or further, also known by the name “Alice in Wonderland Syndrome.”

redefining hallucinations, the Naive Realist argument against the indistinguishability claim in the Argument from Hallucination will be blocked and thus the argument’s expansion to include veridical cases may find support. In addition, the new definition will clearly differentiate a hallucinatory experience from a non-hallucinatory experience that is nevertheless indistinguishable from it.

Instead of being an experience whose object is absent, a *hallucination*\(^{46}\) can be defined as,

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\text{A sensory experience which occurs in the absence of corresponding external stimulation of the relevant sensory organ, has a sufficient sense of reality to resemble a veridical perception, over which the subject does not feel they have direct and voluntary control, and which occurs in the awake state.}\quad^{47}
\]

This new definition blocks the Naive Realist argument against the Argument from Hallucination at (2),\(^{48}\) it is not that when one hallucinates, an ordinary object doesn’t exist; it is rather that a relevant sense-organ will not be engaged in the experience. A hallucination is a perceptual experience that—within a causal link—doesn’t involve the external stimulation of sense-organs. This would be the primary factor upon which a veridical perception differs from a non-veridical perception. If then the perception proves to otherwise involve sense-organs, one may turn to ask if the percept corresponds to a mind-independent entity or not. The answer would make a second factor in the differentiation. It is usually thought that, if, for example, a stick (while the sense-organs are engaged) is perceived as *straight* when suspended in air, the perception would be veridical; but if perceived as *bent or broken* when half submerged in a glass of water, it makes a

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\(^{46}\) It is worth noting that hallucinations are not exclusive to the so-called *mentally-ill* populations. Their occurrence spans to include many other conditions and can be experienced by *normal* individuals.


\(^{48}\) See, the second premise in the presented Naïve Realist argument: “When one hallucinates, an object doesn’t exist.”
case of sensory illusion. Due to suspecting that the second perception is false, one may need to ask if the perceived *bentness* corresponds to a mind-independent property of the stick or not; and if it turns out to have no correspondence to any mind-independent property of the stick, then the experience would be a case of sensory illusion. A detailed discussion of illusions will follow in the next chapter. The following algorithm (figure 1) demonstrates the different perceptual cases:

![Algorithm Diagram]

**Figure 1 The role of sense-organs in the veridicality of perception.**

The benefit of this new distinction is that, on the one hand, and unlike naive realism, this distinction doesn’t miss out cases where an external stimulus can be present at the distal end of a perceiving system and yet a perception will not be elicited\(^49\) while equally considering the many cases in which a perception is elicited despite the absence of external stimulation to sense-organs (e.g. aftereffects, phosphenes, hallucinations, artificial brain electrostimulation, the

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\(^49\) See, Cases of insensitivity to pain from birth, [https://www.ncbi.nlm.nih.gov/books/NBK481553/](https://www.ncbi.nlm.nih.gov/books/NBK481553/)
natural state of dream or imagination). And on the other hand, the definition shows that, in a certain sense, an illusion is different from a hallucinatory experience, and so it provides a more empirically accurate distinction than the one assumed by the disjunctive approach. The definition also illustrates that Disjunctivism doesn’t really oppose the indistinguishability claim because the two are not based on the same ground: the difference (disjunction) between a hallucination and a veridical perception doesn’t emerge from a dissimilarity in the content or status of perception but from the unfolding of the causal chain at a different step.

But the main advantage of this way of drawing the distinction is that it points out how a hallucination and a veridical perception can differ despite their subjective indistinguishability. This point rebuts J. L. Austin’s critical observation against the indistinguishability claim. Austin argues that “if dreams were not ‘qualitatively’ different from waking experiences, then every waking experience would be like a dream” and that “the similarity between the two groups is exaggerated… and some subsidiary features… are ignored by sense-data theorists.” Paul Snowdon reiterates the same notion: “the fact that two cases are indistinguishable to the subject does not mean that they are not, in themselves, quite different.” I argued, through this definition and without the need to refer to a Naive Realist view, that a hallucinatory and a non-hallucinatory perception differ despite their subjective indistinguishability.

But then the distinction is still defective. Although the distinction provides an adequate response to metaphysical Naive Realism by redefining the difference between a hallucination

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51 J. L. Austin, Sense and Sensibility, reconstructed by, G. J. Warnock (Clarendon Press ; Oxford University Press, 1962), 49.

52 Ibid., 54.

and a non-hallucinatory experience in an empirically accurate way, their ontological indistinguishability/similarity is not identified. It remains to be seen whether if this difference (the engagement of sense-organs or not) deprives a hallucination from the conditions necessary for a successful (indiscriminable) perception. Moreover, the new distinction which promotes sense-data doesn’t answer the critical question directed to naive realism, “what will the experienced phenomenal characters be referred to (in a hallucination or else)?” and whose answer may define the “common factor.” To identity an ontological indistinguishability, I resort to Howard Robinson’s causal argument. The argument rests on the “same cause, same effect” principle, it describes a perceptual experience, be it hallucinatory or veridical, as a process that involves multiple steps, these steps proceed in a causal chain where the experience becomes mediated at its end. Luckily or unluckily, the perceptual system truly extends to involve two ends, a proximal end and a more distal one, AKA central and peripheral parts; perception as an act can only be mediated centrally. The involvement of the system’s distal end alone, i.e., the sense-organs, is not sufficient for a perception to take place. A hallucination, a perceptual case that is defective only in the involvement of the sense-organs, therefore satisfies the conditions of a conscious perceptual experience. Howard Robinson argues,

> It is necessary to give the same account of both hallucinating and perceptual experiences when they have the same neural cause. Thus, it is not, for example, plausible to say that the hallucinatory experience involves a mental image or sense-datum, but that the perception does not, if the two experiences have the same proximate—i.e.neural—cause.\(^{54}\)

Based on Robinson’s causal argument, one can reargue in favor of sense-data and in the line of the Argument from Hallucination that:

(1) A Hallucination does occur at the proximate end of the perceiving system

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(2) When we are subject to a (sensory) hallucination, we are subject to perceiving sense-impressions without the involvement of the distal end of the perceiving system.

(3) Veridical perception is indistinguishable from hallucination because they both have proximate sense impressions.

(4) Therefore, the immediate object of perception is always a proximate sense-impression.

For some, this argument, which is a reformulation of the Argument from Hallucination, seems superfluous: it is normal to ask, why isn’t the mechanism or brain state responsible for the production of an image, or otherwise characterized subjective sense-content sufficient for the good case? The answer is simple, it is in fact sufficient, but not necessary; veridical perception is a causal process that connects an organism with its external environment; it is not meant by it to be either spontaneous or defective and if it were spontaneous or defective, as seen in aberrant over-activation in some sensory brain areas or in defective self-monitoring (misattributing self-generated inner speech to an external source), an unneeded bad case would result. As much as this sufficiency (and thus the commonality) refutes (metaphysical) disjunctivism, it, on the other hand, secures temporal differentiation: studies suggest that hallucinations and the processing of external stimuli compete for common neural substrates or processing sites to the point that these sites become “less responsive to external stimulation during hallucinations compared to when they (the hallucinations) are absent” This further supports the common kind claim and at the same time differentiates between the two perceptual experiences.

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57 Brackets are mine.
According to the defended causal argument, the experienced sensory qualities, and thus the direct object of perception, will be referred to the proximate end of the causal chain where perceptions are supposed to take place and in fact, the case cannot be otherwise: color-tuned neurons\(^{58}\) have been discovered in the visual cortex. “Lennie and others (1990) concluded that most V1 neurons show some degree of color tuning and that the population contained representatives with color biases for every perceivable color.”\(^{59}\) Moreover, hue maps were reported in visual area 2, V2, “Xiao and others measured… the responses to different colors—red, orange, yellow, lime, green, aqua, blue, and purple—presented as equiluminant color-and-gray gratings. The locations of peak activity for each color were sequentially shifted, so that regions of cortex most strongly activated by red were next to regions strongly activated by orange, orange next to yellow, yellow next to lime, and so on.”\(^{60}\) This means that the visual cortex is selective to color. At this point, it would be hard to say if these color-biased neurons will fire at the end of a causal chain (a process which—in a veridical perception—starts in their corresponding retinal visual pigments of the eye) when we perceive red or red will be perceived when these color neurons fire. The first fits the description of a perception that is veridical and the second perhaps better explains a color perception in a hallucinatory experience. And in either case, when this distinct neuron or group of neurons fire, the subject will be aware of a red thing. Importantly, these findings precisely describe Howard Robinson’s \textit{phenomenal principle}, which states that, “If there sensibly appears to a subject to be something which possesses a particular

\(^{58}\)“Population theory” is one among other information encoding theories, it states that different groups of neuronal cells encode for different perceived properties, such as form, color, motion, depth perception, or orientation.


sensible quality then there is something of which the subject is aware which does possess that sensible quality.\textsuperscript{61} The \textit{thing} of which the subject is aware is clearly a sense-datum which carries the \textit{property} color, a property which will be instantiated through the activity of the relevant neurons. The present account takes such \textit{thing} (sense-datum) to be the direct object of perception.

In this chapter, I presented the traditional version of the Argument from Hallucination, the argument concludes that the immediate object of perception is always a sense-datum so its conclusion is proof of the existence of such perceptual immediate entities; one of its premises is the common kind claim, which for some is an unjustified claim. I reformulated the Argument from Hallucination by grounding the common kind claim in Howard Robinson’s causal argument. The causal argument states that the immediate object of perception occur at the proximate end of the perceiving system and since that a hallucination is defective only in the engagement of the system’s distal end; it can be concluded that hallucinations satisfy the necessary requirement of a sensory experience and hence, their indistinguishability from a perception that can be described as veridical. By grounding the Argument from Hallucination in the causal argument, the common kind premise will be justified for and from this, the generalizing step can be concluded. Sense-data exist and they are the immediate objects of all sensory experiences.

For the sake of clarity, I will summarize the definition of some terms whose meaning will be central to the rest of the discussion: a \textit{hallucination} is a sensory conscious experience which occurs in the absence of corresponding external stimulation of the relevant sensory organ; an \textit{illusion} is a sensory experience which occurs in the presence of external stimulation of the

relevant sensory organ and whose sense-data may not correspond (for various reasons) to their mind-independent source; a *veridical perception* is primarily so if a sensory modality has its relevant sensory organ engaged in the experience and secondarily so when the percept matches its mind-independent source; a *perception* is a subjective conscious experience whereby a subject becomes acquainted with sense-data and which is realized at the proximate end of the perceiving system regardless of the characterization or the status of its content and regardless of the engagement of the distal end of the perceiving system (the sense-organs); a *sensation* is a perception that engages the distal end of the perceiving system.

Since that the case for hallucinations has been settled, the discussion in the next chapters will be limited to perceptions that occur in the presence of external stimulation of sensory organs; and the discussion of the causal argument will continue throughout the work.
1.3 The Argument from Illusion: Sense-Data Possess the Perceived Phenomenal Qualities

The Argument from Illusion draws upon its counterpart, the Argument from Hallucination. It affords a defense of sense-data, one that is based on the troubling distinction in philosophy “between ‘appearance’ and ‘reality,’ between what things seem to be and what they are.”62 However, while the Argument from Hallucination has the indistinguishability principle as a premise, the Argument from Illusion utilizes the phenomenon of conflicting appearances, rather than phenomenal similarities between veridical and non-veridical perceptual states, to argue in favor of sense-data. Equally important, the two cases, hallucinations and illusions, differ in the engagement of sense-organs.63 An “illusion” is a perception that engages sense-organs, whereas in a hallucination, sense-organs are not involved.64 In this short chapter, I will first present the Argument from Illusion by presenting the well-known case of the “crooked pen,” a pen is seen straight when fully suspended in air and broken or bent when half-submerged in water. I will then look into how the illusion can be resolved phenomenologically, as it is sometimes possible to infer the cause behind the conflicting perceptions by merely reflecting on them. Lastly, I will show that by following the causal process behind the illusion, this phenomenological analysis for the conflicting appearances can be grounded in differences of sense-data. By proving that the


63 I argued in the first section of the chapter that, the lack of sense-organs engagement is an important defining feature of a hallucination. See, Figure 1.

64 An illusion is a perceptual experience that differs from a delusion. Delusions are maintained false beliefs despite compelling evidence to the contrary. Definition from: Georges Naasan, “The Anatomy of Delusions,” *Genomics, Circuits, and Pathways in Clinical Neuropsychiatry* (2016)).

The traditional version of the Argument from Illusion shows that “what we are directly aware of in perception is never the real, physical object.”\footnote{Michael Huemer, "Sense-Data," section 2.2: The Stanford Encyclopedia of Philosophy, edited Spring 2019, Edward N. Zalta (ed.), URL = https://plato.stanford.edu/archives/spr2019/entries/sense-data/} Cases of conflicting appearances of the same perceived physical object,\footnote{The next chapter discusses the different meanings of the word “Object” where I will argue that perceived ordinary objects like pens, apples, or tables are themselves a perception of form and thus percepts or sense-data.} for example, a perceived pen or a table, are often presented to show that we have no immediate access to that mind-independent object. So in its premise, the argument makes a hypothesis, the hypothesis is that there exists only one mind-independent object with invariant properties. This “sameness hypothesis” serves to prove that the contradictory appearance cannot belong to that same mind-independent thing. However, some other arguments tend to rather falsify one of the two conflicting appearances and approve of the other; by this principle, one of the contradictory perceptions—the false one—defines the illusion. So an illusion is sometimes defined—by means of judging the perceptual experience rather than just reporting them—as, “a judgment about an object or event that does not agree with a judgment based on a more reliable mode of observation.”\footnote{Ian P. Howard, Brian J. Rogers; Perceiving in depth, volume 1: Basic Mechanisms, Chapter 3, Psychophysics and Analysis (Oxford University Press), 98.} I will not follow the latter line of thought in arguing for illusions. For example, in the crooked pen illusion, I will neither argue that “No relevant physical thing is bent in this situation”\footnote{Michael Huemer, "Sense-Data," section 2.2: The Stanford Encyclopedia of Philosophy, edited Spring 2019, Edward N. Zalta (ed.), URL = https://plato.stanford.edu/archives/spr2019/entries/sense-data/} nor that “what one is directly aware of
merely appears bent but is not in fact bent.”70 Despite the fact that the use of these assertions about the state of the perceived pen may strengthen the argument, the preferred idea here is not to favor one perception by assigning reality to it while discarding the other appearance. So rather than denying that the pen is crooked and employing this as a fact to prove that what is crooked must be a sense-datum, I will follow the Pyrrhonian skeptics in “that there is no saying which it is, one must suspend judgment,”71 and go with the belief that the conflict in perception is sufficient to present the case of illusions. The only hypothesis to make in the case of the crooked pen or any other illusion will be the following: “there is only one stick-like thing,”72 “there must be something over and above the private and particular sense-data which appears to various people.”73 According to this hypothesis, the Argument from Illusion, in the specific case of the bent pen, can proceed as follows:

1. The mind-independent object **Pen** cannot be both **bent** (F) and **not bent** (not-F)

2. I *perceive* a pen with both the property **bent** (F) and the property **not bent** (not-F)

3. Therefore, I am not aware of the mind-independent object **Pen**

   From (3) it is concluded that a perceiver must be aware of sense-data or at least of something other than the mind-independent object pen. However, the argument as presented here can be refuted at (2). A J. Ayer challenges sense-data theorists on the language they use to describe delusive experiences; Ayer blames it on the propositions made. Because by making a proposition like in (2), a sense-data theorist, according to Ayer, falls into the trap of designating real modes

70 Ibid.


72 Ibid.


of perception (see) to something “whose validity” cannot be subjected “to empirical tests.” By the latter thing whose validity is unverifiable, he means sense-data, because when one says, “I see a sense-datum,” he will be “saying something the truth or falsehood of which makes no difference whatsoever to the nature of... experience.” Seeing is a real mode of perception, whereas a sense-datum is not, these propositions halt sense-data theory and don't allow it to go beyond being a new verbal use. This novel technical language may, according to Ayer, assist our defective ordinary language when describing deceptive cases like illusions but in using this language, a sense-data theorist “is not putting forward a new hypothesis which could be empirically verified or confused.” Thus, the real challenge in the Argument from Illusion is to empirically verify the statement in (2).

How is it possible to assert that a perception of a bent pen, i.e., a bent sense-datum, is as real as a perception of a straight pen if all that I see is a pen and not a sense-datum? And how is it possible to assert this empirically through perceptual experience? The “illusion of the crooked pen” can be experienced when in one instance, the pen is perceived with the property “bent” and in another instance with the property “not bent;” and it is undeniable that both the property bent (F) and not bent (not-F) are given within a perceptual experience. So to analyze the perceived property bent (F), one can utilize reflection by looking into what resolves the property bent (F) or what resolves the illusion. Within the visual modality—the visual modality can itself be perceptually verified by blinking—the perceptual discrepancy can be resolved by entirely removing the pen from or fully submerging it in water, by experimentally doing so, the pen will

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75 Ibid.
76 Ibid.
no longer be broken. The following table illustrates the empirical analysis and I will call this experiment (1):

<table>
<thead>
<tr>
<th>Perceived Medium</th>
<th>Air alone</th>
<th>Water alone</th>
<th>Air and Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense-organ (Perceived by blinking)</td>
<td>Vision</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Pen</td>
<td>Not Bent</td>
<td>Not Bent</td>
<td>Bent</td>
</tr>
</tbody>
</table>

Moreover, the illusion can be equally resolved while maintaining the perceived medium, i.e., by keeping the pen half-submerged in water. This is tenable if it will be perceived via a different sense modality: if the pen is perceived by the sense of touch while being half-submerged in water, the illusion will resolve. The following table illustrates the empirical analysis and I will call this experiment (2):

<table>
<thead>
<tr>
<th>Perceived Medium</th>
<th>Air and Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense-organ (Perceived by either blinking or hand movement)</td>
<td>Touch</td>
</tr>
<tr>
<td>Perceived Pen</td>
<td>Not Bent</td>
</tr>
</tbody>
</table>
Experiment (1) proves that the sense of vision, i.e. visual sense-data, is not sufficient to produce the illusion or the perceived property bent (F) since that it was possible to visually perceive the property not bent (not-F) when the pen was fully submerged in water; and experiment (2) shows that submerging half of the pen in water is not enough to produce the “crooked pen” illusion since that while half-submerged in water, a property not bent (not-F) can be haptically (by touch) perceived. Experiment (1) proves that the visual modality alone is not the reason behind the perceptual conflict and experiment (2) proves that submerging half of the pen in water is not the only reason behind the perceptual conflict. From (1) and (2), it can be concluded that the property bent (F) is necessitated by the presence of three elements and these are: vision, air and water, because the removal of any of these empirically perceived elements resolves the illusion or the perceived property bent. Thus, the property bent (F) does not belong to the perceived pen, it is something else, we can call it a sense-datum; and a sense-datum bent (F) is something which the availability of vision, air and water secures within a perception and to which the presence of the pen remains neutral. The laws of physics support this empirical observation, the law of refraction or Snell’s law states that light (vision) bends when it moves from a medium with a higher index of refraction, such as (water) to another medium with a lower index of refraction, such as (air) (illustrated in figure 2). But I don’t observe a light ray that bends. I, in fact, see a pen with the property bent (F). So how can a property bent (F) or not bent (not-F) be implemented in a sense-datum that reports about the pen?
Figure 2 Light reflection and refraction. (a) Light reflects off a smooth surface at the normal (dashed line) with an angle of reflection (θr) equal to the angle of incidence (θi) (left); Snell’s law states that light refracts upon travelling from a medium to another with different indices (right). (b) Light bends away from the normal and the reference line (red) when it travels from water (blue circle) to air. (Illustration (a) adapted from *On the optical path length in refracting media*. Javier E. Hasbun. American Journal of Physics 86, 268 (2018)). (Illustration (b) adapted from *Conceptualization of Light Refraction*. Andrzej Sokolowski. The Physics Teacher 51, 110 (2013)).

If we accept the argument’s hypothesis in (1) which states that a mind-independent object (pen) exists independently of perception and that it cannot be both bent (F) and not bent (not-F), it follows that on one hand light that is normally reflected from an arbitrary point X at the submerged half of the pen will then be refracted as it travels from water to air before falling on the retina at a certain angle (corresponds to point P2 in figure 3); and on the other hand, if the pen were rather suspended in air, light reflecting off the same arbitrary point will fall at a different point on the retina (P1 in figure 3) since it doesn’t refract (figure 3 left). Therefore, light that refracts follows a different path from light which does not refract. To return to our half-submerged pen, light reflected off its un-submerged upper half will follow a path different from
light reflected off its lower submerged half. That is because light from one half will refract before hitting the retinal sheet while light from the other half will not. Consequently, on the bi-dimensionally extended retinal sheet, light from the first half will stimulate photoreceptors different from the photoreceptors stimulated by light from the second half. Two targets will be spatially localized as a result. Eventually, the data at the retina will be processed, transmitted and perceived at a retinal spatial map possessed by the visual cortex, known as the retinotopic map. The perceiver will spatially locate the upper half of the pen and the pen’s lower half at different places in the visual space. The two halves of the pen will be differently localized in the perceiver’s visual field, the field which is constructed from visual sense-data. It is true that the mind-independent pen contributes to the perception by reflecting light, but the property bent (F) belongs to these spatially differentiated perceived data.

Figure 3 The Illusion of the Crooked Pen. Light reflects off a pen suspended in air at arbitrary point X and hits the retina at P1 following the path of the reference line (red) (left); light reflecting off the same arbitrary point will refract as it travels from water to air before hitting the retina at P2 (right). (Illustration adapted from Conceptualization of Light Refraction. Andrzej Sokolowski. The Physics Teacher 51, 110 (2013)).
In this section, I presented the case of the crooked or bent pen to model an Illusion. It is difficult to find a broad definition that encompasses all cases of illusions because each case of conflicting perceptions can have its own clarification; the favored theme here is to treat all perceptions as valid, without favoring one perception or the other. However, perceptions, which disagree, make an “influential argument for the existence of sense data.”78 Conflicting appearances can be traced back along their causal process where we find that an explanation for these dazzling perceptual differences “must lie in a detailed understanding of the interaction between perceiver and perceived.”79 I presented an explanation for the illusion known in the literature as “the crooked pen,” the phenomenological and scientific explanation is grounded in the fact that perception is a causal process. The Argument from Illusion is based on the offered explanation and on the hypothesis that a mind-independent thing with invariant properties exists. Because the causal process demonstrates that the conflicting appearances are reflected in sense-data, it was concluded that: if the hypothesized mind-independent entity will ever be perceived, it will be through the perception of sense-data.

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Chapter 2. Sense-Data are the Sole Objects of Perception

According to the causal argument of perception that I defended in the previous chapter, sense-data are the objects with which the subject becomes acquainted within a sensory experience. They, rather than any other entities, are the objects immediately presented to the perceiver’s mind. This account of perception needs to be complemented with another account about the “relation between sense-data and the world of material objects,”80 so in this chapter, I will first discuss the different meanings that the word “object” might bear according to different philosophical schools; second, I will explore the relation of what is called “Ordinary Object”81 to sense-data and if this “Ordinary Object” is perceived, i.e., mind-dependent or not.82 If these objects are not perceived, then they should hold a relation of some sort to the direct perceptual objects or to sense-data; if they are however directly perceived, then they should themselves be categorized as sense-data, given that I have argued, in the previous chapters and in agreement with most models of sense-data theory, that sense-data are the immediate objects of perception. Out of these two possibilities, I propose that what is referred to as “Ordinary Objects” is itself a perception and my objective is to show that the bodies that are usually thought to be “persistent macroscopic constituents of the world we live in,”83 often conflated with mind-independent existence (even according to some sense-data accounts) and to which we refer the different sensations of colours and shapes and smells, are themselves perceived and thus mind-dependent.


81 The term “Physical Object” is sometime used in the philosophical literature to refer to a medium-sized object, such as an apple. I will instead use the word “Ordinary Object” because the discussion is not intended to reveal the physicality of such substance. The chapter only explores if these “Ordinary Objects” are sense-data or not.


83 Ibid.
“Such things as stones, tables, trees, people and other animals”84 are mind-dependent entities, they stand on equal footing with sense-data, for they are sense-data.

2.1 “Objects” in the Philosophical Literature and their Relation to Consciousness

Sense-data received the status of being the direct objects of awareness because their perception is taken to be a representation of other arbitrary entities the existence of which is independent of the perceived data. The perception of this mind-independent existence, if proved possible, will in turn be less direct than the perception of sense-data. In that sense, sense-data Theorists are considered Representationalists and they agree with the Phenomenalists on the immediacy of sense-data; the two groups however disagree on the ontological status of these immediate objects of perception: “The Representationalist holds that physical objects are not to be identified with the immediate objects of awareness, but are quite distinct from, and capable of existing independently of, these immediate objects,”\(^\text{85}\)\(^\text{86}\) while the Phenomenalist “holds that physical objects are nothing more than constructions out of the immediate objects of awareness, and so holds that physical objects do not exist independently of perception.”\(^\text{87}\) A third school of thought tends to get rid of these immediate objects altogether when describing a perception: Adverbialists are state theorists who deny the existence of sense-data and therefore, the word “object” for an Adverbialist will hold a different meaning from that intended by Representationalists and Phenomenalists. An “Ordinary Object” is all that is there, according to this school, since that perception reveals the object’s identity.

Although an Adverbialist and a Phenomenalist share the custom of describing their perceptual experience; in their narrative, they will be referring to the same object while meaning


\(^{86}\) The defended account is a representationalist account of perception, however, it admits, against some representationalist views, that Ordinary objects are rather sense-data due to the fact that they are perceived.

different things. When engaging in a description of his perceptions, the only objects that Adverbialism might admit of are those which the layman calls “Ordinary Objects” and which are thought to be capable of existing independently of the perceiver. The Phenomenalist, as just mentioned, does not admit of any objects existing independently of the perception because the only immediately accessible existence is the phenomenal. A Representationalist agrees on the latter, he considers perceptions to be a representation of a different class of objects, where the representation is a sense-datum, i.e., a direct object, and the represented is perceived indirectly, if perceived at all, and thus an indirect object. Because the nature of sense-data is a matter of dispute and what is only asserted about them is their mind-dependency, sense-data are often portrayed as mental; and because they are usually presented in a dichotomy with their mind-independent counterparts, the physical attribute became the defining feature of the latter but not the earlier mind-dependent perceived entities. Thus, the physicality of an object is commonly used by a Representationalist and a Phenomenalist to refer to something that is concealed and “never appear to us in actual fact” while what comes to awareness may still be an object yet more immediate and of a disputed nature. This is how the use of the word “object” has become a puzzle, by meaning different things depending on the position of the speaker.

Another intricate problem is, where this ordinary object might be? A believer in the mental-physical dichotomy will claim that “all mental phenomena...are perceived only in inner consciousness, while only outer perception is possible for the physical,” and the denier of a separate mental world, like an Adverbialist, will spare ordinary objects an external space of their

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88 This account doesn’t contrast what is physical with what is mental. It, however, contrasts what is mental with what is not mental, or what is mind-dependent with what is mind-independent.


90 Ibid., 51.
own. The views of Adverbialism and Phenomenalism on this are surprisingly the same despite their disagreement on the identity of these objects. Both accounts permit only one place for perceptions: whereas an Adverbialist acknowledges perceptions to be only outer, the “so-called outer perception is...not perception”\textsuperscript{91} according to a Phenomenalist. The place of perception is thus either outer or inner, but in both cases and for both views, it has only one place. A Representationalist offers an inner place for perceptions to occur (in the subject’s awareness) and an outer place for objects to exist. The identity of ordinary objects as either being outer and perceived (Adverbialism) or of them being outer but unperceived (Phenomenalism) changed as a result of claiming them to be outer and yet indirectly perceived, i.e., accessible, (Representationalism). The position on ordinary objects that I am proposing takes them to be \textit{inner} and \textit{perceived}, equating them with sense-data of colors, smells, or temperatures. This argument, i.e. of ordinary objects being inner and perceived or existing in the perceiver’s awareness, will be presented after a discussion on the root of “Objects” as a concept in philosophy and their relation to consciousness. By tracing their story from the start, it will become clear how ordinary objects were given this wide range of possible identities and places and why is it more plausible to think of them as inner and perceived entities.

Ontological Idealism is a metaphysical theory that holds that immaterial existence, i.e., mental or spiritual existence, to be “the ultimate foundation of all reality,”\textsuperscript{92} and refuses to admit any physical form of it. According to this immaterialist position, “all that exists are ideas and the minds, less than divine or divine, that have them,”\textsuperscript{93} so even “physical objects consist in

\textsuperscript{91} Ibid.


\textsuperscript{93} Ibid.
George Berkeley’s immaterialism is explicit in *The Principles Of Human Knowledge*: “All the furniture of the earth...have not any subsistence without a mind...so long as they are not actually perceived by me or do not exist in my mind or that of any other created spirit, they must either have no existence at all or else subsist in the mind of some external spirit.”

G. E. Moore attempted to refute Berkeley’s position in his article, “The Refutation of Idealism.” Moore is a Commonsense Realist, his intention, in the article, was not to refute that reality or the universe is mental but his desire was to show that the proposition upon which Idealists like Berkeley ground their ontological position is false: The proposition “esse is percipi,” that is, to be real or to exist, a thing must be perceived, is false. Moore demonstrates the falsity of this proposition by showing that being committed to a position, which identifies the existence of an object and the perception of it, risks a contradiction, it contains the contradiction of “saying that a synthetic necessity can be proved by the law of non-contradiction alone.”

Moore argues that, (1) the proposition “esse is percipi” is an argument “about the world (Moore calls it experience), not merely a claim about the meanings of words or the relationship between concepts,” so it is a synthetic proposition; and yet, (2) the proposition assumes an identical relation which can be proved by the law of non-contradiction alone (yellow and the sensation of yellow are identical for an Idealist) and since that, according to Moore, (3) “no truth can be both analytic (proven by the law of non-contradiction alone) and synthetic (cannot be proven by the

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97 Ibid., Section e, brackets are mine.
law of non contradiction alone),”\textsuperscript{98} it can be concluded that the proposition “esse is percipi” is not true. Moore puts his argumentation as follows,

What I suggest then is that Idealists hold the particular doctrine in question, concerning the relation of subject and object in experience, because they think it is an analytic truth in this restricted sense that it is proved by the law of contradiction alone [...] To assert that yellow is necessarily an object of experience is to assert that yellow is necessarily yellow - a purely identical proposition, and therefore proved by the law of contradiction alone. Of course, the proposition also implies that experience is, after all, something distinct from yellow - else there would be no reason for insisting that yellow is a sensation: and that the argument thus both affirms and denies that yellow and sensation of yellow are distinct is what sufficiently refutes it\textsuperscript{99}

Moore, despite refuting Idealism, agrees with Berkeley on the immediacy of perception (on sense-data being the direct object of perception), however and unlike Berkeley, the notion that this immediacy stems from the \textit{absolute} existence of the perceived objects in the mind (any perceiving mind) doesn’t appeal to him; perhaps, Moore thinks instead that this immediacy stems from the immediate objects being perceived. So, although Moore might not be happy about the dependence of the objects of perception \textit{in their existence} on a perceiving mind,\textsuperscript{100} he won’t mind their dependence \textit{in their perception} on that mind—without denying the existence of mind-independent objects. Moore’s argument is not clear and it is certainly not the most agreeable: it keeps the immediate objects, refuses to identify the existence of all objects with the mind, but coin their perception with an action of it. It doesn’t really assert that the objects of perception can exist unperceived, i.e. it never answers Berkeley’s worry, it only explains their relation to the mind. However, the argument’s distinction between the act of perception, i.e. the subject’s mind which is realizing the perception, and its object is a turning point in the Theory of Perception.

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{98} G. E. Moore, “The refutation of Idealism,” 31, URL = \url{http://selfpace.uconn.edu/class/ana/MooreRefute.pdf}
\item \textsuperscript{99} Ibid.
\item \textsuperscript{100} Paul Snowdon, “Sense-Data,” in \textit{Moore’s Interpretation of Sense-Data}, ed. Mohan Matthen (Oxford University Press, 2014).
\end{itemize}
\end{footnotesize}
what later came to be known as the act-object distinction, “the sensation of yellow” or the act of sensing yellow and “yellow” or its object were no longer identical, and this moved existence per se from a world of minds (Berkeley’s immaterialism) to a world of objects, re-opening the door for Representationalists to argue that the dependence of an object of perception on the mind in being apprehended doesn’t rule out the possibility of the existence of another object that might be mind-independent, given that the mere existence of every object is now distinguished from and is no longer dependent on the mind. This led to the division of believers in sense-data into two groups. The two sense-data proponents are Representationalists and Phenomenalists, their position on what is known as “Ordinary Objects” has been discussed above.

It can be argued that the real purpose behind Moore’s move (the act-object relational characteristic of experience) was only to refute Idealism and this was A. J. Ayer’s analysis of Moore’s act-object relation: “We have seen that the reason why some philosophers have been anxious to deny that the experience even of sense-data consists in their being perceived, is that the acceptance of this principle is thought to lead to idealism. It is believed that…this is to put in question the reality of the external world.”101 Others regard the distinction necessary because perceiving sense-data is a kind of knowing, for if “it is supposed to be an essential characteristic of knowledge that what is known exists independently of the knowing of it,”102 then the distinction between a knower (actor), the act of knowing (the act), and what is known (object) is needed. Here, sense-data can maintain their immediacy and a room may be made for an object to be known through them. Hence, the need for a perceptual relation, which takes the form $S$ perceives $O$. H. A. Prichard denied that perceiving is a kind of knowing; but the idea was entertained by some sense-data Theorists, such as D. M. Armstrong and A. J. Ayer.

102 Ibid., 65.
In either case, Moore’s act-object formula is a realization of refuting idealism, where the existence of an object—ordinary unthinking object—becomes independent of its perception. It considers conditioning the absolute existence of something with its perception (esse is percipi) false, because this condition affirms the possibility of its existence—if perceived, so it can not be possible to deny (or confirm) the existence of something that was never perceived, which what an Idealist may propose. In other words, “it makes no sense to ask how things appear when they are not observed”\(^{103}\) because “the way in which the question is put effectively preempts the possibility of it ever being answered.”\(^{104}\) Modern Phenomenalists “tried to avoid this problem by claiming that statements about the world can be analysed into statements about sense-experience”\(^{105}\) Another way of putting it is that Phenomenalists allowed “the continued possibility of experience,”\(^{106}\) where “physical objects are thought of as constructions out of actual and possible sense-data,”\(^{107}\) thus, “there is no mention here of an independent world, such conditionals are only described in terms of the content of one’s experience”\(^{108}\) and nothing more. By neither denying nor confirming the existence of a physical world, a Phenomenalist gives himself the right to think that “the meaning of any statement which refers to an object may be fully conveyed in statements which solely refer to sense-data or the sensible appearances of things.”\(^{109}\)


\(^{104}\) Ibid., 98.


\(^{109}\) Ibid.
Moore’s question on awareness continues to be a scientific puzzle, if solved, this may prove him right about the distinction between the mind’s act of awareness and its object. The distinction is plausible, for it is more often than not that we are given many and different objects in one and the same perceptual experience; Moore observes the unity of the experience that holds discriminable objects, “blue is one object of sensation and green is another, and consciousness, which both sensations have in common, is different from either.”\textsuperscript{110} If consciousness is truly different from the object of which the perceiver becomes conscious, it is legitimate to inquire about the nature of consciousness and not just the object’s identity. That is to ask, “What happens in the brain when a stimulus is shown, and can we establish when conscious experience emerges from the neural activity it causes?”\textsuperscript{111} Sense-data (which are the objects of which a perceiver becomes aware in my proposal) can be identified with certain neuronal activity within the perceptual system and it is perhaps more natural for us to think that we scan our environment, by moving our eyes or guiding our hands in space; yet the evident selectivity of neurons to their stimuli means that in perception, the world will also be scanned against the perceptual system; neuronal selectivity means that a specific area or certain neurons in the perceiving system will specifically respond when their corresponding stimulus will be present and when the perceiver experiences a certain experience. If we take the brain’s visual cortex, a cortex whose “neurons exhibit complex tuning properties such as selectivity for motion, depth, colour or shape, and even respond selectively to faces,”\textsuperscript{112} we find that the incoming visual information will be processed through a “Feedforward Sweep,” the sweep of the neuronal impulse through the visual

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\textsuperscript{112} Ibid.
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cortex will allow each area in the cortex to rapidly *extract* its corresponding information, if found. And “Within several milliseconds each area extracts information about shape, color, motion, position, objects and faces. Processing by the feedforward sweep is not, however, accompanied by conscious experience of the visual input.”  

The extraction step gives birth to sense-data, but not to the act of awareness nor to being aware of them. “What seems necessary for conscious experience is that neurons in visual areas engage in so-called recurrent (or re-entrant or resonant) processing, where high- and low-level areas interact,”  

extracted information will be shuffled back and forth in feed-forward and -backward move. This process of exchanging information and its necessity for realizing awareness of the neural data “is a view that is now being increasingly embraced,” yet in order to solve D. J. Chalmers’s hard problem of consciousness or to understand the worth of Moore’s distinction, more is yet to be known about “Where… does the neuronal processing of…information become conscious?”  

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114 Ibid., From Neural Activation to Visual Experience.

115 Ibid.

2.2 An “Ordinary Object” is a Perception of Form

In the previous section, I discussed the various meanings of the word “object” and what it might mean according to the different philosophical theories of perception. I will now demonstrate how these objects, i.e., the macroscopic visuo-tactile continuants of the world, can be accounted for by means of sense-data, I argue that (1) an “Ordinary Object” is perceived, (2) sense-data are the immediate objects of perception, then (3) an “Ordinary Object” is a sense-datum. The argument matches with Berkeley’s view on the dependence of an “Ordinary Object” on the mind by concluding that what we ordinarily call “object” is a sense-datum, but it rejects Berkeley’s hypothesis that sense-data constitute the essence of all existence—to the degree of him denying the existence of mind-independent objects. The defended view also rejects the common sense position on an “Ordinary Object,” since the common sense view overlooks the fact that seeing an apple involves seeing, where seeing is an act of the mind that determines mind-dependency. According to the common sense position, our daily “Sensible experience is permeated by concepts… and these concepts are about realistically conceived objects,”117 thus when making a meaningful perceptual judgment of the form, “the apple is red,” a perceiver predicates “red” of a subject “apple,” where the statement’s subject is commonly considered a persisting material existence that is transparently revealed in perceptual awareness and the predicate is usually thought of as a property possessed by this subject. This area is worth exploring seeing that the visuo-tactile nature of what we call “Ordinary Objects” implies that they are given in perception via vision and touch. So what can this persisting object really be? My proposal about an “Ordinary Object” is that the perception of something such as apple holds the immediacy that

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enables it to be mind-dependent. There will be no attempt in this proposal to analyze an object apple, or construct it from or break it down to sense-data as a Phenomenalist might venture. Nevertheless, it is often missed that the “bearers of phenomenal (visuo-tactile) properties”118 are themselves perceived as much as the properties attributed to them; they are given within a perception and they make part of it. Perceiving an apple is unanalyzable because “object” is a sense-datum as much as “color” is. So if it is only “Relative to the human perceptual standpoint, the grosser ordinary objects are visuo-tactile continuants,”119 then it must be the case that human perception characterizes these grosser visuo-tactile continuants and it can be argued,

(A) I see an apple, where seeing is a perceptual experience that involves sense-impressions

(B) The immediate object of perception is always a proximate sense-impression (concluded in chapter I from The Argument from Hallucination)

(C) Therefore, a perceived apple is an immediate object of perception or a sense-datum

This argument contradicts the popular idea that something like a piece of chalk is “a particular persisting mind-independent physical object,”120 it moreover contradicts “Locke’s inventory of primary qualities.”121 According to the Lockean classification, perceived qualities of “shape, size, position, number, motion-or-rest and solidity”122 are the primary qualities “whose existence

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119 Ibid., paragraph 42.


is independent of a perceiver”\textsuperscript{123} and hold stronger resemblance to the assumed entity than the secondary qualities. (C) thus concludes—against the concept of primary qualities—that such visuo-tactile continuants are, in their entirety, mind-dependent and that information about size, motion, object, face, place are neither over nor above information about color, sound, taste, or texture and that all these different features are obtained through sense-perception and are sense- or mind-dependent. Perceiving “Ordinary Objects” is a mental representation of its own kind.

In order to reveal the perceptual identity of an “Ordinary Object,” I will analyze some of the Lockean properties, the search will include both primary and secondary properties because, as just argued, Locke’s “distinction between two kinds of properties of ordinary objects”\textsuperscript{124} is “difficult to defend.”\textsuperscript{125} Even though I will not rely on the primary/secondary distinction of qualities in my analysis and that the clear dependency of all perceived qualities on the mind makes it unjustifiable, it can be valuable to reflect on its source. It is observable that some of the “primary qualities can often be detected by more than one sense (length, motion, for example) whereas the ideas of secondary qualities are specific to one sense (color to sight, sound to hearing, temperature to skin senses).”\textsuperscript{126} The earlier is a multisensory perception, but is a commonly processed quality, i.e. a representation of a certain perceptual quality through more than a sense modality, satisfactory to assign primacy, resemblance, or mind-independency to something perceived? Motion perception for instance is a multi-sensory representation detected haptically by the skin and visually by the eyes. Tactile motion information is conveyed from the

\textsuperscript{123} Danial O’Brian, “Objects of Perception,” section 1, direct realism The University of Birmingham U. S. A. URL = https://www.iep.utm.edu/perc-obj/


\textsuperscript{125} Ibid., 103.

\textsuperscript{126} Ibid.
skin (a sense-organ) by means of specialized mechanoreceptors,\(^{127}\) “the spatial-temporal pattern of activation of mechanoreceptive afferents (caused by the displacement of object contours over time) and skin stretch caused by friction between skin and object”\(^{128}\) generate the representation of motion because when “a stimulus moves across the skin, it sequentially activates adjacent populations of afferent fibers,”\(^{129}\) and such sequential activation is further read by an existing brain/cortical map of the skin’s surface (somatotopic map). Visually, several theories and models are being proposed to account for the mechanism of visual motion perception, and whatever the case will turn out to be, visual motion perception shall boil down to a sequence of “varying luminance”\(^{130}\) or color. Considering that the eye’s photoreceptors are sensitive to nothing but light, motion perception needs to be encoded in light’s terminology, thus “motion information from a two-dimensional sheet of receptors in the retina”\(^{131}\) will be represented by means of a sequential change in the pattern of light over that retinal sheet. Reciprocal information from the sense of touch and vision will then become integrated, the concurrent perception may initially sound adequate to define the primacy of a perceived object because the “neutrality between senses”\(^{132}\) could reflect the persistence that we are in search for; however, a multisensory motion perception may only be attributed to a perceived object but it can neither define nor bear resemblance to “object” perception, that is because static perceived objects are scattered in our

\(^{127}\) Mechanotransduction is a physiological process through which mechanical energy (kinetic and potential energy) is transduced or converted to chemical/electrical energy at the skin’s mechanoreceptors, the resulting electrical impulse is then signaled peripherally through nerve fibers to the central nervous system where motion selective neurons become activated.


\(^{129}\) Ibid.

\(^{130}\) Understanding the rotating snakes illusion, Introduction: URL = https://www.ucl.ac.uk/~ucbpmor/docs/case_study3_mor_web.pdf


surroundings and we continue to call them objects despite their static state and it is also the case that we don’t identify a moving dot on a flat screen as “object” despite it being in motion. Therefore, in order to explore the identity of an “Ordinary Object,” a property must be identified as “invariant with respect to other stimulus properties.” In other words, the description “Ordinary Object” survives variation in motion, then “motion” cannot be the proper quality according to which we may identify a perceived object as so, even though movement can be a clue through which the presence of an object is simultaneously confirmed by several senses. This method can be applied to each of the Lockean properties in search for an invariant property that may fit our description of an “Ordinary Object,” so in the rest of this section, I will apply it to (1) color as a secondary quality and to (2) shape as a primary quality. A discussion on position will follow in the next chapter. Can a fixed color, shape or position mark the persistence of a perceived object?

Bertrand Russell presents an analysis of the color of a table that lies in his room whose perception is shared by him and any other normal person in the following passage:

Although I believe that the table is ‘really’ of the same colour all over, the parts that reflect the light look much brighter than the other parts, and some parts look white because of reflected light. I know that if I move, the parts that reflect the light will be different, so that the apparent distribution of colours on the table will change… It is evident from what we have found, that there is no colour which pre-eminently appears to be the colour of the table, or even of any one particular part of the table—it appears to be of different colours from different points of view, and there is no reason for regarding some of these as more really its colour than others.134

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According to the common sense view, which is the view that Russell is refuting here, a certain color, say brown, may be “a sign of something existing independently of us,”¹³⁵ because the perception of brown signals the start and end of a table and its presence as a result. Yet, Russell, in this passage, finds the idea of predicating one specific color to an object implausible, encouraging his reader to be more precise and attentive: he brings to attention the fact that color is not inherent in the perceived object, “but something depending upon the table and the spectator and the way the light falls on the table.”¹³⁶ Indeed, luminance, which can be simply defined as “the intensity of light falling on the retina from a point in the stimulus,”¹³⁷ is expected to vary with the change in distance between the perceived object and the perceiver’s eye; in Russell’s example, as the perceiver moves, the parts of the table which are closer to him (and to the light source) will be brighter and the more distant parts will appear dimmer that it becomes impossible to assign one degree of luminance to a single part in the table. In fact, the varied degrees of luminance, where “White represents maximum luminance and black represents zero luminance,”¹³⁸ can “provide information about an object’s dimension and depth,”¹³⁹ and can be noticed even without a change in the lighting conditions. In other words, perceived luminance provides the perceiver with a depth-cue through which he instantly judges the distance between the perceived and his own eye (body). Yet, Russell, at the opening of the cited passage, asserts his belief in the uniformity of the table’s color despite the described variation in brightness.

Perceived color, i.e. the representation of frequency of light, has its own share of variability by


¹³⁶ Ibid.


¹³⁸ Ibid.

being “a product of two variables, the spectral content of the illuminant (the light source) and the absorptive properties of the object”\textsuperscript{140} and despite of the variability, color’s uniformity is indeed a reliable cue to object identity. Nature has taught us that color breaks off at the object’s contours (contours make up a perception of their own), as it is more likely for an amalgamated mind-independent physical body to have a uniform physical composition and thus a unique absorptive property to light, the sensation of brown will discontinue at the table’s edge and will be replaced by the sensation of another hue. So perceived phenomenal color is indeed a powerful discriminatory tool\textsuperscript{141} and its unity can at times be an indicative sign of the existence of one continuous mind-independent body and this is perhaps the reason behind Russell’s assertive belief about the uniformity of the table’s color. Nevertheless, more than one color may belong to something that is identified as one “Ordinary Object.” Additionally, it is always possible to distinguish many adjacent objects from each other (and count them) despite bearing the same color. Thus, color is not the invariant perceived data whose belonging to an object solely defines it.

One way to describe a perceived object is by noting its apparent dimensions; a table can be rectangular or square. Extension is said to be a “fundamental defining property of a physical object.”\textsuperscript{142} Extension is perceptually represented by means of a perceived form and a perceived form is “available at multiple spatial scales.”\textsuperscript{143} For example, a painter synthesizes three dimensional structures over a bi-dimensionally extended canvas. For that, a painter, as Russell

\begin{itemize}
\item \textsuperscript{140} Bevil R. Conway, “Color Vision, Cones, and Color-Coding in the Cortex,” Color Contrast and Color Constance: The Neuroscientist 15, no. 3 (June 2009): 274–90.
\item \textsuperscript{141} Detected differences in color, after fixing the light source and its distance from the same perceiver and the perceived surface(s), will be due to difference in the absorptive properties of the perceived surface(s).
\item \textsuperscript{142} D. J. O’Connor, Introduction to the Theory of Knowledge (Brighton, Sussex: Harvester Press, 1982), 91.
\item \textsuperscript{143} Jeffrey M. Yau et al., “Feeling Form: The Neural Basis of Haptic Shape Perception,” Abstract: Journal of Neurophysiology 115, no. 2 (February 1, 2016).
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noticed, “...has to learn the habit of seeing things as they appear.”"\textsuperscript{144} Haptically, “Braille reading is a canonical example of our ability to recognize two-dimensional spatial patterns,”\textsuperscript{145} whereas a hand conforming to a glass of water constitutes a three-dimensional percept. In tactile perception, the difference between the two spatial features, two-dimensional and three-dimensional, is that the first can be elicited only by the deformation of “a deformable sensory sheet,”\textsuperscript{146} i.e. the skin; while a three-dimensional perception requires, in addition to skin deformation, that the “hand posture changes.”\textsuperscript{147} Skin’s malleability conveys pressure somatosensory data through the skin’s mechanoreceptors (the more the skin is deformed, the more solid we perceive the object to be) to the brain and when a hand conforms to a three-dimensional shape, another set of sense-data report the form through proprioceptive receptors in the hand muscle tracking the relative position of the muscles to one another. Together they make up a three-dimensional percept, which we call an “Ordinary Object.” The mind-independent correspondence of an “Ordinary Object” is “Clearly… a chunk of matter,”\textsuperscript{148} a number of phenomenally inaccessible atoms and molecules arranged in a certain manner and a sum of charges coming out of their interaction with each other, this existence causes a three-dimensional percept, but only the effect is perceived, not the cause. When one holds a cube of ice, one doesn’t lay his hands on every molecule that makes up the cube—and shockingly, perhaps not even one;

\textsuperscript{144} Bertrand Russell, \textit{The problems of philosophy}, Chapter 1: Appearance and Reality, URL = http://selfpace.uconn.edu/class/ana/RussellProblemsOfPhilosophy.pdf

\textsuperscript{145} Jeffrey M. Yau et al., “Feeling Form: The Neural Basis of Haptic Shape Perception,” Abstract: \textit{Journal of Neurophysiology} 115, no. 2 (February 1, 2016).

\textsuperscript{146} Ibid., Interactions between Proprioceptive and Cutaneous Signals 3D Shape Processing.

\textsuperscript{147} Ibid., Abstract.

yet, because the skin’s surface is itself extended,\textsuperscript{149} by displacing the skin—which holds receptors that are sensitive to mechanical pressure—at a given time, a form perception announces that a chunk of matter has displaced another in space.\textsuperscript{150} The following passage summarizes the argument about “Ordinary Object” perception:

The touch and pressure sense-data which contact with the object evokes in my fingers are localized and distinguished as relating to different parts of the skin. Furthermore, my fingers themselves will be bent or straightened and separated to a greater or less extent; and each successive movement and posture of any finger arouses sense-data from the tendons and joints... Thus all the sense-data which are said to belong to an object when it is handled can in suitable conditions be experienced as belonging to the body. But the body is present in our perceptions in a more elusive and less perceptible fashion.\textsuperscript{151}

In this chapter, I presented the historical background of the word “object” and its meaning, talk about ordinary objects such as trees, buildings, pen, or apple, can bear different meaning according to the epistemological and metaphysical position of the speaker. I contrasted Berkeley’s view on what we call “Ordinary Object” with Moore’s refutation to it. Berkeley’s position takes an “Ordinary Object” to be mind-dependent, this Idealist view contains a hypothesis that is based on contrasting what is mental or mind-independent with what is physical, limiting the essence of all existence to immaterialism. I rejected the claim which makes existence dependent on perception, yet on the other hand, I argued, agreeing with Berkeley, that an “Ordinary Object” is a percept or a sense-datum due to its mind-dependency. This argument also implies a rejection to the commonsense view which overlooks the dependency of perceiving

\textsuperscript{149} Self-perception will be discussed in further detail in the last chapter, percepts are carried out through one’s own body to the brain but the body itself is perceived in many way, one of them is as an extended three-dimensional object.

\textsuperscript{150} In vision, space perception and different depth cues from one and two eyes relay information about the displacement of an object by another. It is perceived as occlusion, a front object occludes the perception of a displaced other. Perceiving objects in this way permits phenomenal access to the front surface of the objects. These visual data constitute a three-dimensional perception in an alternative way to touch perception of ordinary objects.

an “Ordinary Object” on the perceptual system, where a percept constitutes the effect and not the cause of the perceptual process. Since (1) a cause and its effect cannot hold a relation of identity, (2) a perception constitutes the effect of an inaccessible cause and (3) an “Ordinary Object” is perceived, then (4) an “Ordinary Object” is the effect of an inaccessible cause. (4) Contradicts the commonsense view.

In the second section of the chapter, I argued that the ordinary “object” is a perception of form. I analyzed motion, and color and shape, these are some of the Lockean primary and secondary properties, and concluded that the perceived three-dimensional spatial pattern is invariant to—and thus fits—the description of an “Ordinary Object.” The essence of this perceived “Ordinary Object” and whether it is physical or not is not discussed, however, the limitation of our perception of matter is obvious: “all bits of matter which are neither too large nor too small to be sensed”\textsuperscript{152} are indeed physical despite our failure to perceive and identify them as such, we call perceived intense pressure “pain” rather than “something of more solidity,” and due to its failure to exert enough pressure on our skin, we don’t include objects—which are indeed material—like water or air with “what Austin called ‘moderate-sized specimens of dry goods’ - rocks, apples, dog.”\textsuperscript{153} Thus, limiting the description “physical” to the latter category or to what we call “Ordinary Object” is not adopted in this account since mind-dependency doesn’t determine the essence of a thing. The account however contrasts what is mind-dependent with what is mind-independent… or what is mental with what is phenomenally inaccessible rather than with what is physical.

\textsuperscript{152} D. J. O’Connor, Introduction to the Theory of Knowledge (Brighton, Sussex: Harvester Press, 1982), 90.
\textsuperscript{153} Ibid.
Chapter 3. Sense-Data are Physical

In the current chapter, I will address two objections to sense-data theory of perception: the *first* problem results from the view adopted in the previous chapter on ordinary objects (being perceived sense-data) and the *second* is an objection that is related to the nature of sense-data as separate and extra objects distinguished from mind-independent entities, the second objection is also an attack on the causal theory which establishes sense-data in the Argument from Causation.

In the previous chapter, I have argued that sense-data are the sole objects of perception and that medium-sized objects such as apples, trees, or tables are themselves a perception of form. Here, I will *first* discuss a problem that is related to this perceptual account on ordinary objects and I will call it by the same name used by W. Russell Brain in his short book *Mind, Perception And Science*, that is “*The Problem of Externality.*” The Problem of Externality is a description of how it is possible for awareness to be of mind-dependent objects, i.e., sense-data, and to be at the same time “of the existence of things outside us.” We are “immediately aware of real, enduring physical things in space.” So if these things were, as I argued, themselves sense-data; and if sense-data are private events presented to the perceiver’s consciousness and exist only in his mind; why do perceptions seem external and how do they become publicly observed? The discussion of this problem distinguishes between the concept of externality and the concept of mind-independency. Externality does not define mind-independency since it

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156 Ibid, paragraph 28.
is possible for something to be external and perceived (by being perceived to be external) but it will be a contradiction to say that a thing is mind-independent and at the same time perceived because perception implies mind-dependency. On the second objection, I will discuss a view formulated against admitting a causal account of perception, the causal argument states (as argued in the first two chapters) that perception is a causal process that involves a causally-linked state of affairs where perception occurs only at its last step. If this were true, then it can be asked: how is it possible to confirm any statements about the earlier links in the causal process? D. M. Armstrong presents this attack under the name, “The Argument from Causation.” In answer to this problem, I argue that the causal argument of perception—and all talk about the earlier steps of the process—can be grounded in covariation of sense-data. The idea of covariation is based on “The Likeness Principle” which was rejected by Berkeley in The Principles of Human Knowledge. The Likeness Principle states that there is resemblance between perceptions and their mind-independent source. By demonstrating an example that shows how sense-data covary, I argue that “The Likeness Principle” holds and that covariation exposes the process of perception and proves that it obeys causality. From that, it can be concluded that sense-data are the effect of physical interactions. Because sense-data are the effect of a causal and physical process, I suggest that they too are physical. This chapter justifies Howard Robinson’s causal argument, the causal argument is the argument upon which the whole work has been grounded.

3.1 The Problem of Externality

It is a frequently experienced phenomenon that in order to retrieve tactile information, the perceiver’s hand needs to be in close contact with the perceived object. It is however possible to obtain visual information about the same object without fulfilling this condition—a distance remains between the eyes and the object. A scientific explanation for this discrepancy is the following: light—reflected off the object—travels to the eyes the same distance that the hand needs to travel to the object. And this physical explanation is compatible with the defended “physiological account of the process of perception”\textsuperscript{158} which states that “physical stimuli in the form of light waves and nerve impulses are supposed to stream continually from external physical objects through the eye, optic tract, etc., to the occipital cortex,”\textsuperscript{159} such process is initiated only when a sense-organ gets stimulated by its significant stimulus. In vision, light stimulates the eye’s receptors and in touch, mechanical energy stimulates the skin’s receptors; the physical stimuli must interact with their relevant sense-organ for veridical perception to occur. Nevertheless, this sophisticated process is not given within perception. None of these physical interactions comes to the perceiver’s awareness: light travelling to his eyes doesn’t come to his awareness, and yet, a perceiver locates the perceived object to be (1) external and (2) occupying “the exact spatial position.”\textsuperscript{160} On the one hand, locating the perceived ordinary object externally is incompatible with the physiological account which “would seem to lead us to locate

\textsuperscript{158} J. R. Smythies, “Analysis of Projection,” (The British Journal for the Philosophy of Science 5, no. 18 (1954), 122, URL = \url{www.jstor.org/stable/685169}

\textsuperscript{159} Ibid., 120.

sense-data spatially in the brain”¹⁶¹ and on the other hand, locating the perceived object in one spatial position is incompatible with the different spatial relation it bears with the different sense-organs, namely, vision and touch. I will call this problem, “The Problem of Externality,” after the name it was given by W. Russell Brain in his short book “Mind, Perception and Science.” Brain describes it as follows: “Externality is the cardinal problem. X sees a tomato on the table. Something happens in X’s brain and he sees a red patch outside him. How are these two statements related.”¹⁶²

The problem of externality is an objection to a representational theory of perception. A representational theory proposes that “sense data, the contents of our sense fields, are not literally parts of the external world; rather they are facets of consciousness brought by a complex of causes of which the physical objects are only a part.”¹⁶³ However, within a perceptual experience, these ordinary perceived objects lie outside the perceiver and, as presented in conscious experience, appear to be external. How is it possible to locate percepts or mental representations in the perceiver’s consciousness while the perceiver himself locates them in external space? “Do they belong to the thing that appears or to the perceiver to whom it appears?”¹⁶⁴ The problem is old, it “persuaded some philosophers to move on to phenomenalism, and others to stick to direct realism, in spite of its difficulties,”¹⁶⁵ it has been called “the

¹⁶⁵ Ibid.
egocentric predicament” and it certainly contradicts common sense by contradicting the certainty about a public and shared world of ordinary things. Thus, a solution is needed for “reconciling the data of presentational immediacy with the data which science provides concerning perception in its causal aspects.” I suggest that a solution resides in distinguishing between two concepts: the concept of externality and the concept of mind-independency. It is implausible to believe that the so-called ordinary objects, after following their causal track within the perceptual system, are “projected out of the physical head of the individual into the external space, retracting the path taken by the original stimuli” and it is also impossible to deny the common sense feel which forces the perceiver to externally locate his percepts. However, it is possible to observe the faint perception of our own bodies. Whenever we perceive a thing, we perceive it in estrangement from, but also in relation to, our bodies. This fact implies that we perceive our own bodies. And the sense of externality which accompanies our perception of the world emerges from a continuous engagement in self-perception. Sense-data that report an object in the world are perceived in relation to “the sensed body.” Thus, the perceived externality does not indicate mind-independency, because even though “sensa (percepts) are

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spatially external to what is usually loosely called “my (human) body,”¹⁷¹ both they and my body are perceptions (Figure 5, right).

![Diagram](image)

**Figure 4 The Problem of Externality.** The common sense view of perception (left); The representational theory of perception (right). (Adapted from *Analysis of Projection.* J. R. Smythies. The British Society for the Philosophy of Science, Vol. 5, No., 18 (Aug., 1954).

The problem of externality brings up a discussion of the perception of *position.* “The body is present in our perceptions in a more elusive and less perceptible fashion,”¹⁷² but, it is all the same present. One way is through correspondence between spatial maps in the brain and the extended sense-organs: “The discrimination of different parts of the body’s surface depends upon the fact that each is separately represented on the surface of the brain. Thus the same relationship of externality exists between the two areas of the body and the two areas of the brain surface. The same is true of two areas of the retina and two areas of the visual cortex.”¹⁷³ I can tell the

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¹⁷³ Ibid., 17.
difference between an object felt in contact with my right hand and another felt in contact with
my left hand because the surface of each hand is separately represented on the brain’s surface.
Another way by which the body is represented is by continuously reporting “the position of the
body or its segments in space.” When I move my hand to grab an object at distance, sense-data
from the moving hand report the change in position of the body part, thus, it is always—
visually—possible to locate the object in the exact spatial position even though its position in
relation to my hand (and my body core) has changed. More recently, a region in the visual cortex
was found to be “selective for human body parts.” The identification of “a single area selective
for images of the human body” means that visual data reporting the body are differentiated
from visual data reporting the world. Sense-data (or percepts) belong, in virtue of their
character, to the physical and mind-independent thing in the world; they however belong to the
perceiver in virtue of their perception. The perceived thing appears to be external to the perceiver
thanks to the perceiver’s ability to perceive his own body and to perceive the world in relation to
his perception of his own body. Bertrand Russell comments on the problem which “may lie at
the basis of many of the contemporary problems of mind” as follows: “The table as a physical
object, consisting of electrons, positrons, and neutrons, lies outside my experience, and if there is

174 Walter Russell Brain, Mind, Perception And Science, Perception, and the Physical World, Awarness of
Externality: (Blackwell Scientific Publications: 1st edition, 1961)., 17, URL =
https://archive.org/details/MindPerceptionAndScience/page/n17/mode/2up
175 Kalanit Grill-Spector, “The Neural Basis of Object Perception,” Current Opinion in Neurobiology 13,
no. 2 (April 2003): 165 https://doi.org/10.1016/S0959-4388(03)00040-0
landmarks, hMT+, and visual field maps to parcellate limb-selective activations in human lateral occipitotemporal
177 The area identified is the Extrastriate Body Area
178 J. R. Smythies, Analysis of Projection (The British Journal for the Philosophy of Science 5, no. 18
a space which contains both it and my perceptual space, then in that space the physical table must be wholly external to my perceptual space…”

3.2 The Argument from Covariance

As I have argued so far, defending a representative (and causal) theory leads to a “conclusion that what we are immediately aware of in perception are sense fields rather than material objects.”\textsuperscript{180} This account of perception, though grounded in physics, is considered a threat to “natural sciences which start by assuming the truth of common sense observations about the external world.”\textsuperscript{181} Science, and in particular empirical science, starts from “observational propositions,”\textsuperscript{182} that are largely dependent on our senses. If we admitted sensory data as caused entities, i.e. only effects of other things, and if “we accepted the Representative theory of perception on the bases of the Argument from Causation,”\textsuperscript{183} then “no scientific conclusions that are derived from them (from observed sensory data) can reliably be taken as true.”\textsuperscript{184} A representative theory that is based on a causal argument of perception implies that what is perceptually perceived is not identical with the world. This theory of perception can be even self-refuting. If sense-data, as extra entities, were “caused by the thing when it affects a perceiver’s sense-receptors,”\textsuperscript{185} then they will be \textit{mere effects} of a thing inaccessible to the senses. In this case, the theory would be self-refuting. How can any talk about this thing or its presence be valid? A. J. Ayer denies the possibility of identifying the causes of our sensory experience by means other than precepts themselves: “All that I am denying is that we can have any rational


\textsuperscript{181} Ibid.

\textsuperscript{182} Ibid.


\textsuperscript{184} Brian Carr, J. O’Connor, \textit{Introduction to the Theory of Knowledge} (Brighton, Sussex: Harvester Press, 1982), 100. (Brackets are mine).

ground for crediting our experiences with causes which are not otherwise identified and for situating these causes in a world of their own to which our senses literally give us no access.”

And D. M. Armstrong expressed the same criticism against the causal argument of perception:

If the conclusion of the argument is true, viz, that no physical state of affairs (with the possible exception of brain-states) are ever immediately perceived, then we have no immediate evidence for the facts which are adduced as premises of the argument, that is, the behaviour of light and sound waves, of sense-organs and of our nervous system. Their existence is just as much inferred from, or suggested by, what is immediately perceived as anything else in the physical world.

John Locke and Bertrand Russell offered a counter argument to this objection. John Locke assumed that what he called primary qualities match our ideas of them and though secondary qualities are “nothing in the objects themselves” and bear no resemblance to the objects, they represent the object’s “powers to produce various sensations in us by their primary qualities.”

Locke’s argument was refuted by George Berkeley in the Principles of Human Knowledge: “I answer, an idea can be like nothing but idea; a colour or figure can be like nothing but another colour or figure.” And he asks, “whether those supposed originals… be themselves perceivable or no?” Berkeley continues, “If you say they are not, I appeal to anyone whether it be sense to assert a colour is like something which is invisible; hard or

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189 John Locke, An Essay Concerning Human Understanding, (4th Edn.), II.viii.10
191 Ibid.
Russell followed John Locke in thinking that “If one object looks blue and another red, we may reasonably presume that there is some corresponding difference between the physical objects.”

I will follow “a Lockean or Russelian duplicate” account. I argue for the existence of covariance between aided—via measuring instruments—and unaided visual sense-data and I will demonstrate covariance in the phenomenon of color. Covariance suggests a causal relationship between “the literally unobserved cause of some perceptual effects” and the observed phenomenal effects. Covariance is a statistical principle that “mainly represents the direction of relationship of two variables.” The two variables in the example I will use are aided (microscopic) and unaided visual sense-data. Their covariation “shall be crediting coloured objects with colourless parts.” The colorless parts, which cannot be observed by naked eyes, “strip the object of its colour” and shows that “an object is coloured only in relation to (eye-visible) light.” The value of the colourless parts covary with the value of phenomenal color, such that the “variables change together” and “move to the same direction.” This

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192 Ibid.
195 Kim, Hae-Young. “Statistical notes for clinical researchers: covariance and correlation.” *Restorative dentistry & endodontics* vol. 43,1 e4. 5 Jan. 2018
197 Ibid., 118.
198 Ibid., 120. (brackets are mine).
200 Ibid.
covariation in value between aided (unobserved by naked eyes) data and unaided data (observed by naked eyes) justifies a causal relation between a mind-independent object and the observed phenomenon of color. Moreover, it suggests “that physical objects are not really coloured.”

I will start this exposition with a brief explanation of the perception of color.

Humans have the ability to discriminate color thanks to the composition of the pigments in their retina, differences in perceived colors represent light with different wavelengths and reflect the degree of absorption of light by their retinal pigments. For example, perception of the color “orange” represents light that has wavelength of ~600 nm and is perceived by most people when the pigments in the green-sensitive cones absorb ~25% of their maximum absorption of light and the pigments in the red-sensitive cones absorb ~75% of their maximum absorption of light simultaneously.

The perception of a certain wavelength requires (1) the reflection of this wavelength by a mind-independent entity, and (2) that the same entity absorbs the rest of the light spectra visible by the perceiver. It is known that green leaves contain chloroplast cells which contain chlorophyll pigment that has the ability to absorb and reflect light of different wavelengths. These cells, their number, and their contained pigments are unobserved by the naked eye. However, the observed color of the leaves (green) is due to the absorptive properties of these chlorophyll pigments, which “is lowest for green light.”

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means its reflection by the leaf and hence, perceiving the leaf as green. Yet, the pigment’s concentration is not homogenous throughout the leaf, where “chlorophyll concentration in the palisade tissue (upper layer of the leaf) is higher than that in the spongy tissue (lower layer of the leaf).” The upper layer of the leaf has more cells and thus more pigment than the lower layer (see figure 5). This variation is reflected in their spectral absorbance and as a result, in the perceived color of the two layers. The upper layer reflects more green and appears as such and conversely, the lower layer reflects less green and appears so. Thus change in the visible color of the leaf’s surface covary with the unobserved “distribution of pigment concentration and their absorption spectra.” The following table shows the relation of covariance,

<table>
<thead>
<tr>
<th>Variable 1</th>
<th>Palisade Tissue (Leaf’s Upper Layer)</th>
<th>Spongy Tissue (Leaf’s Lower Layer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Chloroplasts (or Chlorophyll Pigment Concentration)</td>
<td>More Chloroplasts</td>
<td>Less Chloroplasts</td>
</tr>
<tr>
<td>Variable 2</td>
<td>More green</td>
<td>Less green</td>
</tr>
</tbody>
</table>

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Figure 5 The number of chloroplast cells in the upper palisade (pap) and lower spongy (spp) tissue in a leaf cross-sectional. (Illustration adapted from *Comparative leaf anatomy of three food plants that are used medically; Mespilus germanica L., Malus sylvestris (L.) Mill. subsp. orientalis and Cydonia oblonga Mill. (Rosaceae)* İstanbul Ecz. Fak. Derg. / J. Fac. Pharm. İstanbul 46(1) (2015).

Covariance between unobserved minute particles and observed color suggests that a causal relationship holds between what is on the one hand mind-independent and on the other phenomenal. “The dependence of colour upon light is causal,” thus, the perception of color sense-data is successful when light interacts with a mind-independent physical object before it “affects a perceiver’s sense-receptors in a certain way.” The interaction of mind-independent physical objects and sense-data means that “sense-data are objects or entities of a special kind,” and the fact that the interaction between the two is causal suggests reducing sense-data to the physical world rather than “reducing physical things to appearances.”

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208 Ibid., 160.

209 Ibid., 168.
Conclusion

In this thesis, I defended a representative theory of perception that is dependent on the causal argument of perception. The causal argument of perception was put forward by Howard Robinson. In the causal argument, the process of perception is claimed to follow a causal link where what comes to the mind of the perceiver stands at the end of this causal chain. The entities that the perceiver encounters within a perceptual experience and according to this causal account are mental, private, i.e. experienced only by the perceiver, and immediate. These entities were given different terms, from ideas to percepts, I chose the term “sense-data” to refer to them because (1) the discussion addresses the philosophical positions of many philosophers who used the term during a specific era to promote and defend a representative theory of perception, and (2) the term implies that the information achieved by the perceiver belong to the sense modality and to the sensory part of the perceptual system.

In the first chapter of the thesis, I argued that sense-data exist and that the perceived properties belong to them. I grounded the first claim, i.e. that sense-data exists, in the Argument from Hallucination. To enforce the claim, I grounded one of the premises in the Argument from Hallucination in Howard Robinson’s causal argument. At the end of the work, I come back to ground the causal argument itself in covariance of sense-data, but throughout the work, the reader will find that the causal argument is undefended despite being the main theme around which the work is centered. In the second claim of the first chapter, I argue that the perceived qualities belong to sense-data, and I ground this claim in the Argument from Illusion. The conclusion of the Argument from Illusion opposes the common sense idea, the popular idea
which maintains that the perceived qualities belong to what we call ordinary objects. Therefore, in the second chapter, I start an inquiry to answer what these ordinary objects are and if they are perceived or not. I conclude, through an analysis that is similar to Bertrand Russell’s analysis in *The Analysis of Matter*, that the ordinary objects are perceived and that they too are perceptions of form. On arguing that the ordinary objects are themselves precepts or sense-data, it becomes clear that another claim is implied, that is, sense-data are the only objects of perception. The claim risks falling into the trap of phenomenalism or idealism. Bertrand Russell risked the same trap when he tried to similarly analyse existence using “statements about perception.” In order not to fall in the trap of phenomenalism, I argue in the chapter against Berkeley’s famous proposition “to be is to be perceived” and in that, I call up for Moore’s *Refutation of Idealism*. Following Moore’s strategy, I argue that sense-data aren’t the only objects that exist, even though they are the only constituents of perception. The account thus admits of the existence of two real entities and it holds that the existence of a mind-independent thing is not dependent on its perception. However, this leaves the defended position open for criticism as it is illogical to talk about and assert the existence of (mind-independent) entities that never comes to the mind and it happens that this critical point is also a weakness in the causal argument of perception. So in the last chapter, I address this anticipated criticism by arguing that the covariance of (1) sense-data that are obtained by the senses and (2) sense-data observed by the instrumental aid may suggest the causal relation on which the whole work is grounded and makes it legitimate to talk about mind-independent entities and to assert their existence. The latter entities cause our perceptions and their observance—by aided means—guarantees the causal nature of the process of perception. The causal argument of perception secures sense-data

as representative entities of other different entities that don’t come directly to the perceiver’s mind through the senses. The reader can be guided through the work’s argument by the following illustration where each step grounds the one which follows:

Sense-Data Covariance ➔ The Causal Argument of Perception ➔ The Indistinguishability Claim from the Argument from Hallucination ➔ Sense-Data exist and are the objects of perception
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