Review

Empty names, hallucinations, and semantics

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1. Abstract

In this paper we introduce the problem space of the intersection of hallucinatory experiences and hallucinatory thoughts involving empty names. We recount a brief history of the theory of names. We select and defend a direct reference theory of names. We then apply that theory to cases of hallucination. We show how our theory can explain intentional behavior involving empty names and hallucinatory experiences. We then consider several theories that offer alternative accounts to ours. We critically evaluate those alternatives in relation to our view and defend our view.

2. Introduction

Empty names and hallucinations may seem like strange bedfellows, but actually the issues have much in common. Both involve mental states that purport to be about actual world objects and events, but aren't. We will distinguish pure hallucinatory experiences from hallucinatory experiences that produce or involve hallucinatory thoughts. As for pure hallucinatory experiences, they need not involve thoughts-because they need not involve concepts. Consider an example we will talk about later-an infant in a crib. Supposing the infant lacks certain concepts to describe the mobile above its crib, it will not have thoughts about the mobile. But it could, under certain conditions, have a hallucinatory experience of the sort normally produced by seeing the mobile. This hallucinatory experience could be caused by drugs, a brain tumor, artificial electrical stimulation, etc. In normal cases, the same qualitative experience would be caused by the mobile itself. In hallucinatory cases, other causes are stimulating the perceptual regions the way they would have been stimulated by the mobile itself. Hence, the experience is non-veridical. In this paper, we won't give an analysis of the exact difference between veridical perception and hallucinatory perception[1] because we are interested in the intersection of hallucinatory experiences and the employment of empty names.

Hallucinations sometimes involve empty names. They do when someone hallucinates and thinks a thought while employing an empty name. One of us, as a child,

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[1] For more on a way of capturing this distinction, with which we agree, see McLaughlin [1].

after seeing the movie King Kong dreamt that Kong was after him. It wasn't a hallucination, but it could have been, and the thought part of the experience would have had the same content. Were it to have been a hallucination, not a dream, then the experiential part of the hallucination, too, would have lacked an actual object of experience. So, both thoughts and experiences connected with hallucinations present the problem of content. What is the content of the hallucinatory experience or the thoughts arising from the experience? This paper addresses this intersection.

In what follows, we will recount some brief history of the theory of names. We will then recount the theory we accept and how it handles empty names. Following that, we will give examples of the explanation of intentional behavior involving cases of hallucinatory thoughts with empty names. And finally, we will examine views offering alternatives to our view and evaluate those views in relation to ours.

Historically, the problem of semantics for names largely begins with Frege [2, 3]. For Frege, names have both a sense and a reference. Names have meaning (sense) when used to express a complete thought. "Socrates was wise" expresses the thought that Socrates (teacher of Plato) was wise. "Socrates" refers to the individual who fits the sense of the name (Plato's teacher). Since "Socrates" refers to a former actual individual and that individual was wise, the sentence expresses a truth.

For Frege, empty names lack referents and cannot be used in sentences to express truths. "A thought loses value for us as soon as we recognize that the referent of one of its parts is missing" [2]. Why? Frege's answer is that it is because we are interested in truth, and lacking a referent, a sentence with an empty name cannot express a truth. For fiction, Frege thinks we are interested "only in the sense of the sentences" and the images and feelings that these may arouse. So, sentences of fiction have meaning, but lack truth value. Frege did not discuss hallucinations, but by implication, we can extend his view. Hallucinatory thoughts involving empty names may have meaning, but lacking referents, will also lack truth values. We suspect that Frege might have agreed with the view we will outline in the next section, when it comes to empty names and thought content.

Following Frege (chronologically) came Russell. Russell's view of names has two parts. He thinks there are what he calls "logically proper names", and that these have only their bearers as content [4]. The only two logically proper names for Russell were "this" and "that"-presumably used to ostend objects or events. The contents of any thought involving these logically proper names would incorporate the referents into the contents of the thought-so-called "object-dependent thought". Take the sentence "This MacBook Air is on". The content of this sentence would be a proposition that includes this computer in its present state of being on. We could represent this as the ordered pair <MacBook Air #1, being on>. The "#1" is our way of indicating that the logically proper name would pick out a unique object when used in a sentence and a context.

The second part of Russell's view of names is that names other than logically proper names[2] are "disguised descriptions". As such, their content is determined via Russell's theory of descriptions [5]. For example, "Pegasus flies" expresses the content the winged horse from Greek mythology flies. On Russell's theory of descriptions, such a statement makes three claims: 1. there is a winged horse of Greek mythology, 2. there is only one such horse, and 3. it flies. Since there is no such horse, the sentence is false. So, for Russell, unlike Frege, there would be no truth-value gaps. Any sentence containing a name (not a logically proper name) would have a truth value. When the name is empty, the sentence would express something false, and because it lacks a referent the existence claim would fail.

Both Russell and Frege, despite differences, are "sense theorists" for empty names. Even though the names lack a referent, they have meaning. Their meaning is constituted by their senses. Their senses are a set of descriptions that competent speakers of the language associate with the names. Indeed, even non-empty names (which are not logically proper) have meaning constituted by their senses. In examples above, the meaning of "Socrates" is "Plato's teacher". And the meaning of "Pegasus" is "winged horse of Greek mythology".

There are many prominent sense theories of names (even today)[3]. We don't propose to list them all or evaluate them. Instead, we are convinced by Kripke's rejection of sense theories. In *Naming and Necessity*, Kripke [6] argued (convincingly, to our minds) that names do not have senses. A simple example can be seen by our example sentence "Socrates was wise". If "Socrates" really meant "Plato's teacher", then "Socrates was wise" could not be true, had he never met or taught Plato. But surely Socrates would have been wise whether or not he ever met Plato. Therefore, the meaning of "Socrates" cannot depend upon the sense commonly associated with the name. Instead of the view that the meaning of a name is its sense, Kripke argued that names are "rigid designators" and pick out the same individual across all possible worlds. In essence, the meaning of a name is the thing named (if there is one). So the sentence "Socrates was wise" expresses the proposition consisting of the ordered pair <Socrates, being wise>.

Views derived from Kripke are often called theories of direct reference. That is, they say the meaning of a name is the object named-if there is one. However, if Kripke is indeed correct, we can begin to see the problem presented by empty names. Take "Pegasus flies". We cannot give the content of this sentence via an ordered pair with

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[2] For Russell, the only logically proper names were "this" and "that".

[3] For example, see Davidson [7].

an actual winged horse in the subject slot and an instance of the property of flying in the predicate slot-because there was no such winged horse. So how, on a theory of direct reference, does one give the content of that sentence? In the next section, we will give our account of the answer to this question.

We should point out that there is one more possible solution from Meinong [8]. Meinong holds that the meaning of a name is the thing named and in the case of Pegasus, would claim there is still a referent because there is a sense in which there is a Pegasus, even though Pegasus is not actual. This view has its proponents to this day, but we agree with Russell [4] that one's "robust sense of reality" should lead one to reject such a view. Nonetheless, one can find several approaches that take their inspiration from Meinong in the literature[4].

3. Empty names

Given the difficulty presented to direct reference theory by the problem of empty names, one faces a choice. One could adopt a hybrid view of names. That is, one could say for filled names (names not lacking a referent) the meaning of a name is the thing named, and for empty names (names lacking a referent) the meaning of a name is its sense. While this hybrid approach may have its attractions, it doesn't present a unified theory-a theory on which all names function the same way.

We reject the hybrid approach and would accept it only as a fallback position, were a unified approach to names to fail. We believe the direct reference theory has a way to meet the challenge of empty names. Of course, it won't satisfy everyone, but what does?

On our account, the meaning of a name is its bearer, and if it lacks a bearer, it has no semantic content. For filled names, consider the sentence "Gottlob was a genius". Or consider Russell's sentence, "Scott wrote Waverly". On our view, filled names contribute their bearer to the proposition expressed by their use. So, the content of "Gottlob was a genius", can be captured by <Gottlob, being a genius>. And the content of "Scott wrote Waverly", can be captured by <Scott, authoring Waverly>.

But what of empty names? There being no bearer, the use of an empty name cannot contribute its bearer to its content. So then, what is the content of "Pegasus flies"? On our view "Pegasus" has no bearer and contributes no referent to the content of the sentence. The content would be captured by the following: <___, flies>. The predicate position is not empty because the property of flying exists.

This type of content goes by different names. Braun [9] calls it a "gappy proposition". Adams & Stecker [10] call it an "incomplete proposition". Nathan Salmon [11] calls it a "structurally challenged" proposition. By any name, it expresses all the semantic content there is when an empty name is used on an occasion to try to impart information.

Now, one may object that there is more to cognitively understand by the sentence "Pegasus flies", than the sparse content < ____, flies>. And that is so. If one understands the origin of the name "Pegasus", one will associate with the name the description "winged horse from Greek mythology". This is how one tracks the introduction of the name into the conversation. However, given the rejection of sense theories of names, at hand of Kripke [6, 12], senses are not the meanings of names, not even of empty ones.

But then what is going on with these associated descriptions? Kripke [6] admitted that descriptions could help to cognitively identify or keep track of objects, even if they are not part of the meaning of the names. On our view, when a name is introduced into a conversation or a context, there are often associated descriptions placed into a mental file to help the thinker (speaker) keep track of the name (or named). The associations are only contingent associations, and not part of the meaning of the name. The associations are somewhat Humean (stimulus - response style) associations, not unlike Hume's notion that we perceive the cause and effect but not the causing. Nonetheless, there is a constant conjunction of cause-and-effect stimuli. This is similar with names and associated descriptions. When we think of Russell we think of co-author of *Principia*. We cannot help make this mental association when thinking about Russell or hearing his name. Yet, as Kripke [6] taught us, Russell might not have co-authored *Principia* or have done any of the many other things we associate with him. This would not change the fact that Russell = Russell is necessary and true, and that Russell co-authored *Principia* is only contingently true. So descriptions associated with names are contingent. They help us cognitively keep track of individuals and can even aid communication about such individuals. And they make it unnecessary to say everything one knows about an individual when discussing them. So for example, when we say Russell was imprisoned for protesting the Viet Nam war, we pragmatically impart the information that the co-author of *Principia* was imprisoned for protesting the Viet Nam war (without having to utter those very words). Such information is utilized pragmatically (but not semantically) by virtue of the information stored in one's mental file (information that is shared with others).

Similar remarks apply regarding empty names and contingently associated descriptions. Take the historical example of Vulcan. When Mercury's orbit was observed to be irregular, astronomers hypothesized that this was due to the gravitational influence of a planet between Mercury and the sun. This strategy had worked before. Neptune had been hypothesized to account for the irregularity in the or-

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[4] See F. Lihoreau [13] for many examples and Smith [14] for a sustained defense. Terrence Parsons is also a contemporary Meinongian. For more on why we reject fictional objects as ontological, see Adams [14] where he discusses the views of Amy Thomasson, among others.

bit of Uranus and the hypothesis was later confirmed when Neptune was observed via telescope. But this time the hypothesis failed. There was no planet Vulcan. The irregular orbit was later explained by the space-time curvature due to mass of the sun and proximity of Mercury. Nonetheless, there were descriptions contingently associated with the hypothesized Vulcan. The list includes: 10th planet, planet between Mercury and the sun, planet causing perturbations in orbit of Mercury, etc. When it was discovered that there was no Vulcan, it was discovered that there was no planet with any of these properties.

Now consider the sentence "Vulcan does not exist". On the face of it, this sentence surely seems to be true. But how can it be? Its content is something like <____, non being>. Or its content is -Ex(x)(x = ____) where one cannot fill the blank with an object because none is contributed by the name.

So then why does the sentence "Vulcan does not exist" *seem* so true? We think it seems true for several reasons. First, the pragmatic implicatures of the expression all are true. There is no 10th planet. There is no planet between Mercury and the sun. There is no planet influencing the orbit of Mercury. These are all true, but since the associated descriptions are not part the semantic content of "Vulcan", they don't give the meaning of the term. Second, as David Braun has pointed out to us (in correspondence), if one takes the metaphor of a language of thought seriously, one who accepts "Vulcan does not exist" has that sentence sitting in one's "belief box". One normally doesn't allow things in one's belief box knowing they are false. So it is natural that this sentence would seem true, if allowed entry into one's belief box.

Third, most people don't have a theory of the semantics of names, not to mention empty names. So, most people find such sentences to be true-unreflectively (or false, as the case may be).

And lastly, the information imparted is the same whether this particular sentential delivery vehicle is itself true or, as we claim, neither true nor false. People stopped believing in Vulcan, when Relativity theory explained Mercury's orbit, regardless of the truth value of the sentence "Vulcan does not exist". To most scientists, a philosophical point about the semantics of names (or empty names) was secondary to the astronomical facts and the explanation of planetary motion. Astronomically, it didn't matter whether technically the sentence was true or neither true nor false.

For what it's worth, these negative existential sentences seem true to us, too. We can't help it. But, often, true theories tell us that what seems true to us, isn't. For example, it seems to us that time should be the same for Mr. X and Mr. Y if the only difference is that Mr. X is in a spaceship moving rapidly through space. However, relativity theory tells us that this is not the case. Or it seemed to Euclid that the "parallel postulate" had to be true-off a given line and through a point one and only one parallel line

could be drawn. But Riemann and Lobachevsky demonstrated that there are two other possible answers: none and an infinite number depending upon the geometrical dimensions of space.

Sometimes one's theory trumps one's intuitions, and in this case, this is what we think is happening. We have a unified theory of names that says on every occasion of use, the meaning of a name is its bearer if it has one. And if the name has no bearer, it has no meaning and cannot be used to say something true or false. As we indicated above, we take some solace in the fact that one no less revered than Frege seems to agree that there can be truth-value gaps when names lack referents.

Nathan Salmon has a view of at least some sentences with empty names that is similar to our view (p. 318 & 319 of [11]). Where we call incomplete propositions "gappy" (following Braun [9]), he calls them "structurally challenged"). We also agree with his criticism of Braun (ft.nt.57) that "Braun illegitimately makes the problem too easy" by claiming all such propositions have truth values, when they do not[5]. There are important differences between our view and some of Salmon's views that are not relevant to the matter of hallucinations and empty names. We won't go into these differences here[6].

4. Hallucinatory semantics

In this section, we will apply our view of empty names to the topic of hallucinations. Before we begin on how empty names enter the discussion, we should point out that hallucinations can involve thoughts, but they may not. That is, there can be pure hallucinatory experiences. By that, we mean hallucinations that are not accompanied by thoughts. Why does this matter? It matters because experiences are not thoughts. Thoughts involve concepts, which are the constituents of thoughts (probably in the language of thought). Experiences are activations in perceptual regions that may trigger thoughts, but they need not do so. It would be hard, if not impossible, to describe a hallucinatory experience without applying concepts and therefore involving thoughts. But it could happen because experiencing is not believing (or thinking). They are separate mental episodes. So, when we speak of the intersection between the problem of empty names and hallucinatory content, we will primarily be discussing thought content deriving from hallucinatory experiences.

To begin, let's use a demonstrative thought deriv-

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5 See Adams & Stecker [10] where we make a similar objection to Braun and defend the view that some gappy propositions lack truth values.

6 Though we won't go into it here, the same points apply to names used within, about, and across fiction. For explanation of how this goes, please see Adams, Fuller, & Stecker [16], Adams [15], Adams & Dietrich [17].

ing from a hallucinatory experience. And let's contrast a veridical episode with th hallucinatory episode. Suppose Judy is having a veridical experience of a man chasing her with a knife. Judy thinks to herself, that man is chasing me. The content of Judy's thought is <that man, chasing Judy>. This thought naturally triggers Judy's running from the man. She correctly believes there is a man chasing her and that thought results in deliberate avoidance behavior.

Now let's contrast a veridical case with the hallucinatory one. Suppose Judy only *hallucinates* that a man is chasing her with knife. Nonetheless, she thinks to herself, that man is chasing me. What is the content of her thought, since it contains an empty demonstrative "that man"? The content is <____, chasing Judy>. Since Judy doesn't know she is hallucinating, her thought generates the existential thought, there is a man chasing me. This existential thought results in deliberate avoidance behavior. Hence, hallucinatory thoughts with incomplete or gappy content can still play an explanatory role in one's intentional behavior.

But this example is of an empty demonstrative thought. To turn it into a case with an empty name, imagine the following. Judy grew up with a vivid imagination. As a child, she had an imaginary friend Ernie. For some reason, Judy imagined Ernie to turn bad in his thoughts and deeds. One day, during a bad college party experience, Judy hallucinates Ernie chasing her with knife. She has the thought: Ernie is after me. The content of the thought is <____, chasing Judy>. As before, this generates the existential thought that someone is chasing her with a knife and she takes appropriate evasive action. So, the introduction of an empty name to the empty demonstrative case does not change the explanation of how an incomplete thought can explain intentional behavior.

One objection that can be raised to this kind of explanation is that it leaves out important features of the explanation of behavior. For example, suppose Judy had two imaginary friends, Jerry and Ernie. Wouldn't the explanation of Judy's behavior be different if she hallucinated Jerry chasing her with a knife, rather than Ernie? It seems that it would, but the objection is that the contents of the hallucinatory thoughts would be identical, viz. <___, chasing Judy>. So the objection is that the explanation misses something crucial: the difference between the thoughts Judy has.

Our reply is that our explanation does not miss these important features of the differences in Judy's experiences and thoughts. Our view just puts them in a different place. There is a different syntactic object in Judy's language of thought when she hallucinates Jerry than when she hallucinates Ernie. In addition, she associates different descriptions with Jerry and with Ernie. For example, she might think Jerry has a beard but Ernie doesn't, and so on. Hence, the pragmatic implicatures of her hallucinatory thoughts will differ. She will think Jerry, the bearded one, is after me, versus, Ernie, the clean-shaven one is after me.

These associated descriptions can have important implications for her behavior. For example, while still hallucinating, she may give different descriptions of the attacker in a police report. So, our account doesn't diminish the importance of the differences in associated descriptions linked to empty names nor the differences in the syntactical properties of the names themselves[7].

5. Alternate views and replies

5.1 Garcia-Ramirez

Eduardo Garcia-Ramirez [17] (hereafter EGR) offers what he calls a cognitive theory of empty names. We will describe his account, compare it to ours, and evaluate it. Similar to our view of names, he "does not take them [names] to have descriptive semantic content". This suggests that for him, the meaning of a name is not a description associated with a name (filled or empty).

EGR situates his theory within the context of theories of pretense of Leslie and Stich & Nichols [20, 21]. While these theories are interesting and important, not all of their details will be necessary for our description of his account or its appraisal, as we will make clear. We must investigate his account in order to discover the states to which he attributes content when empty terms occur and the means of content determination he accepts.

One feature of earlier accounts we will mention is the notion of a "decoupler". This is the idea that, in pretense, a representation is not taken to be a belief. When a child pretends that a shoe is a phone, he does not believe it actually is one. Similarly, when an author writes a fiction, she does not believe the persons in the story exist or that the events actually take place. The representations are "quarantined", so to speak. Or, as we might say, they are not placed in one's *belief box*. If one does not believe these representations to represent facts about the actual world, one is not prepared to act upon them as one otherwise would.

Yet, EGR notes that these representations "can be viewed as mental analogues of quoted sentences". He also relates them to "imaginings". For us, this will mean that we can take them to be something like sentences in the language of thought (LOT). But EGR thinks these can be divorced from their "referential, truth, and existential conditions". Since we think truth conditions are essential to content, we don't think this is quite right, as we will try to explain. He seems to think the decoupled representations are given "interpretations" which are different from their standard content and that these may represent the propositional attitudes of these decoupled psychological states (the imaginings or hallucinatory thoughts).

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7 For how these issues relate to traditional matters of narrow versus broad content or objections to object-dependent thoughts and their defense, see Adams, Fuller, & Stecker [19].

Cognitive depictions (CD's) are the output of the decoupled mechanisms in EGR's theory. They are mental representations that he likens to items in the language of thought, propositions, or thought vehicles. As far as we can tell, these play the cognitive role of thoughts when the representations involve empty names. But there is still some uncertainty because propositions would be the *contents* of thoughts, not their vehicles. EGR says that, like propositions, CD's can represent possibilities, but need not do so. He says: "… a CD is better understood as an arbitrary assignment of referential, truth, and existential conditions to a decoupled and manipulated representation…" Here again we are unsure whether he is talking about the content of the representation or the representation vehicle. He seems to slip between the two at will, in one passage equating CD's with contents of the vehicles and in others with the vehicles themselves. But he does seem to want them to be close to thought vehicles, saying:

"So CDs are closer to being thought vehicles (i.e., mental representations that can express propositions) than to being propositions. Are they just like items in the language of thought? That depends on how flexible the latter can be".

And later, he says:

"With this flexibility in mind we can ask: can CDs be items in the language of thought? According to the language of thought hypothesis, mental representations are formulas of a language-like representational system; they may be combined syntactically and semantically; they are causally efficacious mainly in virtue of their syntactic properties; and they provide the human mind with a domain for mental processing. If this is all there is to an item in the language of thought, then we can accept that a CD is an item in the language of thought".

His main concern about whether to call CDs items in LOT is whether they are compositional or not. Fodor maintains that items in LOT are compositional and EGR maintains that some CDs are not, but most are. That is good enough for us, so we will leave this matter aside here.

EGR further claims that some perceptually salient object will trigger the work of the decoupler and result in a CD. This is because he relates his view to the pretense view of Stich & Nichols, and Leslie, who make use of perceptual props to aid imagination and pretense. We think this unnecessarily ties his account to these things and is quite problematic in the end.

EGR closes with this:

"All we need is a relevant representation the interpretation of which does not require anything but existing objects. That is exactly what a CD is. These objects exist; they are vehicles of thought required for humans to pretend [20, 22]. Thus, there is no need for inexistent objects".

At first sight, this makes his account look very much like ours. When one has a representation involving an empty term, there is no need for non-existent or "inexistent" objects because we can appeal to a CD to explain what needs explaining and a CD is nothing more than a sentence in the language of thought (or something related). But that's not the end of the matter because he adds "the interpretation" of the CD. This is where problems enter because in the case of fictional objects or hallucinated objects, there are no objects to give the CD its interpretation. The CD is not identical to its interpretation. An interpretation needs semantic objects and when these are fictional or non-existent, the problem - which EGR thinks he avoids - remains. If CDs are sentences in the language of thought, they can't be the referents of terms involved in the CD. And yet, EGR seems to want to have them play both roles.

He seems to want to allow CDs to make fictional sentences[8] true (or false) because the sentences are *about the CDs* and not about fictional (or non-existent) objects. But this won't work. Fictional sentences are not about the CDs. Not if CDs are sentences in the language of thought. That would mean that when a child thinks "Santa is coming tonight" her thought is about something in her head and not someone (she believes to be) in the world. Or Conan Doyle's penning the sentence "Sherlock Holmes is a detective" would be about something in Doyle's head not about the fictional Holmes. But surely such sentences are not about things in head. There are things in the head-maybe even CDs. But *these sentences* are not about them. Maybe the sentence "the child's conception of Santa" is about such a thing. Or perhaps "Doyle's conception of Holmes" may be about a CD. But not the sentence "Santa lives at the North Pole", nor "Holmes lives at 22B Baker Street".

Again, EGR seems to want to say CDs can account for the truth of sentences such as "Holmes is famous", or "the Greeks worships Zeus". But this cannot be correct because the CD is not identical to its interpretation. So, the semantic content of the interpretation will include either the referent (which it cannot because none exists) or a description of the referent (which he cannot accept because he denies being a descriptivist about empty names). So, what is in the interpretation that can make these sentences true? Nothing! And *there* is the problem for his view. This is what led us to the theory that sentences containing empty names lack truth values and express incomplete propositions [10, 15, 17, 19, 23, 24].

We think EGR comes oh so close to having the right view when he discusses the case of Vulcan and of Neptune. But we think he gets it wrong. He also gets it wrong when he discusses the hallucinatory case. We think we can explain clearly how things go wrong in the hallucinatory case and then use that explanation to show how things go wrong for him in the cases of Vulcan and Neptune.

First, consider an example of the difference between a veridical case and a hallucinatory case. Shari sees a

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8 Again, for our account of the semantics of fiction see Adams, Fuller, & Stecker [19] and Adams [15].

man after her with a knife in the veridical case. Shari seems to see a man after her with a knife in hallucinatory case. From her perspective, both cases seem exactly the same, but they are not semantically the same. In the veridical case, Shari correctly believes "that man is after me", and she runs from him. In the hallucinatory case, Shari has a sentence in the language of thought of the form "that man is after me", but there is no man. So what proposition does she express? The interpretation, if you will, of her CD is an incomplete proposition of the form "___ is after me". Since there is no man to be the actual content of her belief, the best she can do is accept an incomplete proposition. (Of course, this can still explain her behavior…See Adams, Fuller, & Stecker [19]). So even though what is in the head may be exactly the same in the veridical and hallucinatory case, the semantics of what's in the head are not the same in the veridical and hallucinatory case. There is an empty demonstrative in the hallucinatory case, but not in the veridical. In the veridical case, she is running from an actual man and has object-dependent thoughts about him. This is not true in the hallucinatory case.

Now consider EGR's very similar example of Andy in the desert. We will modify it slightly. In the veridical case, Andy sees someone at a distance standing by a lake. In the hallucinatory case he hallucinates someone at a distance standing by a lake. In both cases it appears to Andy as a dark spot by the lake. Andy says to himself, "He is by the lake". Now what is the content of that state? Of that CD? In the veridical case, Andy is seeing someone. That person enters the content of Andy's perceptual states and of his belief states. Andy's belief is about him and is true. Whereas, in the hallucinatory case, Andy's perceptual and belief states are about no one-even though, from Andy's perspective the cases seem exactly the same.

What EGR says about this is that the spot Andy seems to see "is the referent" of "He" in the hallucinatory case. He adds that the spot exists, is in Andy's head, and can be used as a prop by the decoupler mechanism. But this is where EGR goes wrong. There is a perceptual hallucinatory image in Andy's head, but this is not what he thinks he sees. He incorrectly believes he sees a person. EGR seems to want the referent of "He" to go from being about someone by the lake (where there is no one) to being about something inside Andy's head (where there is something, namely the spot). But in the hallucinatory case, Andy's sentence in the language of thought is "He is by the lake". Since there is no one by the lake, it has the content of an incomplete thought-the content "___ is by the lake". This is neither true nor false. By attempting to switch the referent and make it about something in his head, EGR tries to salvage a complete thought for Andy. But what he says about the hallucination: "the hallucinatory state turns out to be an incorrect or unfit belief", is actually true of the state EGR thinks Andy actually believes.

When someone is hallucinating a spot, the person is not seeing anything. It might seem to the subject that he is seeing something, but there is nothing there. What about the spot, one may ask? The spot is part of the phenomenal content of one's experience. That is, one is having an experience of the sort one would be having if one were actually seeing a spot. Since there is no spot in world, one's experience is non-veridical. One isn't seeing anything. The spot cannot be the referent of "He". The decoupler can make use of the properties of the hallucinatory experience (which may provide items in the vehicle for a thought), but the interpreter cannot substitute the phenomenal spot for the referent of "He", because there is no referent of "He" even if the subject thinks there is. So again, the most that can be said for Andy's thought is that it is an incomplete (or gappy) thought. And this is not what EGR needs to be true for his theory to work.

Now let's return to the cases of Vulcan and Neptune. The thoughts he ascribes to the scientists are the following:

Vulcan is influencing the orbit of Mercury.

Neptune is influencing the orbit of Uranus.

He correctly says that prior to seeing Neptune (say, through a telescope), the CDs in the Vulcan case and Neptune case are very much the same. They have to be slightly different because one is partly about Mercury and the other is partly about Uranus. But with respect to the names "Vulcan" and "Neptune", since there are no object-dependent thoughts prior to perceptual contact with Neptune, there is much similarity. When scientists actually see Neptune through a telescope, then there is perceptual contact with the planet. Then Neptune becomes the content of "Neptune". A referent for "Neptune" is fixed. However, this is never the case for "Vulcan". Since there is no planet between Mercury and the sun, there is no referent for "Vulcan". There is a difference in the two thoughts above, regardless of whether the scientist LeVerrier became aware of this or not. The content of "Vulcan is influencing the orbit of Mercury" remains the incomplete thought "___ is influencing the orbit of Mercury". In case of Neptune, complete thoughts arise once the referent of the name is fixed, viz. the thought "Neptune is influencing the orbit of Uranus". Whether the CDs are the same or not depends upon whether there is a causal anchoring of the names involved. For empty names, there never is. For filled names, there will be such a causal anchoring. This will make the difference in the interpretations of the CDs. EGR overlooks this difference. Of course, EGR could have said that prior to a perceptual event of anchoring the name "Neptune" both names were descriptive names only. But then he would be saying the meaning of the names have descriptive content and he denies being a descriptivist about names. His view and our view here are very similar, but not identical, because he doesn't distinguish complete and incomplete thoughts and he relies on this notion of a decoupler mechanism that he thinks can assign referents (which we deny). No interpreter

or prop can assign a referent (a content) where there is no referent to be the semantic content of a term. And when he tries to switch the referent from the world to the head (within the CD), it will not work. In the examples of hallucinations or fiction, the relevant thoughts are not about things in the head (in the CD, in the language of thought).

Above we pointed out that there is a problem in his account due to his reliance upon perceptual triggers for the decoupler mechanism and its production of a CD.

He says:

"CDs are a product of the decoupler mechanism. The decoupler, in turn, is perceptually triggered: whether CDs are invoked to interpret a given referential term depends on: (i) whether there is a perceptually available salient object; and (ii) whether there is a pretense involved in the use of the referential term. If there is no perceptually available salient object, then the decoupler will be triggered and a CD will be produced to understand such representation. If there is some such object but also the pretense that such object be a stand-in or a prop, then the decoupler will also be triggered".

First, he has to admit that there is an exception in the case of fiction. There are no perceptual triggers for the CDs involved in fiction. What is more, the interpreter in the case of fiction will fail to assign an appropriate semantic object because there are no real-world referents. He seems to think mental imagery will do as referents, but as we've pointed out above, it won't.

Second, even in cases where he thinks perceptual triggers do activate the decoupler, i.e., hallucination, the account will go wrong. Consider again the two cases of Shari. In one, Shari is running from a man with a knife. In the other, Shari is hallucinating a man with a knife. What about the decoupler? If it requires a perceptual event, it should be working in the veridical case. After all, Shari sees a man with a knife. And in the hallucinatory case, Shari actually sees nothing. So, what triggers the decoupler is an hallucinatory experience that is qualitatively identical to the veridical experience. How can the decoupler differentiate? It seems to us that this is hopeless. Either the decoupler activates in both cases or neither. If it activates in both cases, how is it tied to pretense or hallucination? And if it activates in neither case, then there are no CDs. Either outcome is not good.

5.2 Johnston

We think we mostly agree with Mark Johnston on hallucination [25]. He agrees with us that it is not possible to hallucinate an object with which one has no prior contact:

"I can hallucinate my mother talking to me on the phone, but I could not do this unless I already had an independent way of making singular reference to my mother… Hallucination does not introduce particular topics for thought and reference. Hallucination of a specific mother or a specific dagger is parasitic upon antecedent sin-

gular reference to that mother or that dagger". (p. 129 of [25])

So far, so good. He seems to be agreeing with us there.

We are also prepared to go along with Johnston's claim that:

"Furthermore, the fact that hallucination can provide us with original knowledge of quality, but not original knowledge of particulars, suggests that the primary object of hallucination is somehow more qualitative than particularized, that it is individuated in terms of properties rather than in terms of particulars".

We may also be prepared to go along with him in his further ruminations about hallucination:

"My thesis will be that items suited to be the primary objects of hallucination are the factors in common between hallucinations and corresponding veridical sensings, common factors that explain the possibility of seamless transitions from cases of hallucination to cases of veridical perception". (p. 133 of [25])

"Sensible profiles are manners of presentation that are themselves presented in sensing…. Sensory manners of presentation are themselves sensed". (p. 141 of [25])

We have no objection to this account because we see it as simply describing the phenomenal content one experiences and can describe when hallucinating. As long as these sensible profiles are not turned into objects referred to via empty names, we can accept this view.

He makes further remarks that seem consistent with our understanding of his view:

"Hallucination is a mental act directed at sensible qualities and relations, but these qualities and relations are the familiar ones, which if instantiated could only be instantiated by physical particulars. So, the positive account of hallucination and of veridical sensing can be summarized as follows: In sensory hallucination one is aware of complexes of sensible qualities and relations. In veridical sensing one is aware of instantiations of complexes of sensible qualities, relations and sensible natural kinds. There are no qualia. It is ordinary qualities and complexes involving them that account for the so-called subjective character of experience". (p. 146 of [25])

We are not sure what he means by "there are no qualia". We take qualia to be just what he is describing as sensible content.

The first place we find a departure from Johnston's view and our own is in what he says about the following case:

"Suppose a child dwells on the thought that Santa Claus is not coming down the chimney this Christmas and this causes him to hallucinate Santa Claus. His thought that Santa Claus is not coming down the chimney is true, but it does not entail that Santa Claus exists. If this is a case where his hallucination's being of Santa Claus amounts to an act of awareness of a certain sensible profile being caused by

and referentially anchored to the child's thought concerning Santa Claus, then we need not think of the child's hallucination as a genuine relation to a non-existent object called 'santa Claus' (p. 157 of [25]).

For us, the child's thought "Santa is not coming down the chimney" is neither true nor false, because it is incomplete in content. So, we're not sure that Johnston is actually taking a stand on this matter because nowhere else in the paper is the truth or falsity of sentences involving empty names discussed.

For our purposes, perhaps the most interesting case Johnston discusses is the John Nash case, where Nash hallucinates a roommate, Charles. When Johnston talks about the qualitative content of a hallucination, he calls it the hallucination's "sensible profile". So, Nash's hallucination of his "roommate" would look a certain way to him. But there is no individual there-it would not put Nash in contact with an actual person.

Our account of hallucination gives the following diagnosis of the case of Nash's roommate. At various times throughout his life Nash is presented with a series of qualitatively related sensible profiles, which include visual, auditory and tactile qualities. These are the sort of sensible profiles that might be enjoyed by someone having a veridical experience of a charming, supportive English roommate. At first, Nash takes the sensible profiles to be a certain Englishman, Charles Herman, whom he takes to be his roommate. Later, as he gains some control over his reactions to his hallucinations, Nash still takes certain sensible profiles to be Charles, but he regards Charles as a mere figment of his imagination. Hence the so-called intensional (with an "s") "identity" of Charles through episodes in which "he" is regarded as real and unreal. (p. 165 of [25])

There is nothing about this with which we specifically disagree. It is not so much what Johnston says, but what he doesn't say. He doesn't say what the content of Nash's thoughts about Charles is. Since there is no Charles, Nash's thought contents can't be about Charles. They cannot include Charles as object-dependent thoughts. Johnston spends considerable time debunking the Meinongian solution to this question. But still he doesn't tell us what contents are had by thoughts with empty names. Nash's thoughts are, so to speak, "Charles-about" but not about Charles (there being no Charles). In principle, we cannot tell whether Johnston would agree or disagree with our account of the semantics of hallucinatory thoughts that include empty names. On our view, a thought by Nash of the form "Charles is shy" would consist of the content <___, being shy>[9].

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[9] In this paper we are concerned with contents of terms that are not object-involving, hence empty. But there are some concerns over Johnston's account of object-involving hallucinatory content. For these see James [27].

5.3 Tye

We now turn to some remarks by Michael Tye. He raises objections to views of gappy content (though he doesn't specifically mention a view like ours). He mentions the view of David Braun [24] about gappy content, and Braun's view of this is sufficiently similar to ours.

So, we will begin with his objections. Let's start with his words:

"It was suggested above that where a visual experience is hallucinatory, the content is just like a singular content but with a gap or hole in it where an object should go. But does this really make sense?" [26].

Our answer is yes, it does make sense. Let's see why, in particular, Tye thinks it doesn't makes sense.

He starts by saying that that the content of a thought could be represented by an ordered pair where the first item is the subject of the thought and the second item a predicate.

"Since a gap or hole is not an item, or so it seems, there is no first member of the ordered pair and so no ordered pair at all".

Our reply is that what it means for there to be a *gap* is for there to be a missing item from the ordered pair that would consist of a complete thought content.

He says:

"…a possible reply is to say that the missing item in both cases is the empty set. Where one hallucinates, the content is a complex entity built out of the empty set and various properties. But intuitively this is a bizzare proposal, indeed. If the empty set is the gap filler, then the hallucinatory experience is about the empty set". (p. 294 of [26])

We agree that this is not the way to go. A gappy thought with a missing subject is not about anything-not a set (filled or empty) or anything else. Of course, the person having the thought doesn't realize this. To say that a hallucinatory thought is not about anything is not to say that it is about the empty set. He says of one hallucinating something that seems to be red, that on this view one would be hallucinating the empty set being red. Our view is that one is experiencing *no thing*; set theory doesn't factor in. One's experience is qualitatively similar to an experience of some red thing, but in this case, there is no red thing-though the experience is similar to cases where there was a red thing. As in our case above where one's hallucinatory experience is similar to the case of a veridical experience of someone coming after you with a knife. You will still run away even though your experience is of no man-indeed of no one.

We agree that the attempt to fill the gap in gappy thought with something (the empty set or anything else) is a mistake. What makes it gappy and an incomplete thought is that part of its content is missing. These thoughts have the logical form of open sentences [19].

He considers another possible gap filler-holes. We don't wish to go this direction either. Nor do we wish to say some space-time region is filling the gap. There is nothing

filling the gap. It is a mistake to attempt to characterize an absence as an object.

Tye considers more possibilities, but without going through all of them, we can cut to the chase. Braun's [24] account of gappy content is about thoughts and thought content.

Tye, at the very end of his objections to gappy content of the kind Braun considers, points out that he (Tye) talks about experiences, not thoughts. And for Tye experiences are not linguistic. They have no syntax. So, there won't be a subject term or a predicate term. His main objection, then, is none of the above but rather that hallucinatory experiences should not be treated as thought, gappy or otherwise. With this we think we can agree, but it leaves untouched Braun's (and our) account of incomplete thoughts that may arise out of hallucinatory experiences.

But let's now turn to hallucinatory experiential content. Take Tye's example of hallucinating a ripe tomato. Susan's experience of hallucinating a ripe tomato is qualitatively indistinguishable from her veridical experience of seeing a ripe tomato. The experiences are qualitatively indistinguishable, but in one case she is seeing a tomato an in the other seeing nothing. Her experience is of a situation such that if her experience were veridical, there would be a ripe tomato in front of her.

We agree with his distinction between the vehicle of the experience and its content. In the case of thoughts, we think the vehicle is something like symbols in the language of thought. In the case of experiences, the vehicle is something in the visual system that is activated normally when observing scenes. The content is what the scene is of. When a ripe tomato is viewed, it is the content. When hallucinating a ripe tomato, there is no tomato to be the content of the hallucination. But there are properties (red, round, and so on) that comprise the content of the hallucinatory experience. We agree with Tye that it is a mistake to assume that "a property of the vehicle of representation (the experience) must be a property of its content" (p. 299 of [26]).

He uses the example of thought content about Vulcan that has been well-worked in the literature by us and Braun [9, 19, 23]. So, we don't think we disagree on thoughts. It seems only to be experiences and their content where there is room for disagreement[10].

Let's continue by noting our agreements with Tye. He says that in a hallucinatory experience, say of *o* being *F*, even though *o* is not part of the content of the experience, the experience remains crucially tied to *o*. Why? Because the content of an experience is determined by its veridicality conditions. This is similar to a belief's content being tied to its truth conditions. So, as we indicated above, when

S hallucinated a ripe tomato, one is in a state one would be in when veridically experiencing a ripe tomato. It's just that hallucinations are not veridical experiences. So, to this point, we are in agreement with Tye.

Do we agree with him about the content of an hallucinatory experience where the content seems to point to an experienced object that is not there? Tye seems to say that the experience is an "unstructured whole", and has no parts. This is where we think we depart. We see no reason to say that experiences, hallucinatory or otherwise, are unstructured wholes. We certainly wouldn't say that about beliefs, even beliefs involving empty names. The thought that Vulcan is small, is not an unstructured whole. For us, it has the incomplete content represented by the set $<$___, is small$>$. And it uses the term "Vulcan" to deliver that content. Tye would admit, concerning thoughts, that they are complex because they involve concept and a sentence-like structure.

Why, then, does he say hallucinatory experiences are unstructured wholes? He says: "the set of worlds associated with a hallucinatory experience is the empty set". (p. 300 of [26]) So far, so good. If one hallucinates a unicorn, since there are no worlds with unicorns, the content of one's visual experience is the empty set. Well, not quite, because there is still the part about "horse-like and horned-like" experiential content. But if content is externally determined (as for Tye and for us), there being no unicorns, they will be no part of the content of an experience (veridical or hallucinatory), nor a thought, for that matter.

Tye goes on to give the following argument:

(1) If I see an object, it looks some way to me.

(2) If an object looks some way to me, then it is experienced *as* being some way.

[This is a premise we would reject because when hallucinating, there is no object that looks some way to you. $_{fa\&aj}$]

(3) If an object is experienced as being some way, then it is a component part of the content of the experience (assuming the experience has a content).

[This is the premise Tye rejects. f$_{a\&aj}$]

So,

(4) If I see an object, then the seen object itself is a component part of the content of the experience, assuming that experience is representational at all.

The reason he rejects (3) is so that a hallucination of *o* being *F* doesn't include *o* as part of its representational content. Now, in principle, we agree that an hallucination of *o* being *F* does not include o as part of its content. But the argument ignores the difference in *meaning* between veridical and hallucinatory experience. For veridical experience, (3) is true and the argument is sound. For hallucinatory experience, (3) is false, but so is (2) and even (1). And furthermore, we disagree that if S hallucinates *o* being *F*, there is no part *being F*. There is structure to experience, even hallucinatory experience. It is just that the *o-part* is empty-

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10 Despite having written an entire book about qualia (Tye [29]), Tye seems to endorse rejecting them entirely in what calls "Package 1" of this paper (305-6).

however one wants to represent experiential content. So, we agree that there is missing content to a hallucinatory experience, but are not willing to go so far as to say these experiences have unstructured content. There is definitely structure.

5.4 Schellenberg

Schellenberg [28] wants a view of perception and hallucinatory content that is compatible with perception being both representational and relational. She settles on a view that involves Fregean *de re* modes of presentation. She believes this view will give her a way of handling both the content of experiences and hallucinations and their "particularity" of content.

In the case of hallucination, she employs the idea of an ordered pair that includes a mode of presentation (or MOP) in both the subject slot and the predicate slot. So, it might have the form <MOP1, MOP2> where MOP1 specifies an object and MOP2 specifies a property. Like us, this has the content of specifying a property an object would have if the perception were accurate (veridical). When hallucinating, MOP1 is a *de re* mode of presentation and is object-related, but of no relational object, since it's a hallucination. So far, this sounds much like our view outlined above. But when we look closer, we see important differences.

One important difference is the one Tye brought out and we discussed above. That is, experiences are not thoughts and do not necessarily involve concepts. Schellenberg says modes of presentation are concepts. "To a first approximation a mode of presentation can be characterized as the specific way in which a subject conceives of an object or a property when she refers to it" (p. 34 of [28]). One problem with this is that it is restricted to concepts. But since experiences do not necessarily involve concepts, hallucinations, which are experiences, also need not involve concepts.

Consider the following: Suppose a mad neuroscientist caused an infant in a crib to hallucinate. This is done by inserting a probe into its visual cortex and stimulating it so as to produce an experience it would be having under normal conditions if looking at the white mobile above its crib. On the assumption that the infant does not yet have the concept of a mobile, one cannot account for its hallucinatory experience in terms of its concepts, or how it conceives an object. So, if there is a mode of presentation in the infant's hallucination, the mode of presentation must be perceptual, not conceptual.

We don't quarrel with Schellenberg's notion that we can represent the content of the hallucination with gappy content and modes of presentation, but we disagree with how she conceives of these. For incomplete thoughts, as we have described above, our view and hers are virtually the same-with a slight modification that our view is more Russellian than Fregean. But we share the idea that we can capture the content of a hallucinatory thought via ordered pairs, where at least one of the terms is vacuous. Of course, for us, a mode of presentation in an incomplete thought utilizes a syntactic object in the language of thought (LOT).

For experiences, however, these cannot be the modes of presentation involved in giving the content of the hallucinatory experience. We suspect that, for experiences, there are vehicles in the perceptual system that play the role of a mode of presentation. These are likely firings in the visual cortex (or something in the visual system) that is a representation and that would represent an object and its properties, under veridical conditions of perception. Of course, when hallucinating, the perception is not veridical and the experience does not accurately represent what's there.

While we agree with her employment of modes of presentation in order to handle hallucinations, we disagree with her Fregean interpretation of modes. What is more, we are inclined to defend a more Russellian view of content. In order to do this, we owe her replies to her rejection of the Russellian view.

Her rejection of the Russellian view stems from examples like Hume's missing shade of blue. Here the problem is that the missing shade of blue is an uninstantiated property. How is one to be related to that property, since it is uninstantiated[11]? On our view, one has experienced shade B1 and B3 and then, using one's imagination, one produces in oneself an imaginary experience of B2. You are not instantiating the property but are instantiating your response to what the instantiated property would be-through the power of imagination. We take this to be a type of self-produced stimulation of the perceptual system.

Our response differs from one of her possible responses in that we are not saying this is purely conceptually driven. There is a sensory imaginative image produced through imagination. For us there is no difficulty over how perceptual hallucinatory experiences could be indistinguishable, because for us, the hallucination of B2 would not be conceptual, rather than experiential.

We also do not say a subject is sensorily aware of B2, because B2 is uninstantiated. But through the works of the imagination, there is a sensory-like experience of the sort one would have if one were sensing B2.

The "particularity" of one's B2 imagining is just produced by the mind's ability to hit the middle between B1 and B3. It is not produced by B2, because B2 is uninstantiated. On her view that employs "Fregean modes of presentation", B2 is still uninstantiated. Thus, there is no mode of presentation that relates one to B2 in a *de re* way, and that is really what Schellenberg strives for. She seems to think *de re* modes of presentation do not require causal links to objects or properties. But then what makes them *de*

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11   On Fodor's (Fodor [30]) asymmetrical causal dependency theory of meaning, there can be causal relations to uninstantiated properties, but we won't take this way around the problem.

re? In her own examples, it is a relation to an existing object that makes the difference in modes of presentation between two qualitatively indistinguishable experiences [28]. And for her, a mode of presentation with non-existing objects or properties "is empty" [28]. So the significant difference between our views is that she takes a mode of presentation of a non-existent object or property to be a concept. For us this is only true of thoughts involving empty names, but not experiences (which need not involve concepts because experiencing is not thinking)[12].

Schellenberg seems to think that by moving to concepts as modes of presentation, it removes all the difficulties. But it doesn't. She says uninstantiated properties are not a problem for her view. But they are when one hallucinates a non-existent object or uninstantiated property. For now, she must explain how these concepts acquire their content. One could go with Fodor [30] and allow causal relation between the mind and uninstantiated properties, but we get the impression she does not go that way (since she does not use Fodor's ideas to support hers). So, she still hasn't explained how modes of non-existent objects or uninstantiated properties acquire their content—even at the level of types, not tokens. This is why, for us, empty names have no meaning and empty predicates (if atomic) lack meaning as well[13].

5.5 Azzouni

Azzouni [31] takes a view that may or may not be in conflict with our view because he defines "reference and aboutness" in two different ways. In one way (the way we have treated these terms above), they are real world relations between terms and the world. But in another way, Azzouni says: "The latter are not relations at all. Instead, they are characterizations of certain terms…when such play a certain role in discourse: have grammatical and semantic roles in sentences indistinguishable from otherwise referential terms. When a term is said to refer [in this sense $fa\&aj$], no relationship to anything is indicated" (p. 24 of [31]). For example, Azzouni says: "Pegasus" refers to Pegasus, because of the application of the name-schemata "____" refers to ___, one that applies to every name by virtue of sheer grammatical role. Azzouni goes on to make clear that in this case no metaphysical commitments are made.

Now we should point out that we don't agree because we believe this gives up the game. For us, the game is finding a unified theory of names on which the criteria for meaning is the same on every occasion of use of any name. Clearly, Azzouni is not playing the same game. His account of different senses of "aboutness and reference" abandons the hope of giving a unified account. What is more, for us there is no sense in which it can be true that "'Pega-

sus' refers to Pegasus". It cannot unless one cashes out the meaning of the second occurrence of the term and Azzouni does not.

Nonetheless, Azzouni devotes an entire chapter to hallucination and content, so we turn to that now. An important feature of Azzouni's view of hallucinations is that the hallucinator and outside observers can share content about the hallucination. He doesn't specify which of his senses of "about" we should understand. But let's press on. Suppose S is hallucinating a non-existent rabid dog named George. S can use public language to describe his hallucinatory experience. For us this means that S can create a file of descriptions that S associates with George, based upon his hallucinatory experience. S can share that file with observers. So, in the file would go: "is a dog", "is named George", "is frothing at the mouth", "is growling", "is right here in front of me", "looks thus and so", (you get the picture).

Azzouni says the outside observers can share things about the hallucinatory experience. S can even be corrected. For us, this means that S may be corrected about things he has placed in the file and shared with the observers. S can correct observers and they can correct S because what is in the file determines what is so-called "correct". We suppose S could even change what he says about the hallucination by paying more attention to his perceptual episode. Maybe upon closer inspection to his experience, S observes George having short hair, not long, or other things. Azzouni even imagines the possibility of a futuristic machine that could cause co-hallucinations between S and the outside observers, so that they could experience the same hallucinatory content as S. In principle, we suppose this may be physically possible.

Where we disagree, however, is with Azzouni's statement that S's experiences are experiences *of hallucinated objects*. An experience of George is not an experience of a hallucinated dog, no matter how real it seems. It is a dog-hallucination, but not a hallucination *of a dog* (unless Azzouni is falling back upon his non-referential sense of "about"). If he is, then he is changing the subject and introducing ambiguity into his account. This is a frustrating feature of his view-his embrace of the *ambiguity* of "about and refer". Where he thinks he is talking about a hallucinatory object, we think he is talking about nothing (with which actually he would agree, since he resists Meinongianism)[14].

Next question for Azzouni: how does he get the descriptions in the file produced and based upon the experiential content of the hallucination to synchronize with the experiential content of the hallucination? Azzouni seems to think that properties are attributed to hallucinated objects "in a manner semantically indistinguishable from how such properties are attributed to real objects" (p. 82 of [31]).

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12 There is an old saying "seeing is believing." But, of course, it ain't!

13 Complex empty predicates are composed of parts that do have content-as everyone since Descartes seems to have accepted.

14 Several commentators on Azzouni are suspicious about his rejection of Meinongianism-for example, (Aranyosi [32]).

This highlights our disagreement. For us, attributing properties to hallucinated objects is only a matter of associating predicates with names. However, for us this is semantically quite distinct from doing so with real objects, because there might be empty names with hallucinated objects. Of course, if one hallucinates a real object, then we might agree. But this is not guaranteed when hallucinating, as we have made clear earlier. So when there is similarity in attribution it is because there is similarity in associating descriptions in files with names. This happens whether names are filled or empty. If this is what Azzouni is saying, then we agree as long as the names aren't empty. We agree with Azzouni that descriptions used to describe hallucinatory experiences are not meaningless. But we don't agree that the reason they are not meaningless is because they record "hallucinated facts" (our term, not his.).

Azzouni thinks hallucinated objects are "temporally and spatially indexed" (p. 82 of [31]). But what could this mean? They are not in actual space. So, he must mean in perceptual space. But what is that? It is where something perceptually appears to be relative to the subject's body or other objects. This too would go into one's file of descriptions associated with the hallucinated object. We don't deny that hallucinations such as visual ones are visual presentations. They visually present to the experiencer. They perceptually seem to have all manner of properties and locations. But for us this all takes place in a mental vehicle[15] not in actual space and not actual objects of experience. A hallucination of a dog is a dog-hallucination not a hallucination of an object. One's experience is of the sort one would be having if one were actually experiencing a dog. But one is experiencing no object. This, we think, is the crucial difference between our view and Azzouni's.

As we read Azzouni, he seems to be saying that one can used the very same language to describe hallucinated objects and properties that one would use to describe real objects and their properties. These are what he calls "truth-based properties" (p. 83 of [31]). That accords with our account so far. The descriptions in files produced from hallucinatory experiences may be identical to files produced from veridical experiences of real objects. We see him as saying one can use the same language with the same meanings to describe hallucinations. Again, we agree as long as the terms are not empty and understanding that the propositions may be false due to the hallucination. Another place we depart from Azzouni is that he wants to say hallucinated objects *have* truth-based properties (p. 84 of [30]). Whereas, we want to say the descriptions in one's file for describing the hallucinations use truth-based descriptions and language that could be applied truthfully to actual objects and states of affairs. But hallucinated objects don't exist and have no properties. Oddly enough, proposing not to be Meinongian, Azzouni should agree with this. But in-

stead he states that "for something to present as such and such to someone *is* for it to have the property of presenting to someone as such and such". (p. 84 of [31])

Azzouni may object to a view like ours in the following way. "The temptation to treat hallucinatory experience as contentless has its ultimate source in views that object-dependent thought and experience must be incomplete-not genuine-if there are no objects targeted" (p. 108 of [31]). On the contrary, as we have shown above in section III, incomplete or gappy thoughts are real, and have real content, and can be explanatory of intentional behavior. Therefore, we disagree strongly with Azzouni's prognosis for a view such as the one defended by us in this paper.

5.6 Sainsbury

Sainsbury [29] believes there can be reference without referents. In non-empty cases he believes, like us, that singular thoughts are object-dependent. But for empty names there can be singular content without referents. Since we don't believe this to be possible, we will figure out where we disagree. First, Sainsbury thinks there can be more than one subject reporting the same hallucinatory content (p. 253 of [33]). Second, he gives an example of hallucinating and reporting seeing "a little green man that looked to the subject as if he was bald". He says the ascribed content is singular and not true, yet "no one could deny the truth of such ascriptions". So he, like Azzouni, seems to want to have it both ways. But how can it be both true and not true unless "reference" or "truth" have two meanings for Sainsbury?

He says for every hallucinatory experience there could be a qualitatively identical veridical one. We agree, as pointed out in Section III. He seems to want to say that if one hallucinates a pink rat and thinks "that rat is pink", one is having a singular thought (without a referent). And based on this, he says hallucinatory thoughts can have singular content. For us, the only thing singular is the logical form of the thought, not its content. For us, there is at best an incomplete thought of the form $<\_\_\_$, being pink$>$. He agrees with us, that since there is no pink rat when hallucinating, and there is a pink rat in veridical case, the two thoughts cannot have the exact same content. But he seems to want to say there must be singular content because that content can be used to explain intentional behavior. But as we have explained in Section III and other places, our account too can explain intentional behavior when there are incomplete thoughts. So far, we still don't have a reason to accept reference without referents. He thinks our approach defeats the goal of explaining intentional behavior when there is incomplete content. But we have provided explanations in spite of his protests. He seems to overlook the fact that to the subject the thoughts will seem to be complete (if one doesn't know one is hallucinating) and that based on this, one will have existential thoughts that flow from the incomplete ones and produce natural behavioral consequences-as we explained above.

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[15] For more on this see Adams, Fuller, & Clarke [34].

The only thing singular in thoughts based on empty hallucinations are the sentences in the language of thought-not their contents.

He seems to want to say that a thought singular in form must be singular in content because of its functional role. But as we have pointed out, incomplete thoughts can have the same functional role in hallucinatory cases as complete ones would in veridical cases. Hence, Sainsbury's conclusion that there must be singular thoughts in cases of empty names in hallucination, fails to follow or be true.

We think part of the reason Sainsbury disagrees with our approach is the mistaken idea that if something is a name, it must have a referent. This is perhaps true of Russell's "logically proper names", but not true of names. Direct reference theorists have no trouble accepting that "Pegasus" or "Holmes" are names. They just don't name. So, he again falls back on his idea that names are identified by their functional role. If this is syntactic functional role, we agree. But if it is semantic functional role, we don't agree-and he has provided no good reason to agree. He also appeals (as does Braun [8]) to negative free logic to explain why negative existential sentences with empty names are false. But free logic stipulates its semantics (like any model theory) and is not attempting to explain how language captures the world it is about. So an *argument by stipulation* is hardly victorious.

6. Conclusions

In this paper we introduce the problem space of the intersection of hallucinatory experiences and hallucinatory thoughts involving empty names. We recount a brief history of the theory of names. We select and defend a direct reference theory of names. We then apply that theory to cases of hallucination. We show how our theory can explain intentional behavior involving empty names and hallucinatory experiences. We then consider several theories that offer alternative accounts to ours. We critically evaluate those alternatives in relation to our view and defend our view[16].

7. Author contributions

FA and AJ contributed equally to the conception, design and writing of this manuscript. All authors have read and approved the manuscript.

8. Ethics approval and consent to participate

Not applicable.

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11. Conflict of interest

The author declares no conflict of interest.

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