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STRUCTURAL COMPLEXITY OF POPULAR SCIENCE NARRATIVES OF DISCOVERY AS AN INDICATOR OF READER-AWARENESS: A LABOV-INSPIRED APPROACH

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ABSTRACT. Labov's (1972) model for the analysis of narrative macrostructure of stories relating personal experiences has been suggested as a possible universal measure of narrativity and has been applied to a variety of narratives. It has not, however, been used to investigate popular science. This article suggest that by applying Labov's (1972) model to popular science narratives of discovery it is possible to see the underlying universal structure of these narratives. Using a corpus-based approach, this study analyses 62 popular science narratives of discovery published in 2011. As a result, it becomes evident that popular science narratives while conforming to the universal narrative structure outlined by Labov are more structurally complex than the narratives of personal experience. Popular science narratives of discovery exhibit a more developed secondary (scaffolding) structure than the narratives of personal experience. This complexity results in a more flexible arrangement of narrative elements than envisioned by Labov. The analysis also demonstrates the presence of a new structural element that is not part of the original model but is essential to the narratives of discovery. The structural complexity of the popular science narratives of discovery does not inhibit the understanding of the narrative by a lay audience. To the contrary, it enhances the reader engagement properties of the narrative and demonstrates the authors' awareness of the lay readers' needs. The application of Labov's (1972) model to the recently produced texts outside the realm of the personal experience narrative confirms the universality of the framework and demonstrates its continuous ability to provide valuable insight.

Keywords: popular science; narrative macrostructure; reader engagement; narrative of discovery; discourse analysis; scientific writing

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1. Introduction

Narrative is a popular form of knowledge dissemination. In fact, some scholars (see, for example, Schank 1990; Gjedde 2000; Boyd 2009; Herman 2009) suggest that it is the preferred method for humans to acquire and process new information. It is no wonder that in recent decades such disciplines as communication of science to the public, philosophy of science, and science as culture have been paying increased attention to narratives and their ability to transfer complex scientific concepts to lay audiences. Narrative analysis of popular science contributes to the exploration of the language of popular science as a discourse category. Just as the languages of individual scientific disciplines can be seen as separate discourse categories (see, for example, Mackinnon 2010 for a discussion of the language of classical physics) or as the unified language of science, the language of popular science can be parsed into several discourses or analyzed as one. This study treats the language of popular science as a subsuming discourse category and suggests that the underlying narrative structure explored here is suitable for popularization of a variety of scientific disciplines.

Recent studies (see, for example, Reitsma 2010; Blanchard et al. 2015; Hermwille 2016) demonstrate that the explanatory and contextualizing abilities of popular science narratives appeal not only to the science-minded laymen but also to the decision-making social power structures such as grant-providing agencies or policy-creating institutions. In that, popular science narratives have helped popular science to cross the boundaries of intellectual entertainment and become vital pieces of the technological and socio-economic spheres.

While the awareness of the importance of narrative in communication of science is obvious, the linguistic insight into the structure of such narratives remains somewhat underdeveloped. Those who investigate popular science from the point of view of linguistics (see, for example, Moirand 2003; Myers 2003; Turney 2004; De Oliveira and Pagano 2006; Fu and Hyland 2014) tend to address either broad issues such as explanatory properties (see, for example, Turney 2004) or the general structure and effectiveness of a message (see, for example, Moirand 2003; Myers 2003). Others take a very narrow approach that addresses one specific linguistic issue (see, for example, De Oliveira and Pagano 2006 or Urbanova 2012 for analyses of discourse presentation; Fu and Hyland 2014 for exploration of interactional metadiscourse). General narratology usually regards scientific and popular scientific discourses as a side note (see, for example, Herman 2009).

It might be tempting, in the circumstances, to propose a structural system that could account for and explicate popular science narratives and in the process introduce specific steps that successful narratives follow. Such a

system would be equally useful for writers and for analysts who have to evaluate popular science narratives in order to make public policy decisions. However, as this article shows, there is no need to invent a new framework.

In 1967, Labov and Waletzky introduced a structural framework for analyzing oral narratives of personal experience. In 1972, through a case-study, Labov perfected this model. Since then numerous studies proved the applicability of the model to narratives other than those relating personal experiences. In fact, Labov's (1972) model (with modifications) has served as a springboard for structural analyses of literary narratives, narratives of children, and several types of personal narratives not examined by Labov (for example, see Peterson and McCabe 1983, Plum 1988, Berman 1997, Fleischman 1997, Baerger and McAdam 1999). So far, the value of the model has been in its universality; it is capable of exposing the underlying narrative structure of multiple text types. However, Labov's (1972) framework for narrative analysis can do more. When applied to certain segments of popular science texts, it not only supports the claims for narrativity but also helps identify a structural element peculiar to popular science narratives of discovery.

1.1. Labov's Model: An Overview

The original Labovian approach suggests that narratives of personal experience can be parsed into several sections that correspond to the following narrative elements: Abstract (an optional brief summary of a narrative to come), Orientation (introduction of the actants and the setting of a narrative), Complication (the main body of a narrative), Evaluation (the speaker's assessment of a narrative), Result (the resolution of a narrative), and Coda (the element that transitions the speaker and the listener from the past events of a narrative to the present). Labov (1972: 369) suggests that a complete narrative contains these elements and presents them in the order listed above.

In addition to the narrative macrostructure comprised of the narrative elements, Labov and Waletzky (1967) and Labov (1972) outline a microstructure comprised of narrative, free, and restricted clauses. The narrative clauses represent the events of the narrative in the chronological order (the temporal sequence) and cannot be reordered without changing the meaning of the narrative. Free clauses are not part of the temporal sequence and can shift positions. Restricted clauses are neither temporally ordered nor completely free and can be rearranged only within certain limits (Labov and Waletzky 1967: 22–23).

1.2. Popular Science Narrative of Discovery

It has been suggested in the Introduction that human knowledge is structured, stored, and related as a form of narrative. It is possible that narratives play such a crucial role in knowledge construction because of their ability to supply context necessary to interpret facts (see, for example, Turney 2004, Reitsma 2010, Avraamidou and Osborne 2008). This view of narrative usually predominates in discussions of popular science texts. As Reitsma (2010: 93) notes, "A narrative … includes interpreted information," arguing that this eliminates the need to draw conclusions between the events presented. Turney (2004: 333) surveys the kinds of narratives employed in popular science and suggests that they all serve one purpose – to explain or "translate" science into laymen's terms. I propose to use the label "scaffolding view" for describing this interpretation of narrative.

On the other hand, Eggins and Slade's (1997) research into casual conversation suggests another function of narratives. Eggins and Slade (1997: 229) demonstrate that narratives reveal "values, attitudes, and ways of seeing the world." I suggest calling this approach the "ideological view" and argue that it could be applied not only to spoken, dialogic narratives (as Eggins and Slade do) but also to the written, monologic narratives, as the ones found in popular science.

Popular science narratives can be separated into several types: personal narratives describing why one became a scientist; explanatory narratives, dealing with a particular scientific concept; and narratives of discovery.[1] It is the last group that is of interest for the present investigation. Narratives of discovery tell stories of how a scientist (or a group of scientists) come up with new ideas, concepts, and breakthroughs. These are predominantly narratives about people [Gilbert and Mulkay (1984) note the importance of the human factor in science]; however, they are rarely presented as personal experience stories even though they do describe the attitudes and experiences of the scientists involved. As third-person narratives, the narratives of discovery convey not only the experiences of making discoveries but also interject the authors' view and evaluation of the scientific discipline described and his/her attitudes and evaluations of the discovery.

The popular science narratives of discovery combine the scaffolding and the ideological views of narrative introduced above. They provide an easy-to-understand interpretation of a discovery in context, and, at the same time, guide the reader towards a particular view, if not of the world, then of the scientific community. This view, it should be noted, is most often very positive. Applying Labov's (1972) analytical framework to these narratives reveals both the scaffolding and the ideological sides of these text segments.

2. Corpus Description and Methodology

The data for this analysis is drawn from sixty-two narratives of discovery extracted from three popular science bestsellers by Marcus du Sautoy (*The Number Mysteries*, 2011), Brian Greene (*The Hidden Reality*, 2011), and Michio Kaku (*Physics of the Future*, 2011). Each narrative has been given a name and parsed into the structural elements proposed by the Labov (1972) model and then analyzed for its conformity to the narrative structure exemplified by the model. Below is an example of the narrative parsing:

1. "Galileo and Pendulum"

1. Abstract
Why Are Pendulums Not As Predictable As They First Appear?

2. Orientation
It was Galileo, the master of using math to make predictions, who first unlocked the secret of what makes a pendulum tick. The story goes that when he was 17, he was attending Mass at the cathedral in Pisa.

3. Complication
In a moment of boredom, he stared up at the ceiling, and his eyes fell on a chandelier that was swinging gently in the breeze blowing through the building. Galileo decided to time how long it took the chandelier to swing from side to side. He didn't have a watch (they hadn't been invented yet), so he used his pulse to keep track of the swing.

4.a. Result
The great discovery he made was that the time the chandelier took to complete one swing did not seem to depend on the size of the swing.

5. Explanation
In other words, the time of the swing essentially doesn't change if you increase or decrease the angle of swing. (I put the word essentially in there to indicate that if we dig a little deeper, things get slightly more complicated.)

4.b. Result
When the wind blew harder, the chandelier swung through a larger arc but took the same time to swing as when the wind dropped and the chandelier was hardly moving at all.

6. Evaluation
This was an important discovery and resulted in the swinging pendulum being used to record the passage of time.

7. Coda

But what does the time of the swing depend on, and can we predict whether and how the swing will change if the weight is increased or if the pendulum is made longer? (du Sautoy 2011: 226)

3. Results

It is possible to single out the elements that resemble the Abstract, the Orientation, the Complication, the Evaluation, the Result, and the Coda in the majority of the narratives of discovery; however, these elements are not as clearly identifiable as Labov's (1972) examples suggest. As with all analyses of discourse, there is an amount of subjectivity and room for debate. At the same time, what Labov (1972: 361) calls the "skeleton of a narrative" comprised of narrative clauses (the Complication, the Result, and sometimes the Orientation) is present in all the narratives of discovery and is clearly identifiable, but the elements that draw the reader in and out of the story present more of a challenge.

Other researchers, for example, Plum (1988, cited in Martin and Plum 1997) also noted several issues with complete applicability of Labov's framework. Unlike my findings, Plum's research showed that Labov's elements could account for the beginnings and ends of the narratives but not for the narrative skeleton.

The goal of the present analysis, however, is not so much to demonstrate the applicability of Labov's (1972) model to the narratives of discovery in popular science as to use this model to reveal unique features of these narratives. For instance, Labov's model reveals a particular type of structural complexity in the narratives of discovery. The analysis performed within Labov and Waletzky's (1967) and Labov's (1972) framework brings to light a structural element not present in the original model but one that is of key importance to the narratives of discovery in popular science. Labov's (1972) model also reveals that there are several types of complicating actions in the narratives of discovery.

3.1. A New Narrative Element: The Explanation

In addition to the elements of Abstract, Orientation, Complication, Evaluation, Result, and Coda outlined in Labov (1972), popular science narratives of discovery contain an additional element, which I shall call "the Explanation." It is part of what Labov (1972: 369) considers a "secondary structure" of a narrative – that is a portion of a narrative that relates to the listener/reader information other than the temporal sequence of events. Together with the Evaluation it supplies the information that is not part of the narrative core

but is, in many cases, essential for the processing of the narrative by the reader. The Explanation and the Evaluation provide the context necessary for a reader of popular science. In some ways, these two elements embody the popularizing techniques.

Existing research explicitly points out explanatory properties of popular science (see, for example, Turney 2004, Herman 2009); however, for the most part, it does not identify specific linguistic structures or their precise location in a popular science narrative. In fact, the term "narrative" can be used as an umbrella term that includes explanatory texts, especially when it comes to scientific writing (see, for example, Reitsma 2010). Turney (2004: 333) suggests that many popular science narratives are explanatory by nature and that when one needs to explain a scientific concept, he/she usually employs narrative techniques. In other words, a popular science narrative is itself an explanation. Herman (2009: 89–100) also discusses explanation as a text type along with description and narrative. Surveying the explanation in scientific discourse, Herman (2009: 100–104) suggests that either explanation is a text type separate from narrative, or both explanation and narrative constitute a combined text type of explanatory narrative. He does not propose treating explanation as an element of scientific (or popular science) narrative. At the same time, not all popular science narratives have explanation as their only goal.

The analysis undertaken here showcases the structural complexity of a popular science narrative of discovery and demonstrates that a narrative can fulfill various functions. Each narrative element plays a specific role, and explanation is only one part of the overarching narrative structure of a popular science narrative of discovery. In the corpus of the popular science narratives of discovery analyzed for this study, the Explanation is a scaffolding mechanism used by the authors to clarify and explain scientific concepts to lay readers. In these narratives, the explanatory function may be supplemented by an ideological one (usually fulfilled by the Evaluation), representing a certain view of science. The Explanation in the narratives of discovery is usually confined to a particular section of a narrative and does not dominate the story. For instance, in a sample narrative from the corpus [introduced above as example (1)], the Explanation occupies only 15% (41 words out of 267 words total). In fact, no single element ever occupies more than about 30% of the total word count.

The application of the Labov model allows the narrative to be parsed into the easily identifiable structural elements, which, in turn, makes it possible to identify linguistic features associated with each one. For example, in the "Galileo and the Pendulum" narrative, the Explanation is marked by the shift in tense from the past simple in the main body of the narrative to the present simple in the Explanation. It is clearly a section of the narrative that is not

part of the temporal sequence. In fact, it interrupts the Result – the final element of the temporal sequence. While the last sentence of the Orientation, all of the Complication, and the Result recount the discovery, the Explanation clarifies the scientific concept uncovered by Galileo.

The analysis of "Galileo and the Pendulum" according to Labov's model demonstrates that the narrative as a whole contributes to the understanding of the scientific issue discussed, but the Explanation is the place where the focus on understanding is the most salient. In other words, the Explanation condenses the information presented throughout the narrative.

The Explanation in the narratives of discovery is similar to Labov's (1972) Evaluation in a sense that in many narratives it functions as a suspending device for the story and could be excluded without changing the temporal sequence. At the same time, the Explanation is closely interwoven into the fabric of a narrative and its exclusion may impact comprehension. To the popular science narratives of discovery, the Explanation might be as essential as the Evaluation is to the narratives of personal experience. Labov suggests that without the Evaluation, the narrative loses its purpose. Moreover, Labov (1972: 372) demonstrates that under certain circumstances, the Evaluation in the narratives of personal experience is essential in order to elicit the right emotional response from the audience and to keep them interested. The absence of the Evaluation in such cases will cause the narrative to break down because it will become unclear to the audience and lose its communicative purpose. The Explanation functions in a similar way. Without the Explanation, the narratives of discovery may lose much of their meaning since a lay reader might not be equipped to understand the very subject matter of a discovery. In a way, the Explanation element of the narratives of discovery facilitates the communication between the author and the reader.

The double secondary structure of the narratives of discovery created by the Evaluation and the Explanation performs a supportive role. It helps the reader construct a full picture of the scientific breakthrough by explaining the discovery and by outlining its importance within the bounds of the scientific community and beyond.

While the Explanation is usually a specific section of a narrative, it is possible for it to permeate the other elements and thus create "explanatory waves." The choice of this label is influenced by Labov's (1972: 369) term "waves of evaluation." He writes, "The evaluation of the narrative forms a secondary structure which is concentrated in the evaluation section but may be found in various forms throughout the narrative" (Labov 1972: 369). Explanatory waves usually manifest as short definitions or asides found within the elements representing the temporal sequence. Consider example 2 with a short definition inserted into the Result section of the narrative:

2. Result
Suddenly, dots arranged in pentagons appeared, and that allowed them to home in on one of the more interesting of Plato's dice: **the icosahedron – the shape made of 20 triangles with five triangles meeting at each point.** (du Sautoy 2011: 69)

In addition to creating explanatory waves, the Explanation can be presented as a series of explanatory elements. These separate sections are different from the explanatory waves because they interrupt the temporal sequence by creating a tense shift; explanatory waves are located within the temporal sequence and do not initiate tense shifts (see example 2). In another narrative from du Sautoy (2011: 70–74), identified in the corpus as "Bubbles Fusing Together," there are three explanatory elements: one located in a usual position immediately after the Result, one appearing right after the Abstract, and one splitting the Complication. Each time the narrative shifts to the Explanation, the tense changes from the past simple to the present simple. Example 3 demonstrates the transitions to the Explanation from the Abstract and the Result. Example 4 shows the point of the split in the Complication:

3. Abstract
Five years later, a pencil-and-paper proof of the double-bubble conjecture **was announced**. It actually **proved** a more general conjecture:

Explanation
If the bubbles **do not enclose** the same volume, but rather one **is** smaller than the other, then the bubbles **fuse** together so that the wall between the bubbles **is** no longer flat but bent into the small bubble. The wall **is** part of a third sphere and **meets** the two spherical bubbles in such a way that the three soap films **have** angles of 120 degrees between them.

Result
The first rule **was** that soap films always meet in threes at an angle of 120 degrees. The edge formed by these three walls is called a Plateau border in his honor. The second rule **was** about the way these borders can meet.

Explanation
Plateau borders **meet** in fours at an angle of about 109.47 degrees ($\cos^{-1}$-1/3, to be precise). If you **take** a tetrahedron and **draw** lines from the four vertices to the center, you **get** the configuration of the four Plateau borders in foam. So the edges in the bulging square at the center of the cube wire frame actually **meet** at 109.47 degrees.

4. Complication
While he **was doing** research into the effect of light on the eye, he **stared** at the sun for half a minute, and by the age of 40, he **was blind**. Then, with the help of relatives and colleagues, he **switched** to investigating the shape of bubbles. Plateau **began** by dipping wire frames into bubble mixture and examining the different shapes that appeared.

Explanation
For example, when you **dip** a wire frame in the shape of a cube into the mixture, you **get** 13 walls that meet at a square in the middle. This "square," however, **isn't** quite a square-the edges bulge out.

Complication
As Plateau **explored** the various shapes that **appeared** in different wire frames, he **began** to formulate a set of rules for how bubbles join together.

Other than the tense shift, examples 3 and 4 demonstrate the switch in the narrative focus from the scientist to the reader. The presence of the reader pronoun (*you*) and the hypothetical instructions (*if you take… and draw*; *when you dip*) indicate that the reader has become the center of the narrative. The Explanation is a likely location for the reader engagement mechanisms. As a scaffolding mechanism, the Explanation is the most interactive element of a narrative of discovery, and it is usually here that the relationship between the author and the reader becomes apparent. By stepping out of the temporally ordered events of the discovery story, the author is able to address the reader directly and ask him/her to engage the imagination to help comprehend the events described. In the above examples, du Sautoy is not simply addressing the reader but is using the pronoun to draw him/her into the hypothetical activities used to create the Explanation.

Another narrative in the corpus, identified as "Duality" (Greene 2011: 109–111), takes the reader engagement in the Explanation one step further by merging the identity of the author with that of the reader. Greene (2011: 109–111) uses the interpersonal pronoun *you*, indicating the reader, while relating his own personal experience. By doing so Greene creates an illusion of the reader seeing the same things as the author did. He thus transforms his own observations into an experience of the reader, helping him/her connect with the material on a personal level. Example 5 presents the Explanation element of the "Duality" narrative:

5. Explanation
I recently encountered a splendid graphic that from close up looks like Albert Einstein, with a bit more distance becomes ambiguous, and from far away resolves into Marilyn Monroe... If **you** saw only the images that come into

focus at the two extremes, **you**'d have every reason to think **you** were looking at two separate pictures. But if **you** steadily examine the image through the range of intermediate distances, **you** unexpectedly find that Einstein and Monroe are aspects of a single portrait. Similarly, an examination of two string theories, in the extreme case when each has a small coupling, reveals that they're as different as Albert and Marilyn. If **you** stopped there, as for years string theorists did, **you**'d conclude that **you** were studying two separate theories. But if **you** examine the theories as their couplings are varied over the range of intermediate values, **you** find that, like Albert turning into Marilyn, each gradually morphs into the other.

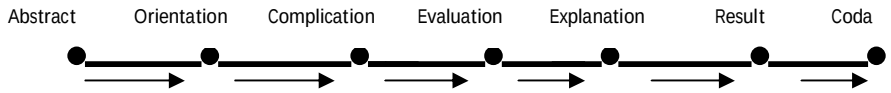
One more way to engage the reader is to use imperatives within the Explanation. Greene's (2011: 84–85) narrative "Kaluza-Klein Theory" provides an example:

6. To picture this, **think** of a common drinking straw. But for the purpose at hand, **make** it decidedly uncommon by imagining it as thin as usual but as tall as the Empire State Building…. Now **imagine** viewing the tall straw from across the Hudson River…. For another visualization, **think** of a huge carpet blanketing Utah's salt flats.

Overall, the major function of the Explanation is to create scaffolding for the lay reader. Together with the Evaluation it forms the secondary structure of the narratives of discovery by suspending the temporal sequence to introduce information to help the reader understand more fully the narrative and its significance.

The Explanation is not part of Labov and Waletzky's (1967) nor Labov's (1972) macrostructure of a narrative. However, it is an important feature of the popular science narratives of discovery which is revealed through the application of their model. A schematic representation of the narrative structure of popular science discovery stories is shown in figure 1. Note that the order of the elements presented in the figure reflects only one possible organization of a narrative of discovery.

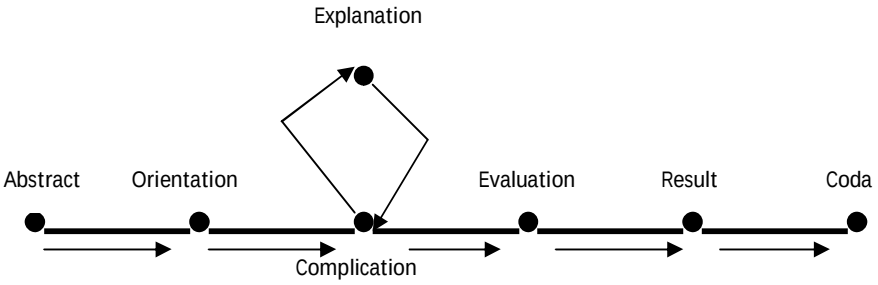
Figure 1 Linear Narrative Structure



The presence of the Explanation demonstrates a structural complexity of the narratives of discovery. Not only does it supply an additional element for the narrative macrostructure, but it also reveals the possible re-organization of the elements that Labov and Waletzy (1967) and Labov (1972) do not exem-

plify. Labov (1972: 363) acknowledged the existence of "complex chainings and embeddings" of the narrative elements he identified. At the same time, as Labov (1972: 363) himself pointed out, he was "dealing with the simpler forms" of narratives, and these phenomena were regarded as outliers rather than as the norm. In the popular science narratives of discovery, however, the explanatory waves and the Explanations that interrupt the temporal sequence are common enough to be regarded as general occurrences. Figure 2 demonstrates a sample schematic representation of a narrative macrostructure complicated by the interruption caused by the Explanation.

Figure 2 Complex Narrative Structure



4. Discussion: Structural Complexity of the Narratives of Discovery as Revealed by Labov's Model

Parsing the narratives of discovery into the narrative elements outlined in Labov and Waletzky (1967) and Labov (1972) reveals that these narratives do not always follow the order Labov observed in the narratives of personal experience; moreover, the structural elements in the narratives of discovery demonstrate an organizing mechanism that includes sections of narratives similar to Labov's (1972) elements but that is more complex due to multiple interruptions between the elements.

The extension of the secondary structure with the addition of the Explanation doubles the opportunities for suspending the temporal sequence. The Explanation and the Evaluation can interrupt a narrative of discovery almost at any point. Thus the secondary structure of a popular science narrative of discovery has multiple possible locations within a narrative and does not necessarily follow the complicating action as it does in the narratives of personal experience (see Labov 1972: 369–370). This is not surprising since the narratives of discovery are quite different from the oral narratives of personal experience. Other researchers (see, for example, Peterson and McCabe 1983) also noticed deviations from Labov's order and even exclusions of some

of the elements when narratives other than those of personal experience of adults were analyzed. Unlike the narratives of small children observed by Peterson and McCabe (1983), the narratives of discovery do not lack resolutions or proceed from event to event without apparent connections. Instead, the narratives of discovery exhibit interrupted Complications, Orientations, and Results.

In addition to the interruptions of the temporal sequence, the Explanation can also be inserted inside the Evaluation, creating a complex cluster of the scaffolding elements. Such occurrences are most likely to appear at the end of a narrative, following the Result. The scaffolding cluster created by the Explanation and the Evaluation does not mean that the Explanation is not present as a separate element elsewhere in the narrative, for example, following the Complication. Example 5 taken from Kaku's (2011: 148) narrative identified in the corpus as "Resveratrol" shows the Explanation as a part of the scaffolding cluster:

(5) Evaluation
This was intriguing, because scientists also believe that resveratrol may be responsible for the benefits of red wine and may explain the "French paradox."

Explanation
French cooking is famous for its rich sauces, which are high in fats and oils, yet the French seem to have a normal life span. Perhaps this mystery can be explained because the French consume so much red wine, which contains resveratrol.

Evaluation
Scientists have found that sirtuin activators can protect mice from an impressive variety of diseases, including lung and colon cancer, melanoma, lymphoma, type 2 diabetes, cardiovascular disease, and Alzheimer's disease, according to Sinclair. If even a fraction of these diseases can be treated in humans via sirtuins, it would revolutionize all medicine

While the presence of the Explanation usually complicates the narrative macrostructure by creating rifts in the temporal sequence, at the same time, it eases the comprehension of the narrative since it supplies the context for the discovery that the reader might lack. It appears that in the popular science narratives of discovery structural complexity does not impede comprehension.

By focusing on the macrostructure of a narrative of discovery, Labov's (1972) model allows to parse the narrative into its component parts and to analyze each narrative element separately. Considering each component part of a narrative on its own reveals the variations in the Complication element as it is employed in different narratives. For instance, the phrase indicating

the complicating action in "Galileo and Pendulum" (see example 1) –"*Galileo decided*" – indicates a complicating action different from the one in "Duality" (Greene 2011: 109–111), where it is expressed as "*researchers could do nothing more than shrug, throw up their hands, and admit that the math they were using was too feeble to provide any reliable insight*." It appears that the popular science narratives of discovery can utilize several types of complicating actions.

However, the analytical tools that Labov's model supplies are efficient only for the identification of the difference and not for its explanation. As Ageliki Nicolopoulou (1997: 375) notes, Labovian analytical model has "the lack of a genuine interpretive dimension in its theoretical starting point." Nicolopoulou (1997: 369) suggests that as a result, "the tendencies in … research that have drawn on Labov's analysis of narrative have done so in largely formalist and decontextualized ways." Tappan (1997: 380) also points out the limitations of Labov's (1972) framework when it comes to an analysis that attempts to reveal the meaning in addition to the narrative structure. Labov (1997) introduces several updates to the original model of narrative analysis; however, they too are primarily concerned with the narrative structure and do not provide enough analytical tools for the full investigation of the narrative features the model identifies.

At the same time, credit is due to Labov's (1972, 1997) approach for allowing the identification of certain narrative elements and structures. Since the scope of the present work is limited to the discussion of the contributions of Labov's model as it is applied to the narratives of discovery, the investigation of the Complication and its subtypes will not be addressed in detail here.

To summarize briefly, the application of the Labov and Waletzky (1967) and the Labov (1972) model reveal the complexity of the macrostructure of the popular science narratives of discovery. Of particular significance is the presence of a new narrative element, which has been labeled "the Explanation," and the structural complexities associated with it. In addition, preliminary findings point to the presence of several subtypes of the Complication element in the popular science narratives of discovery. Further research is needed to confirm this observation. Hoey's (2001) concept of a lexical signal might be a productive means for future investigations of this issue.

5. Conclusion

The present study set out to determine whether or not the narrative macrostructure identified by Labov and Waletzky's (1967) and Labov's (1972) framework as universal for narratives of personal experience can be extended to include popular science narratives of discovery. It was assumed, based on

the previous applications of the model to the narratives other than those of personal experience, that popular science narratives of discovery would exhibit a similar structural makeup. A corpus of sixty-two popular science narratives of discovery has been examined. In the process, it was determined that some of the elements outlined in the Labovian framework are found in the narratives of discovery and perform the same roles as assigned to them by Labov (1972). These undisputed elements are the Complication and the Result – the narrative core. On the other hand, the elements that help the reader transition in and out of a narrative (the Abstract, the Orientation, and the Coda) have less clear boundaries in the narratives of discovery than they do in the narratives of personal experience. The Evaluation as it is defined by Labov and Waletzky (1967) and Labov (1972) is present in the narratives of discovery both in the form of a separate element and waves. In addition to the Evaluation, another element that suspends the temporal sequence but performs a vital role has been identified. It has been labeled the Explanation. The present study demonstrates that it is a distinguishing feature of the popular science narratives of discovery included in the corpus.

Overall, the narratives of discovery exhibit a macrostructure that is similar to that of the narratives of personal experience; however, the popular science narratives are more complex and do not necessarily follow the order of the elements as Labov (1972: 369) suggests "a complete narrative" would. At the same time, the narratives of discovery possess the same dual structure that Labov (1972) observed in the narratives of personal experience: the primary narrative comprised of the temporal sequence and the introductory/concluding elements and the secondary structure represented by the Evaluation and the Explanation. The presence of the Explanation indicates that the secondary or scaffolding structure of the popular science narratives of discovery is stronger and more pronounced than it is in the narratives of personal experience. This is very likely the result of the genre-specific requirements that call for the authors to address the needs of the readers who are not familiar with certain scientific concepts and terminology.

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NOTE

1. This is only one of many classifications of (popular) science narratives. For an example of a different approach see Myers (1990), who proposes the division into narratives of science and narratives of nature.

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Appendix: Summative Representation of the Corpus of the Popular Science Narratives of Discovery Analyzed

Author/Source	Summary	Number of Words
1. du Sautoy *The Number Mysteries* p. 226	Galileo discovered that the time it takes for a pendulum to swing does not depend on the size of the swing.	258
2. du Sautoy *The Number Mysteries* pp. 66–68	Four-sided tetrahedron is the best shape for a tea bag.	919
3. du Sautoy *The Number Mysteries* p. 69	Biologists discover the shape of viruses.	280
4. du Sautoy *The Number*	Gauss and Weber discover a way to use electromagnetism for communication purposes. Their code was very similar to the	340

Mysteries pp. 176–177	Morse code.	
5. du Sautoy *The Number Mysteries* pp. 70–74	Discovery of the Plateau border – the angle at which bubbles in foam fuse together – named after the discoverer, Joseph Plateau.	814
6. du Sautoy *The Number Mysteries* pp. 74–76	Denis Weaire and Robert Phelan discover the most efficient shape for constructing foam (a combination of a distorted dodecahedron and a tetrakaidecahedron), beating Lord Kelvin's 1887 suggestion that the best shape was the truncated octahedron.	461
7. du Sautoy *The Number Mysteries* p. 45	Marin Mersenne discovers one of the best formulas for finding prime numbers. The formula did not always work, but it led to the discoveries of some of the biggest primes.	345
8. du Sautoy *The Number Mysteries* pp. 51–52	Gauss discovers the prime-number theorem – a model that helps predict the behaviour of primes. It was proven by Jacques Hadamard and Charles de la Vallee Poussin.	432
9. du Sautoy *The Number Mysteries* p. 59	Archimedes discovers that the sphere is the most efficient shape.	374
10. du Sautoy *The Number Mysteries* pp. 215–216	Using the famous experiment involving the leaning tower of Pizza, Galileo discovers that the weight of an object does not influence the speed with which it falls.	601
11. du Sautoy *The Number Mysteries* pp. 229–230	Poincare discovers chaos theory.	562
12. du Sautoy *The Number Mysteries* pp. 46–47	Amateurs and professional mathematicians use computers to discover the largest prime number.	632
13. du Sautoy *The Number Mysteries* pp. 32–33	Euclid discovers that there is an infinite number of primes.	453
14. du Sautoy *The Number Mysteries* pp. 40–43	Discovery of Fibonacci numbers.	785
15. du Sautoy *The Number Mysteries* p. 43	The Fibonacci numbers were discovered by an Indian writer Virahanka before Fibonacci made his discovery.	252
16. du Sautoy *The Number Mysteries* pp. 84–85	Benoit Mandelbrot discovers fractals.	417

17. du Sautoy *The Number Mysteries* pp. 56–57	William Watts discovers a method for making perfectly spherical iron balls.	260
18. du Sautoy *The Number Mysteries* p. 77	The Kepler conjecture – hexagon is the most efficient way to pack balls.	203
19. du Sautoy *The Number Mysteries* pp. 179–181	Gottfried Leibniz discovers the binary code.	550
20. du Sautoy *The Number Mysteries* p. 23	Discovery of Zero	155
21. du Sautoy *The Number Mysteries* p. 63	The discovery of Archimedean solids.	278
22. Greene *The Hidden Reality* pp. 11–12	Leimaitre discovers the Big Bang theory.	448
23. Greene *The Hidden Reality* pp. 122–123	Herman Zanstra, using the cyclical cosmology model, calculates that the number of the cycles our universe has had before becoming what it is now is not infinite. He proves that there is an ultimate beginning to the universe regarded through the cyclical cosmology model.	267
24. Greene *The Hidden Reality* pp. 109–111	Witten discovers the principle of duality for string theories and unifies all the varieties of string theories into M-theory.	703
25. Greene *The Hidden Reality* pp. 38–41	Gamow, Alpher, and Herman, and later Penzias and Wilson, discover cosmic microwave background radiation – the proof of the Big Bang.	1227
26. Greene *The Hidden Reality* pp. 129–141	The Supernova Cosmology Project Measures the cosmological constant.	4277
27. Greene *The Hidden Reality* p. 81	Discovery of Graviton	198
28. Greene *The Hidden Reality* pp. 84–88	Kaluza and Klein discover that our universe has hidden dimensions	150
29. Greene *The Hidden*	The discovery of String theory	615

Reality pp. 74–75		
30. Greene *The Hidden Reality* p. 98	Andrew Strominger and Cumrun Vafa discover a way to measure entropy in black holes.	241
31. Greene *The Hidden Reality* pp. 97–98	Physicists discover that string theory can handle calculations to explain various types of singularities, proving that string theory could be the quantum theory of gravity.	413
32. Greene *The Hidden Reality* pp. 189–191	Everett rethinks quantum theory and discovers mathematical proof for multiple universes.	547
33. Greene *The Hidden Reality* p. 193	Davisson and Germer discover wave-like properties of electrons.	191
34. Greene *The Hidden Reality* p. 296	Discovery of antimatter.	158
35. Greene *The Hidden Reality* pp. 48–49	Maxwell discovers equations for dealing with electro-magnetic fields.	645
36. Greene *The Hidden Reality* pp. 12–15	Einstein discovers the theory of relativity.	1257
37. Greene *The Hidden Reality* pp. 240–241	Karl Schwarzschild discovers, and later Wheeler popularizes, black holes.	730
38. Greene *The Hidden Reality* pp. 245–247	Bekenstein discovers that black holes contain entropy.	1071
39. Greene *The Hidden Reality* pp. 248–250	Hawking discovers that black holes emit radiation and have a temperature.	763
40. Greene *The Hidden Reality* pp. 18–19	Einstein discovers the cosmological constant.	687
41. Greene *The Hidden Reality* pp. 15–18	Einstein discovers that the universe is not static.	1258

42. Greene *The Hidden Reality* pp. 319–320	Another description of the discovery of the relativity theory by Einstein.	212
43. Greene *The Hidden Reality* p. 320	Einstein discovers that star light travels along curved trajectories.	155
44. Greene *The Hidden Reality* p. 321	Everett suggests that Schrodinger's equation should apply to everything and discovers the Many Worlds theory.	157
45. Greene *The Hidden Reality* p. 73	Einstein fails to discover the theory of unification.	290
46. Kaku *Physics of the Future* p. 148	Discovery of Resveratrol.	283
47. Kaku *Physics of the Future* p. 121	Discovery of DNA.	202
48. Kaku *Physics of the Future* p. 139	Discovery of the "Mighty Mouse gene" – a gene responsible for excess muscle growth.	277
49. Kaku *Physics of the Future* pp. 60–62	Bernhard Blumich and his colleagues discover a way to construct a mini-MRI that could be used on soft tissue.	786
50. Kaku *Physics of the Future* pp. 56–57	Using fMRI technology scientists have discovered a way to record images people see in their dreams.	332
51. Kaku *Physics of the Future* pp. 169–170	Scientists discover that H1N1 flu virus is not as deadly as the infamous Spanish flu virus of 1918.	248
52. Kaku *Physics of the Future* p. 138	Discovery of the "Smart Mouse gene" – a gene that increases memory.	402
53. Kaku *Physics of the Future* pp. 183–186	Thomas Mallouk and Ayusman Sen discover a way to create a molecular car – a synthetic alternative to a molecular power source.	738

54. Kaku *Physics of the Future* pp. 278–280	Scientists discover a way to produce composite nanotubes.	313
55. Kaku *Physics of the Future* p. 268	Discovery of water on the Moon.	175
56. Kaku *Physics of the Future* pp. 87–88	Scientists discover that particular parts of the brain control human behaviour.	327
57. Kaku *Physics of the Future* p. 128	Stephen Davies discovers that an astrocyte – a type of nerve cell – has two varieties, and only one of them is effective in treating spinal cord injuries.	207
58. Kaku *Physics of the Future* p. 298	Newton discovers gravity.	154
59. Kaku *Physics of the Future* p. 246	Philo Farnsworth discovers a way to build the first television.	119
60. Kaku *Physics of the Future* p. 236	Ronald Richter, working for the Argentinean government, fails to discover Cold Fusion.	301
61. Kaku *Physics of the Future* pp. 236–237	Pons and Fleischmann fail to discover Cold Fusion.	384
62. Kaku *Physics of the Future* p. 130	Scientists discover cloning.	70

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DO IGNORANT ASSESSORS CASES POSE A CHALLENGE TO RELATIVISM ABOUT EPISTEMIC MODALS?

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ABSTRACT. Epistemic modality concerns what is possible given a body of knowledge or evidence. Cases involving epistemic modals, present an interesting semantic challenge: in order to give a semantic treatment of epistemic modals, we must explain how informational states figure in the semantic representation of these terms. According to John MacFarlane's (2011, 2014) view – Assessor Relativism – epistemic modal claims are assessment-sensitive in that their truth depends on what is known by the assessor at the time he or she assesses the claim. Hence, truth for epistemic modal claims varies with the context of assessment. Critics of MacFarlane's approach, such as Anthony Gillies and Kai von Fintel (2008) point to so called "ignorant assessor cases," ones in which the assessor knows less than the speaker. They claim that such cases pose a serious problem for Assessment Relativism. I argue, however, that these cases do not uncover a flaw in the assessment relativist's semantics. The apparent problems only seem to arise because the authors have not given adequate attention to the epistemic details of the cases. In making my argument, I present a larger methodological point about the role of epistemic data in semantic theory construction. I claim that, it is often difficult to distinguish the boundary between semantics and epistemology when discussing epistemic modals. As a result, linguists and philosophers of language sometimes fail distinguish between epistemic intuitions that are *directly relevant* to the semantics and those that are *indirectly relevant*. I conclude that we do not have to complicate the semantics of epistemic modals in order to accommodate epistemic data such as intuitions about epistemic warrant.

Keywords: relativism; contextualism; epistemic modals; ignorant assessor; semantics; pragmatics

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1. Introduction

Our ordinary conversations are filled with talk about what could or must be. For instance, in an iconic scene from *On the Waterfront*, the protagonist Terry bemoans his ruined boxing career. "I *could* have been a contender," he says, "instead of a bum, which is what I am."[1] Terry's regret is tied not only to the way things are but also to the way things might have been. As it was, Terry lost his chance at the title. However, had he not thrown a big fight, things might have turned out quite differently for him. "Could" and "might," along with their duals, "should" and "must," are modal terms: we use them to talk about what is possible and what is necessary. Terry's statement has to do with what is metaphysically possible. Although certain things are essential to Terry's nature, presumably being a bum is not. There are other kinds of possibility besides metaphysical possibility. For instance, when a parent tells a child "You must not lie," she is reminding the child of what is morally necessary – that is, what is not possible given the constraints of morality.

One particularly interesting type of modality is epistemic modality, which concerns what is possible given a body of knowledge or evidence. For instance, consider Luke and Max's conversation in (1).

(1) Luke: What did you catch out on the lake?
Max: I'm no expert, but it *might* be a rainbow trout.
Luke: It *can't* be a rainbow trout. It is missing the pink streak down its side.
Max: Oh, then I guess I was wrong.

Cases involving epistemic modals, such as (1), present an interesting semantic challenge. In order to give a semantic treatment of epistemic modals, we must explain how informational states figure in the semantic representation of these terms. Recently, there have been several proposals for a semantic theory of epistemic modals.[2] One major view – relativism –holds that claims involving epistemic modals are only true or false *relative* to epistemic agents or informational states. On this view, epistemic modals are quantifiers over epistemic possibilities, and the range of possibilities quantified over changes depending on whose knowledge is relevant. For now, we can think of epistemic possibilities as represented by epistemically possible worlds – worlds compatible with what is known.[3] Formally, utterances containing epistemic modals express propositions (which we can think of as either sets of worlds or functions from worlds to truth values) that are evaluated for truth relative to a circumstance of evaluation (or index). The circumstance of evaluation includes a parameter *i* that represents an informational state that determines the range of the quantifier.

Because informational states vary from person to person, an important question for the relativist to answer is "*whose* knowledge is relevant?"

According to a basic version of relativism – call it *speaker relativism* – the truth of an epistemic modal claim depends upon what the *speaker* knows at the time of utterance. It is true just in case what the speaker knows at the time she utters the claim does not rule out the possibility in question. Relativist John MacFarlane claims that speaker relativism is inadequate. He argues that examples like (1) show that it cannot be the speaker's information that is relevant. If the speaker's evidence alone is relevant, then it would hardly be appropriate for Luke to contradict Max's claim, or for Max to retract it. After all, for all Max knew at the time he uttered the claim, the fish was a rainbow trout. Instead, MacFarlane suggests that the truth of epistemic modal claims depends on the informational state of the person *assessing* the claim. According to MacFarlane's view – call it *assessor relativism* – epistemic modal claims are *assessment-sensitive* in that their truth depends on what is known by the *assessor* at the time he or she assesses the claim. Hence, truth for epistemic modal claims varies with what MacFarlane calls the *context of assessment*.[4]

Examples such as (1) seem especially suited to support assessor relativism because, in this case, the assessor knows *more* than the speaker. When the assessor is better informed than the speaker, it seems natural for the assessor to correct the speaker, and for the speaker to issue a retraction.[5] Assessor relativism predicts these corrections and retractions, and so appears to give us the right results. However, Anthony Gillies and Kai von Fintel claim that assessment relativism gives the wrong result in cases where the assessor knows *less* than the speaker.[6] It has been argued that these so-called "ignorant assessor cases" pose a serious problem for assessment relativism. Even John MacFarlane, arguably the staunchest assessment relativist, goes so far as to complicate his semantic theory in order to accommodate these cases.

In my view, assessor relativism faces some serious difficulties. However, rather than articulating these challenges my goal is to show that ignorant assessor cases are not among them. I will consider two kinds of cases: one by Gillies and von Fintel, and one by John MacFarlane. I will argue that these cases do not uncover a flaw in the assessment relativist's semantics. The apparent problems only seem to arise because the authors have not given adequate attention to the *epistemic* details of the cases. In making my argument, I present a larger methodological point about the role of epistemic data in semantic theory construction. I claim that, it is often difficult to distinguish the boundary between semantics and epistemology when discussing epistemic modals. As a result, linguists and philosophers of language sometimes fail distinguish between epistemic intuitions that are *directly relevant* to the semantics and those that are *indirectly relevant*. In the end, I conclude that we do not have to complicate the semantics of epistemic modals in order to accommodate epistemic data such as intuitions about epistemic warrant.

This result is significant because the semantic debate regarding epistemic modals often revolves around intuitions similar to those elicited by ignorant assessor cases. Similarly, the greater debate, regarding the semantics of so-called "perspectival expressions" including predicates of personal taste, knowledge attributions, and future contingents, often focuses on how to semantically accommodate felicity judgments regarding linguistic examples.[7] For each of these expressions, it is an open question how intuitive data ought to be reflected in the semantics.[8] In that case, the conclusions of this paper, which concern the relevance of intuitive data to semantic theory, may have wider application within semantic theorizing regarding epistemic modals and perspectival expressions in general.

2. Relativist Semantics

2.1 Speaker relativism

Before I present the ignorant-assessor objections to assessor relativism, it will be helpful to review some of the technical details of relativism.[9] Relativists use the semantic framework of Kaplan and Lewis as a basis for constructing their semantics.[10] On such a view, truth values for sentences are assigned relative to a *context of utterance*, a *circumstance of evaluation*, and an *assignment function*. The context of utterance is employed to handle context-sensitive items, such as indexicals. The circumstance of evaluation is used to accommodate intentional sentential operators. The assignment function is brought in to help provide a compositional account of quantifiers. As a baseline, the circumstance of evaluation includes only a possible world and perhaps a time. However, it is possible to include additional parameters. Relativism adds a parameter *i* to the circumstance of evaluation, which represents an informational state – a set of worlds compatible with what is known. Formally, for any sentence Φ we can represent "It might be that Φ" as follows where *C* is a context, *i* is a set of possible worlds representing an *information state* (the worlds left open by a particular state of information), *w* is a possible world, and *a* is an *assignment* of objects from the domain relevant at *C* to the variables.[11]

[*Might*: Φ] is true at $\langle C, w, i, a \rangle$ iff for some w' in i, Φ is true at $\langle C, w', i, a \rangle$

As a default, the world and time parameters are usually set by the context of utterance such that the world and time of evaluation are the world and time of utterance. The context of utterance is itself a technical term that can be defined as follows:

- **Context of Utterance:** the setting for an actual or possible use of a sentence (or proposition) in a speech act or mental act.[12]

Speaker relativism also takes *i* to be set by the context of utterance such that the relevant informational state is always that of the speaker at the time of utterance.[13]

2.2 Assessor relativism

Like speaker relativism, assessor relativism adds a parameter *i* to the circumstance of evaluation, which represents an informational state. However, MacFarlane differentiates his assessor relativism from speaker relativism by specifying that *i* is initiated not by the context of utterance but by a separate context of assessment. He defines the context of assessment as follows:

- **Context of Assessment:** the setting from which such a use is being assessed for truth or falsity on some actual or possible occasion of assessment.[14]

On MacFarlane's view, the context of utterance is used to determine which proposition is asserted by a speaker. However, the context of assessment is used to evaluate the truth of that proposition by delivering the relevant informational state: the informational state of the assessor at the time of assessment. With the context of utterance and the context of assessment at his disposal, MacFarlane can define the truth of an utterance of a sentence Φ as follows:

An utterance of a sentence Φ at a context CU is true as assessed from a context CA iff Φ is true at every point of evaluation $\langle C_U, wC_U, iC_A, a \rangle$, where

- *wCU* = the world of CU,
- *iCA* = the set of worlds that aren't excluded by what is known at (CA) by the agent centered on CA,
- *a* = an assignment of objects from the domain of C to the variables.[15]

On this initial version of assessor relativism, the truth of epistemic modals depends on the information state of a single individual. MacFarlane refers to this version of relativism as "solipsistic." As we will see in section (6), MacFarlane considers moving from a solipsistic version of assessment relativism to a version in which the truth of epistemic modal claims depends on the informational state of more than one individual.

2.2.1 Assessor relativism and assertion

How does the technical apparatus of solipsistic assessor relativism apply to a case such as (1)? So far, it is hard to tell. This is because it isn't yet clear how MacFarlane's formal semantic framework applies to ordinary language. To complete his explanation, MacFarlane must explain the role that his doubly contextual truth predicate "true at a context of use CU and a context of assessment CA plays in the speech act of assertion."[16] The traditional characterization of the role of truth as the "aim of assertion" seems inappropriate for relative truth.[17] After all, what does it mean to "aim at truth" if truth is relative to assessors? Instead of focusing on the norms *for* making an assertion, MacFarlane concentrates on the normative *consequences* of making an assertion. On his view, "an assertion (even an insincere one) is a *commitment to the truth* of the proposition asserted."[18] MacFarlane explains that by asserting an assessment-sensitive proposition, we commit ourselves to three things:

(W) In asserting that p at C1, one commits oneself to withdrawing the assertion (at any future context C2) if p is shown to be untrue relative to the context of use C1 and the context of assessment C2.

(J) In asserting that p at C1, one commits oneself to justifying the assertion when the assertion is appropriately challenged. To justify the assertion in a context C2 is to provide grounds for the truth of *p* relative to the context of use C1 and the context of assessment C2.

(R) In asserting that p at C1, one commits oneself to accepting responsibility (at any future context C2) if, on the basis of this assertion, someone else takes p to be true (relative to the context of use C1 and the context of assessment C2) and it proves to be untrue (relative to C1 and C2).[19]

At this point, we have a clearer picture of how assessor relativism operates in an example like (1). According to a solipsistic version of assessor relativism, one and the same utterance (or occurrence) of a sentence can be true relative to one context of assessment, and false relative to another. Accordingly, Max's utterance of "The fish might be a rainbow trout" in (1) expresses a truth, as assessed by him, just in case what he knows (at the time of his assessment) does not rule out the fish being a rainbow trout. Since his evidence does not rule out that possibility at the time he assesses his own utterance, he is licensed to assert his claim. However, Luke occupies a separate context of assessment. At the time he assesses Max's claim, Luke's evidence does rule out the fish being a rainbow trout. In that case, Luke is licensed to say, "The fish can't be a rainbow trout." Furthermore, both Luke and Max tacitly take on certain commitments as speakers. For instance, Max has committed to withdrawing his statement if it is shown to be false relative to any future context of assessment. Once he learns that rainbow trout have pink streaks, his informational state changes. Hence, he occupies a new context of assess-

ment. His original claim is false relative to this new context, and therefore he is assertorically obligated to retract it.

3. "The Boss" Problem for Assessment Relativism

There has been a lot of debate over whether examples like (1), in which the assessor knows more than the speaker, motivate relativism at all.[20] However, even if relativists are allowed to count these cases in their favor, other examples appear to work against them. Gillies and von Fintel offer us one such case. Their example is based on one by Edgington and is closely analogous to "Gibbardian stand-off" cases, where information is passed along from two equally well-informed speakers to a comparatively less informed assessor. In Gibbardian stand-offs, two individuals are both fully entitled to accept one of two contradictory conditionals, and yet a third party is nonetheless able to draw a correct and well-justified conclusion by conjoining reports of the two conditionals.[21] The classic Gibbardian cases are supposed to provide a challenge to certain popular semantic theories of conditionals. Gillies and von Fintel hope that their version of the case provides a similar challenge to assessment relativism.[22]

The Boss Case

The Boss has two informants, Jack and Zack. There is a meeting of spies in a room, and the Boss, Jack, and Zack know that one and only one of their (conveniently named) comrades P, Q, and R is a turncoat. Jack looks through his peephole and sees clearly that it is either P or Q who is the turncoat, and Zack looks through his peephole and sees clearly that it is either Q or R who is the turncoat. Each slips the Boss a note informing him:

(2) [From Jack]: It must be that either P is the turncoat or Q is the turncoat.

(3) [From Zack]: It must be that either Q is the turncoat or R is the turncoat.[23]

The Boss gets the messages, concluding that Q is the turncoat.[24]

Intuitively, the Boss correctly infers from Jack's and Zack's claims that Q is the turncoat. But how can this be on MacFarlane's theory? Here Gillies and von Fintel note that, as with might-claims, what matters for the truth of must-claims is what the assessor knows at the time of the assessment. "By [the assessment relativist's] lights, an assessor J_a should reject any must-claim whose truth (with respect to C_A) would rule out worlds compatible with the facts at C_A (or whose truth would require such worlds to have already been ruled out)."[25] From the point of assessment the Boss occupies, he has

no information about who is the turncoat. In this case, what he knows includes worlds where P is the turncoat, worlds where Q is the turncoat, and worlds where R is the turncoat. But if that is so, then the Boss should judge what Jack and Zack each said to be false. Jack said the turncoat must be either P or Q (but not R), and since what the Boss knows, when he gets the report, is compatible with R being the turncoat, then what Jack said is false. Zack said that the turncoat is either Q or R (but not P), and since what the Boss knows, when he gets the report, is compatible with P being the turncoat, then what Zack said is false. As Gillies and von Fintel put it, "It is a bad idea for the Boss to conclude something he thinks is false on the basis of reports he thinks are false."[26]

By "a bad idea," Gillies and von Fintel seem to mean that not only would it be epistemically irresponsible for the Boss to draw conclusions on the basis of one or more falsehoods, it would also be completely a matter of luck that he arrived at the right conclusion by doing so. This is a bad result for relativism because it seems pretty clear that not only is the Boss not doing something epistemically irresponsible in concluding that Q is the turncoat, but his arriving at this conclusion also has nothing to do with luck.

4. Why the Boss Is Not a Problem for Relativism

Contrary to appearances, the Boss case does not pose a challenge to assessor relativism. In order to demonstrate this point, I'll first examine the most straightforward interpretation of Gillies and von Fintel's objection. Here I'll show that the case rests on an implausible view about the Boss's evidence and the process by which he assimilates new information. Next, I'll provide a more sophisticated interpretation of Gillies and von Fintel's objection. I'll then show that this version of the objection, though attractive, involves a conflation between epistemic and assertoric norms.

4.1 Behind the Boss

4.1.1 A bad view of the evidence

Again, Gillies and von Fintel's argument seems to be this: intuitively, the Boss should be able to reason from his informants' claims to the conclusion that Q is the turncoat. That is just to say that there is nothing epistemically irrational or epistemically irresponsible in the Boss's reasoning. The Boss's reasoning is only rational and responsible so long as he judges his informants' claims to be true. Relativism requires that the Boss should judge his informants' claims to be false; therefore, relativism gives the wrong result in this case.

However, Gillies and von Fintel are mistaken in thinking that Relativism requires the Boss to judge his informants' claims to be false. Their mistake comes in how they fill in the epistemological details of the case. Gillies and von Fintel seem to think that the only evidence the Boss is provided with when he hears his informants' claims is what he reads off the notes (and what he infers from the fact that the culprit can be only P, Q, or R), namely:

- It must be either P or Q (but not R).
- It must be Q or R (but not P).

Since, taken separately, either piece of evidence conflicts with what the Boss knows when he receives it, he cannot update his own information state in light of it. Therefore, relativism requires the Boss to judge both claims to be false at the time of assessment.

However, this description of the case provides an impoverished picture of the Boss's evidence. It also tells an unlikely story about how the Boss is allowed to update his beliefs. Jack and Zack provide the Boss with a special kind of evidence: *testimonial* evidence. Along with the information the Boss reads off the notes, he also has information about the *source* of this evidence. The Boss must choose whether to assimilate the information from either of the notes on the basis of whatever information he has about the informant's trustworthiness, along with information about the likelihood of error. On this picture, the Boss adjusts his evidence *before* he judges the claim, not after. If enough adjustments are made, then the claim will be true relative to the Boss's updated informational state.

Suppose the Boss knows Jack to be trustworthy. Judging Jack to be trustworthy means believing at least two things about him. First, it means having reason to think that Jack has made no mistakes with regard to the evidence he had. This involves knowing something about the margin of error, which in turn involves knowing something about the difficulty of establishing the claim. Second, it means believing that Jack has correctly reported his conclusion. If these conditions are met, then the Boss knows that if Jack says "It must be P or Q," then he must have had enough evidence to rule out R. Pending further evidence, the Boss should rule out R as well for the time being. Once the Boss has adjusted his own evidence to exclude R-worlds, he is in a position to judge Jack's claim to be true. The same process will hold for Zack, provided he is a trustworthy source as well.

4.1.2 The importance of the epistemic details

This point about speaker trustworthiness is easily overlooked because Gillies and von Fintel leave it out of their description altogether. This omission is strange, considering that the reason the Boss's inference seems epistemically responsible is that we presume that the Boss takes Jack and Zack to be trust-

worthy sources of information.[27] If the Boss had reason to distrust what Jack or Zack said, then it seems that he shouldn't update his information in light of their testimony. In that case, he ought to judge the claims to be false until he is given reason to think otherwise.[28] Of course, this scenario does not provide a counterexample to assessor relativism. If the Boss has reason to think that his informers are untrustworthy, we no longer have the intuition that the inference is reasonable. Not only would it be epistemically irresponsible for the Boss to reason on the basis of claims given by an untrustworthy source, it would also be a matter of luck if he came to the correct conclusion with this reasoning.

At this point, we can see that our intuitions about the plausibility of the case vary depending on whether the speaker is taken to be trustworthy. In other words, our intuitions about the goodness of the inference depend directly on how we fill in the epistemic details. Knowing this, it should be clear that the Boss case is not a proper test for the semantics of epistemic modals.

4.2 A second version of the objection

Perhaps Gillies and von Fintel have a deeper worry – one about the epistemological commitments of assessor relativism. Perhaps they worry that assessor relativism doesn't allow for testimonial evidence because relativism encourages a sort of epistemic presumptuousness. Perhaps their point is that since assessment relativism says that it's what the assessor knows that matters for the truth of epistemic modal claims, it gives the assessor license to simply ignore the evidence of others. If the Boss is justified in ignoring the evidence of others, maybe assessor relativism would predict that he should judge his informants' claims to be false. This version of the objection seems to capture the real reason people have found the Boss example so convincing. In that case, it is worth addressing this version of the objection, regardless of whether we can attribute it to Gillies and von Fintel.

Does assessor relativism saddle us with these kinds of unappealing epistemic commitments? No. According to the semantics, epistemic modal claims are only true or false relative to what the assessor knows at the time of assessment. According to the norms of assertion, a speaker (who is by default an assessor of her own claim) may make a claim on the basis of what she knows at the time of utterance. Along with this, the speaker takes up certain commitments with regard to justifying, withdrawing, or taking responsibility for her claim at any future context of assessment she occupies.

At no point does assessor relativism (either implicitly or explicitly) place restrictions on how the assessor forms or updates her informational state.[29] Nowhere does relativism imply that the knowledge of others is not relevant to the assessor's informational state. Nowhere does relativism require that

the assessor refrain from updating her body of beliefs before she judges the truth of someone's claim. This is how it should be. A semantic theory should not come packaged with these sorts of requirements. This is the case even when the theory specifies that truth, in some cases, depends on *what is known*. Furthermore, it is important to remember that relativism about epistemic modals is not a theory about the truth of all sentences, just those containing epistemic modals. According to assessor relativism, the truth of an epistemic modal claim like "It must be P or Q" depends on what the assessor knows. However, the truth of a categorical claim "It is P or Q" doesn't depend on what anyone knows. Just because something must be the case epistemically, that doesn't mean that it is the case. If we want our categorical beliefs to reflect the way the world is; we can't ignore other people's evidence. Although relativism (as a semantic theory) doesn't give us any advice on how to update our beliefs, we have independent, epistemological reasons for considering the information of others.

5. Theorem X

Once the problem with ignorant assessor cases, such as the Boss case, has been made clear, we might wonder if such cases were really convincing in the first place. However, ignorant assessor cases have been taken quite seriously in the literature on epistemic modals. Even MacFarlane, the author of assessment relativism, has taken great pains to address ignorant assessor cases. In his (2009) article, MacFarlane worries about an ignorant-assessor problem brought to his attention by Richard Dietz.[30] MacFarlane presents his own version of Dietz's case as follows:

Theorem X
Suppose that yesterday I proved Theorem X and asserted "Theorem X must be true." Today, however, my memory has grown fuzzy. I recall that I was working on Theorem X, but I don't remember whether I proved it, refuted it, or did neither. If Solipsistic Relativism is correct, I should be able to say:

(4) If I said, "Theorem X must be true" yesterday, then what I said was false.[31]

For what I know now (at the context of assessment) leaves open the possibility that Theorem X is false, and the truth of a "must" claim requires that all possibilities of falsehood be excluded. And this seems very bizarre. Intuitively, I don't have warrant to pronounce on the falsity of claims made by my better-informed past self, even when these claims contain epistemic modals. If epistemic possibility is perspectival, as these data suggest, it is *asymmetrically* perspectival. The truth of epistemic modal claims can depend

on what is known by the assessor, but only if the assessor knows more than the original asserter.[32]

5.1 A clarification

For the sake of clarity, I want to make one small change to MacFarlane's example. As the example is stated above, "must" is embedded in a conditional. Since the semantics of conditionals is itself a controversial topic, MacFarlane's use of it in (4) makes the example more complicated than it needs to be.[33] In that case, I suggest we reformulate the Theorem X case slightly. We can keep most details of the case the same. Only suppose that yesterday, after MacFarlane proves Theorem X, he makes a voice recording saying, "Theorem X must be true." Today, he replays his recorded message, and utters:

(5) I know I said, "Theorem X must be true" yesterday, but what I said was false.

By substituting (5) for (4), we get a slightly cleaner version of the Theorem X case.

6. MacFarlane's Response

MacFarlane offers two kinds of solutions for Theorem X that represent two ways of capturing the idea that epistemic modals are asymmetrically perspectival. Both cases involve a departure from his original solipsistic version of assessor relativism. The first solution – *Hybrid Relativism* – widens the relevant informational state to include the speaker's knowledge. The second solution – *Flexible Relativism* – allows features of the context of assessment to determine whose knowledge is relevant. I will briefly examine each of these below and explain how they circumvent the Theorem X problem.

6.1 Hybrid Relativism

According to *hybrid relativism*, epistemic modals are sensitive to the epistemic states of both the speaker and the assessor. This view, so named because MacFarlane thinks of it as a hybrid of speaker relativism and assessor relativism, can be spelled out in at least two different ways. The first way is to *conjoin* the knowledge of the speaker and the assessor. Formally, the only departure from the assessor-relativist semantics here is a change in the definition of the truth of an utterance of a sentence in a context:

An utterance of a sentence Φ at a context CU is true as assessed from a context CA iff Φ is true at every point of evaluation $\langle C_U, wc_U, ic_u + c_A, a \rangle$, where

- *wCU* = the world of CU,
- iCU+CA = the set of worlds that aren't excluded by what is known at (CA) by the agent centered on CA or by what is known at (Cu) by the agent centered on Cu
- *a* = an assignment of objects from the domain of C to the variables.[34]

A second way of reconstructing the semantics to accommodate the speaker's information is to formulate truth at a point of evaluation in terms of what is known *distributively* by the speaker at the context of utterance and by the assessor at the context of assessment:

- iCU+CA = the set of worlds that aren't excluded by what would be known by a rational agent who knew everything known at CA by the agent centered on CA or by what is known (at CU) by the agent centered on CU.[35]

MacFarlane suggests that either form of hybrid relativism might be used to escape the Theorem X problem. The reason is that both forms make the speaker's knowledge directly relevant to the truth of epistemic modal claims by stipulating that the truth of epistemic modals depends on an amalgamation of the speaker's and assessor's knowledge. As a consequence, the assessor cannot truthfully contradict the speaker in those cases where the speaker knows more than the assessor. Since, in the Theorem X case, the amalgamated knowledge includes the speaker's memory of having proved Theorem X, the speaker cannot truly utter (5). Hence the speaker is not saddled with a true but unwarranted assertion.

6.2 Flexible Relativism

According to *flexible relativism*, the context of assessment determines whose knowledge is relevant to the truth of epistemic modal claims, but it does not always select the assessor as the relevant knower. The definition of truth for an utterance of a sentence at a context leaves open what information state is relevant at the context of assessment.

An utterance of a sentence Φ at a context CU is true as assessed from a context CA iff Φ is true at every point of evaluation $\langle C_U, wc_U, ic_A, a \rangle$, where

- *wCU* = the world of CU,
- *iCA* = the set of worlds that aren't excluded by the information that is relevant at CA by,
- *a* = an assignment of objects from the domain of C to the variables.[36]

Like hybrid relativism, flexible relativism allows the speaker's knowledge to be directly relevant to the truth conditions for epistemic modals. However, instead of explicitly mentioning the speaker's knowledge in the semantics, it is left to the context of assessment to determine when it's relevant. What features of the context of assessment help determine whose knowledge is relevant? MacFarlane is never explicit on this point, though he does give some examples.

> In contexts where the primary point of the assessment is critical evaluation of a speaker's assertion (as when one is trying to determine whether the speaker might be a trustworthy source of information), the relevant information state will generally be a composite of the speaker's and the assessor's information.[37]

In the Theorem X case, the assessor was engaged in a critical evaluation of the speaker's assertion. Therefore, in this circumstance, flexible relativism gives us the same results as hybrid relativism: the assessor cannot truly utter (5).

7. Why Theorem X is Not a Problem for Relativism

MacFarlane admits that both of his semantic solutions come with costs. I will not spend time elaborating on the costs, because I believe that the solutions are uncalled for to begin with. Assessor relativism only *appears* to be threatened by the Theorem X case.

In certain respects, MacFarlane's ignorant-assessor case is like Gillies and von Fintel's Boss case. Gillies and von Fintel worry that relativism would make a seemingly reasonable and responsible inference unreasonable and irresponsible. MacFarlane, on the other hand, worries that assessor relativism would make a seemingly unwarranted claim like (5) assertable. Here MacFarlane is explicitly concerned with the epistemological consequences of assessor relativism. Again, he says, "Intuitively, I don't have *warrant* to pronounce on the falsity of claims made by my better-informed past self, even when these claims contain epistemic modals."[38] And he goes on to say, "If epistemic possibility is perspectival, as the data suggests, it is *asymmetrically* perspectival. The truth of epistemic modal claims can depend on what is known by the assessor, but only if the assessor knows more than the original asserter."[39] In responding to MacFarlane, I first want to examine the intuition that (5) is unwarranted. I then want to comment on MacFarlane's claim that (5) shows that epistemic modals are "asymmetrically perspectival."

7.1 Is (5) unwarranted?

As with the Boss case, our intuitions about the warrant of (5) vary depending on how we fill in the epistemic details of the case. Like Gillies and von Fintel, MacFarlane has given a caricature of the assessor's informational state at the time he utters (5). MacFarlane seems to think that because he, as the assessor, does not have any evidence based on the memory of having proved Theorem X, he must judge his past self's claim to be false.

But of course, when MacFarlane hears that his past self claimed that Theorem X must be true, he has testimonial evidence for the truth of Theorem X. At this point, the details about speaker trustworthiness are essential to our intuitions regarding the case. Unfortunately, MacFarlane leaves these details out of his description. Because of this, we are left to fill the details in from what we, as readers, know about the trustworthiness of MacFarlane's past self. We know that MacFarlane is supposed to have proved Theorem X, however difficult the theorem may have been to prove. We also know that he honestly reported his conclusion. All of this evidence leads us to believe that MacFarlane's past self is a trustworthy source of information.

Of course, what matters to the case is whether *MacFarlane* had reason to think his past self was better informed. The fact that we, as readers, know that MacFarlane's past self was better informed shouldn't make us think that MacFarlane is unwarranted in uttering (5). We have to ask what evidence *he* had about the trustworthiness of his past self.

Notice how much our intuitions about the case change when we explicitly include details regarding what MacFarlane knows about his own trustworthiness. Suppose MacFarlane had every reason to think that he is a trustworthy testifier. Imagine that MacFarlane knows that Theorem X is a relatively easy theorem to prove and that the margin for error is relatively small. In addition, imagine that MacFarlane knows that he is an excellent theoretician and that he is always honest in reporting his conclusions. When we fill in the details this way, it seems that (5) would be unwarranted. However, this is unproblematic for relativism, since relativism would not license uttering (5) in this case. If MacFarlane had reason to think his past self was better informed, then his informational state should be adjusted accordingly. Depending on how extensive these adjustments are, he may be able to accept his past self's claim. In that case, assessor relativism will not license (5).

On the other hand, consider a case where MacFarlane did have reason to distrust his past self. For instance, imagine that MacFarlane knows that Theorem X is extremely difficult to prove. Furthermore, suppose MacFarlane was intoxicated yesterday. Today, when MacFarlane presses the Play button on his tape recorder, he hears himself utter in a drunk and slurring voice, "Theorem X must be true" along with "I've just invented a perpetual motion

machine" and "The President's dog knows calculus." In this scenario, it should be obvious that there is no need for MacFarlane to adjust his information in light of his past self's testimony. Since what he knows at the time of assessment leaves open the possibility that Theorem X is false, assessor relativism does license (5). However, in this case, it's clear that (5) no longer provides a counterexample to assessor relativism because we no longer have the intuition that (5) is unwarranted.

7.2 Evaluating MacFarlane's strategy

I have tried to show that MacFarlane's semantic solutions are unnecessary for addressing Theorem X. I will conclude by making a methodological point concerning the approach MacFarlane takes toward semantically incorporating epistemic data. I will argue that the sort of strategy MacFarlane employs to solve Theorem X raises problems similar to Theorem X. In the end, this failure shows something important about how epistemic data, such as intuitions about epistemic warrant, are related to a semantic theory of epistemic modals.

MacFarlane takes the Theorem X case to show that the speaker's knowledge is somehow relevant to the truth of epistemic modal claims. MacFarlane is right to think that the speaker's knowledge is relevant in this case, but he is wrong about how it is relevant to the semantics of epistemic modal claims. MacFarlane's strategy for incorporating the speaker's evidence is to find a way for her evidence to be *directly* relevant to the semantics. He does so by specifying the speaker's evidence in the truth conditions for epistemic modal claims. In hybrid relativism, the semantics stipulates that the speaker's knowledge always comprises part of the truth conditions. In flexible relativism, the context of assessment determines that the speaker's knowledge sometimes comprises part of the truth conditions.

However, using a "direct incorporation" strategy like hybrid relativism or flexible relativism to handle the Theorem X case will only result in other epistemically problematic cases. On hybrid relativism, we "amalgamate the asserter's and the assessor's knowledge into a single body of known facts with respect to which the epistemic modal is to be evaluated."[40] As it stands, this form of relativism would allow assessors to make claims on the basis of the amalgamated body of knowledge, even when the assessor has only partial access to this knowledge. For instance, consider again the case where MacFarlane proves Theorem X despite its difficulty and his being intoxicated. In that case, even though MacFarlane has every reason to think that his past self did not prove Theorem X, he should be able to truthfully utter (6).

(6) I know I have no reason to think Theorem X is true. Nonetheless, when I said "Theorem X must be true" yesterday, what I said was true.

Even if (6) is true, it is not warranted. However, the reason it is unwarranted cannot be due to the fact that hybrid relativism failed to include the speaker's knowledge in the truth conditions for epistemic modals. Clearly, (6) is unwarranted because we are not justified in making claims (even if they are true) on the basis of testimony that we believe is unreliable.

In the case of epistemic modals, it is often difficult to distinguish the boundary between semantics and epistemology. This is only natural, considering that the truth of epistemic modals depends on a body of beliefs – a body that is continually revised and updated. For instance, epistemic norms often oblige us to defer to the better informed when we form or revise our beliefs. Since truth depends on a body of beliefs subject to these norms, this sort of deference to the better informed will naturally be *indirectly* reflected in the semantics. The upshot is that because of the way epistemic information factors into the truth conditions of epistemic modal claims, there is no need to complicate the semantics to capture the kinds of epistemic intuitions under discussion.

8. Conclusion

Regardless of what difficulties assessment relativism may have, I hope to have shown that uptake problems such as the Boss and Theorem X are not among them. With regard to both cases, I argued that it is possible to assimilate the information from the claims of the better informed, so long as we take them to be epistemically trustworthy. More importantly, I have tried to draw attention to the interaction between epistemic and semantic issues in arguments surrounding the semantics of epistemic modals. In the end, I hope to have convinced the reader that we do not have to complicate the semantics of epistemic modals in order to accommodate epistemic data such as intuitions about epistemic warrant.

NOTES

1. Kazan, 1954.

2. See Schaffer, 2011 and Kolbel, 2008 for introductions to possible views.

3. Whether the truth of epistemic modals depends, strictly speaking, on what is known, or on something like the evidence one has, is a matter of debate. I'll be assuming the latter, since I believe it provides the best fit with the view I will be discussing here. I'll use "knowledge," "evidence," "informational state," and "body of beliefs" interchangeably.

4. MacFarlane, 2011.

5. See Knobe and Yalcin, 2014, for a critique of the use of truth-value judgments and retraction judgments in semantic theories of epistemic modal language.

6. von Fintel and Gillies, 2008.

7. See Köbel, 2008 and Schaffer, 2009, for an explanation of "perspectival expressions."

8. For instance, see Buetow, 2014, for a discussion of the role of philosophical and semantic intuitions in debate regarding predicates of personal taste.

9. With minor adaptations, most of the formalism I use is taken directly from MacFarlane, 2011.

10. See Kaplan, 1989 and Lewis, 1980.

11. MacFarlane, 2011, p. 164.

12. Adapted from MacFarlane, 2011, p. 159. MacFarlane uses "context of use" rather than "context of utterance" to cover more than verbal uses of a sentence.

13. MacFarlane uses "contextualism" to denote the view I am calling "speaker relativism." His use of contextualism is somewhat idiosyncratic. Most philosophers and linguists who use the label "contextualism" use it to denote a view where perspectival information is handled on the level of content, and not by the circumstance of evaluation. Conversely, most philosophers and linguists who hold the view MacFarlane describes as "contextualism" use the label "relativism." See Schaffer, 2011, for a helpful discussion of these labels in the context of the present debate.

14. MacFarlane, 2011, p. 159.

15. MacFarlane, 2011, p. 167. Instead of defining utterance truth, MacFarlane defines the truth of an occurrence of a sentence. The latter includes inscriptions as well as utterances. However, utterance truth is all that is needed for our purposes.

16. See MacFarlane, 2005, especially pp. 328 and 337.

17. See Dummett, 1959, for an explanation of truth as the aim of assertion.

18. MacFarlane, 2005, p. 333.

19. MacFarlane, 2005, p. 337.

20. For instance, see von Fintel and Gillies, 2008. See also Schaffer, 2011.

21. See Edgington, 1995, and Gibbard, 1981.

22. Ludlow, forthcoming, argues that in some of the cases Gillies and von Fintel provide against relativism may not involve epistemic modals at all, but rather contain a "scalar modifier" of the matrix verb.

23. It ought to be noted that, strictly speaking, these two claims are not contradictory. In that sense, this example is not completely analogous to a Gibbardian Stand-off.

24. von Fintel and Gillies, 2008, pp. 11–12.

25. von Fintel and Gillies, 2008, p. 11.

26. von Fintel and Gillies, 2008, p. 12.

27. This omission is additionally perplexing considering the emphasis placed on epistemic trustworthiness in the Gibbard case. In a stand-off situation, the fact that neither individual has made any mistakes with respect to the evidence available to him, nor made any errors in reporting his evidence, is what gives us grounds for thinking that each claim is true. Without this feature, Gibbardian cases fail to get started in the first place.

28. What if the Boss has no information about the speaker's trustworthiness? Perhaps, in the case where the assessor lacks evidence about the trustworthiness of the speaker, she ought to suspend judgment about the speaker's claim. Or perhaps

there ought to be some sort of prima facie presumption in favor of speaker trustworthiness in these cases. In any case, I think this is a matter best settled within the scope of a debate about testimonial evidence.

29. See Nuffer, 2015, for an account of the effect that epistemic modal sentences have on the informational states of those who accept them. See also Cook, 2013, for a discussion of the flow of information in a group-deliberative setting within the context of conversations regarding epistemic modals.

30. Dietz, 2008.

31. Dietz, 2008.

32. MacFarlane, 2011, p. 174.

33. See Bennett, 2003, for an excellent introduction to the debate about the semantics of conditionals. Also, see Moss, 2015, for a novel account of the behavior of epistemic modals in embedded contexts such as conditionals. Finally, see Hacquard and Wellwood, 2012, for a corpus-based study of epistemic modals in embedded contexts.

34. Adapted from MacFarlane, 2011, p. 175. Again, for technical reasons, MacFarlane uses "occurrence of a sentence" instead of "utterance of a sentence."

35. MacFarlane, 2011, p. 175, footnote 31.

36. MacFarlane, 2011, p. 176.

37. MacFarlane, 2011, p. 176–177.

38. MacFarlane, 2011, pp. 174. The emphasis here is mine.

39. MacFarlane, 2011, pp. 174.

40. MacFarlane, 2011, p. 175. Since flexible relativism gives the same results as hybrid relativism in cases of "critical evaluation" like Theorem X, I'll focus on hybrid relativism.

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AN ANALYSIS OF LINGUISTIC NORMATIVITY AND COMMUNICATION AS A RESPONSE TO OBJECTIONS TO A BIOPSYCHOLOGICAL FOUNDATION FOR LINGUISTICS

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ABSTRACT. This paper addresses the common-sense objections to a biopsychological understanding of natural languages. Some traditional notions of shared public languages are problematic for various reasons, both logical and social. It is argued, however, that a modest pragmatic analysis of linguistic norms is defensible, and can illuminate the nature of communication without abandoning a biopsychological perspective. An attempt is made to flesh out Jackendoff's notion of the "tuning" of semantic representations for the purposes of communication (Jackendoff, 2002). Ultimately, it is argued, a biopsychological perspective remains the best-justified hypothesis for the foundation of core theoretical linguistics.

Keywords: philosophy; linguistics; linguistic norms; sociolinguistics; communication; natural language semantics

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1. The Objection from Linguistic Norms

The Scientific and Manifest Images of Language

This paper considers how a scientific understanding of language fits together with our everyday, commonsense understanding of language, according to which language is used for communication between persons, and follows or fails to follow certain essentially normative constraints.

The scientific view of the world poses a theoretical threat to our commonsense understanding of our place in it as persons. As Sellars writes in "Philosophy and the Scientific Image of Man:"

> Does the manifest image of man-in-the-world survive the attempt to unite this image in one field of intellectual vision with man as conceived in terms of the postulated objects of scientific theory? The bite to this question lies, we have seen, in the fact that man is that being which conceives of itself in terms of the manifest image. To the extent that the manifest does not survive in the synoptic view, to that extent man himself would not survive (18).

Something similar could be said regarding the manifest image of human language. The image of language as *normative* (as opposed to merely descriptive), *personal* (as opposed to merely sub-personal), *social* (as opposed to merely individual), and *serving communication* (as opposed to merely serving thought) would be lost if not shown consistent, somehow, with its scientific counterpart.

Because the use of language is important to the commonsense understanding of human beings as persons, consideration of Sellars' analysis of the scientific and manifest images of human beings is relevant to the apparent conflicts between the scientific and manifest images of language.

Humans appear in different ways to different sciences. We have images in social science, psychology, physiology, biochemistry, and all the way down to physics, in which we appear as "a swirl of physical particles, forces, and fields" (Sellars, "Philosophy and the Scientific Image of Man," 20). "The" scientific image of humans is an idealization of the bringing together of these various special images. All of them, and thus "the" scientific image itself, Sellars writes "are to be contrasted with man as he appears to himself in sophisticated common sense, the manifest image which even today contains most of what he knows about himself at the properly human level" (20).

Though, historically, the scientific image of human beings and of the world in general grows out of a basis in their manifest image, once generated and developed, the scientific image presents itself as a rival, conflicting with the theory and ontology of the manifest image. Though the scientific image of the world stems from the manifest image as an historical basis, it also views the manifest image itself as an object in the world and, from the lens of the scientific image, this manifest image is at best a pragmatically useful approximation of ultimate scientific reality (Sellars, 20).

The conflict of the scientific and manifest images of human beings, Sellars notes, leave us with a seemingly inescapable trilemma. We are apparently forced to choose between: "(a) a dualism in which men as scientific objects are contrasted with the 'minds' which are the source and principle of their

existence as persons; (b) abandoning the reality of persons as well as manifest physical objects in favor of the exclusive reality of scientific objects; (c) returning once and for all to the thesis of the merely 'calculational' or 'auxiliary' status of theoretical frameworks and to the affirmation of the primacy of the manifest image" (38–9).

To accept (a) means resorting to an outdated, Cartesian conception of the human mind, at best rendering the scientific image incomplete, and at worst leaving our fundamental conception of personhood a mere epiphenomenon. To accept (b) is simply to eliminate our fundamental conception of personhood altogether. And to accept (c) is to rob the scientific enterprise of its claim to legitimately pursuing truth. None of these options seem at all satisfactory.

In considering the scientific and manifest images of language we face a version of the same trilemma. We are confronted with the apparent need to choose among: (a*) a dualism in which both the scientific and manifest versions of language somehow co-exist, leaving either science's version of language incomplete or common sense's version of language a bizarre epiphenomenon; (b*) abandoning the reality of commonsense public language altogether, as some linguists claim to do, professionally, if not sincerely; or (c*) giving up on the claim that the science of linguistics is a legitimate pursuit of truth. Once again, none of these options seem at all satisfactory.

Sellars' proposed solution involves seeing "the conceptual framework of persons… [as] not something that needs to be reconciled with the scientific image, but rather something to be joined to it" (40). Sellars avoids the dualism of option (a) by defining the manifest image of humans as a normative image, rather than a descriptive one. "To recognize a featherless biped or dolphin or Martian as a person," he writes, "requires that one think thoughts of the form, 'We (one) shall do (or abstain from doing) actions of kind A in circumstances of kind C'" (Sellars, 39–40). His idea is that thinking of objects as persons in this way is not to classify or explain them descriptively, as science does, but rather to judge them by community norms.

The solution to the apparent conflict between the scientific and manifest images of human language will be developed along similar lines. In the present section I will defend the biopsychological theory of language against concerns relating to linguistic normativity. Then in the second section I will defend it against concerns relating to linguistic communication. Ultimately these two solutions go hand in hand as solutions to the general predicament relating the scientific and manifest images of language. This section also relates to a common sense, Moorean objection to my biopsychological frame, which runs, roughly: "but we *know* there are commonsense public languages!" This objection will also be dealt with by the end of this paper.

Linguistic Normativity
Steven Pinker writes:

> Imagine that you are watching a nature documentary. The video shows the usual gorgeous footage of animals in their natural habitats. But the voiceover reports some troubling facts. Dolphins do not execute their swimming strokes properly. White-crowned sparrows carelessly debase their calls. Chickadee's nests are incorrectly constructed, pandas hold bamboo in the wrong paw, the song of the humpback whale contains several well-known errors, and the monkeys' cries have been in a state of chaos and degeneration for hundreds of years (382).

This, to say the least, would be a very strange nature documentary. The voiceover, as Pinker describes it, can be seen as viewing animals the way Sellars views human beings: *normatively*, through the lens of the manifest image. Pinker actually intended this example as a *reductio* of the notion of prescriptive grammar, but it need not be taken this way quite so straightforwardly. While this is not how we normally view non-human animals – excepts pets, perhaps – it lends support to Sellars' view to consider that we seemingly *could* view them this way without contradicting, deflating, or needing to add to the theory or ontology of our scientific understanding of animals, which is provided in the more mainstream nature documentaries. Likewise, I will argue, is the case with language.

Scientific linguists understand human languages as animals are understood by mainstream scientific voiceovers in nature documentaries. The "grammatical" constructions of people's languages are simply whatever constructions their language faculties represent in appropriate ways; grammar is a matter of fact, not a matter of correctness. Yet, in everyday life, people are understood – at certain times, or in many cases in general – as speaking ungrammatically, even when there isn't a performance error. The language faculty, as scientifically understood, generates, via its grammar, many sentences that when judged by common sense seem ungrammatical. Clearly, then, there are two separate understandings of "grammatical" that need to be sorted out (Pinker, 383).

Grammaticality, as understood by the linguistic scientist, is a descriptive notion, describing the rules by which people actually speak. Grammaticality, as understood by the layperson, is a normative notion, prescribing how, according to a particular individual or group, people *should* speak. The prescriptive rules of the layperson, Pinker writes, "have no more to do with human language than the criteria for judging cats at a cat show have to do with mammalian biology" (Pinker, 383–4). Just as feline zoologists may ignore

the prescriptive norms of cat shows, so linguists may ignore prescriptive grammar.

With this analysis of the dual meaning of "grammar" kept in mind, let us return to the Sellarsian trilemma in respect to the scientific and manifest images of language. We apparently must choose between: (a*) a dualism in which both the scientific and manifest versions of language somehow co-exist; (b*) abandoning the reality of commonsense public language altogether; (c*) giving up on the claim that the biopsychological science of linguistics is a legitimate pursuit of truth.

Many linguists seems to adopt (b*), while Platonist philosophers of language can be interpreted as adopting either (a*) or (c*). The normativity-based common-sense objection to the biopsychological philosophy of language is interpretable as a (c*) version of Platonism, albeit less upfront about its ontological commitments.

Speaking of Black English Vernacular, John Simon writes:

> 'I be,' 'you be,' 'he be,' etc… may indeed be comprehensible, but they go against all accepted classical and modern grammars and are the product not of a language with roots in history but of ignorance of how language works (Pinker, 398–9).

Though perfectly understandable and communicable, non-standard varieties of languages are viewed, according to Simon and (often implicitly racist) common sense, as *wrong*. Though "roots in history" suggests an ontological basis somewhat more terrestrial than Katz's Platonism, Simon's view is Platonist in the sense of viewing languages as distinct from their biopsychological representation. Languages, from this perspective, are abstract objects in that they are independent of their users, and many people are incorrect in how they use them.

Problems with Common-sense Prescriptivism

According to common-sense prescriptivism, the standard variants of natural languages that are spoken by elites and taught in universities are the factually correct variants of these languages. Those who speak alternative variants are incorrect about the facts of their own languages. This perspective is both wrong and dangerous.

William Labov was a pioneer in the study of the connection between dialect and education in the 60s and 70s. He writes:

> I would argue that linguistic research applies to a good many of the questions facing contemporary society: how to reverse educational failure in the inner cities; how to resolve conflicts and paradoxes that center around bilingual education; how to implement the

> responsibility of the law to communicate to the public ("Linguistic Science," 166).

While it is the facts of language with which linguistics is concerned, there are cases where these facts can be used to implement important social changes. Here I will be focusing on the topic of educational failure in inner cities, how this failure was a consequence of common-sense prescriptivism, and how this fact can be used as an empirical case indicating that common-sense prescriptivism is both wrong and dangerous.

At the time of his writing, significant government funding in the US was going towards research into understanding the educational problems facing children in poor, inner-city schools. Educational psychologists were trying to understand what disadvantages the children in these schools were having that were causing their low academic performances, on average, relative to children from richer areas. A theory widely believed and implemented for sizable intervention programs was that children from poor, inner city areas had a "cultural deficit" resulting from an "impoverished environment" in their years growing up prior to schooling (*Nonstandard*, 179).

A core component of this "cultural deficit" was thought to be a verbal deficit resultant from a lack of exposure to correct, conceptually sophisticated language use. Rather alarmingly, this verbal and cultural deficit theory was applied in particular to African-American children. As Labov describes the view, "Negro children from the ghetto area receive little verbal stimulation, are said to hear very little well-formed language, and as a result are impoverished in their means of verbal expression: they cannot speak complete sentences, do not know the names of common objects, cannot form concepts or convey logical thoughts" (*Nonstandard*, 179). In brief, the view was that because the adults these children were surrounded by growing up did not speak proper English, the children had a deprived basis from which to learn sophisticated conceptual thought.

The verbal deprivation theory applied to African-American children in poor, inner-city schools was entirely false. Not only was it false, it was harmful. As Labov writes, "the myth of verbal deprivation is particularly dangerous, because it diverts attention from real defects of our educational system to imaginary defects of the child" (*Nonstandard*, 180). This is a case that illustrates that the misunderstanding of facts of language can have real social implications, such as racial unfairness and/or injustice.

As Labov's work demonstrated, the verbal deprivation theory applied to African-American children in the 60s and 70s was based on an implicit assumption that middle-class, predominantly white variants of English determined the facts of English as such, and that those who did not use these variants were failing to grasp the facts of their own language. "Before we

impose middle-class verbal style upon children from other cultural groups," Labov wrote, "we should find out how much of this is useful for the main work of analyzing and generalizing, and how much is merely stylistic – or even dysfunctional" (*Nonstandard*, 192). If a bias towards a given variant of English is not based on its superior utility, but merely on tradition or power structures, then this bias is a prejudice, especially when certain discounted variants are predominantly the variants of certain racial minorities.

In Bereiter, 1966, the AAV (African-American Vernacular) forms "they mine" and "me got juice" are characterized as examples of language failing to serve as a possible medium for logical thought, examples of merely "a series of badly connected words" (Bereiter, 1966, pp. 113 ff.). In the case of "they mine," Labov shows, Bereiter confuses logicality with explicitness. "We know that there are many languages of the world which do not have a present copula, and which conjoin subject and predicate complement with a verb," writes Labov. "Russian, Hungarian, and Arabic may be foreign," he continues, "but they are not by that same token illogical" (*Nonstandard*, 202). When standard variants of other natural languages share a syntactic property with a non-standard variant of English, it is inconsistent to reject the legitimacy of the property in the non-standard variant of English while accepting it in standard variants of other natural languages.

Furthermore, Labov continues, "the deletion of the 'is' or 'are' in non-standard Negro English is not the result of erratic or illogical behaviour: it follows the same regular rules as Standard English contraction" (*Nonstandard*, 203). In other words, AAV allows a zero form of the verb "to be" when and only when AAV standard white English allows a contracted form. "They mine" in AAV is equivalent to "they're mine" in Standard English; it is not equivalent to "they are mine." Likewise, where Standard English does not allow contraction, AAV does not allow a zero form. "Just as one cannot say 'that's what they're' in Standard English, 'that's what they' is equally impossible in the vernacular we are considering" (*Nonstandard*, 203). At an abstract level, Standard English and AAV employ the same syntactic principle. One cannot deny the legitimacy of the principle in one case, while rejecting it in the other. Since racial identity is connected to these variants of English, prejudice not based on linguistic utility is especially problematic.

The mistaken theoretical bias of the verbal deprivation theory led to a fundamental misunderstanding of the educational psychology of children in poor, inner-city schools. The consequences of this failure are significant since they relate to issues of fairness and racial equality. As Labov writes about the usual view:

> When the everyday language of Negro children is stigmatized as 'not a language at all' and 'not possessing the means for logical

> thought,' the effect of such a labeling is repeated many times during each day of the school year. Every time that a child uses a form of NNE[1] without the copula or with negative concord, he will be labeling himself for the teacher's benefit as 'illogical,' as a 'nonconceptual thinker' (*Nonstandard*, 206).

None of this is to claim that the verbal deprivation theory had explicitly racist motivations. It was a scientific theory that turned out to be false. However, once it is recognized that it was implicit bias rather than logic that led psychologists to assume the superiority of Standard English, it is necessary for protection of racial equality that African American variants of English be recognized as fundamental to the unique educational challenges faced by African American children in poor, inner-city schools.

Surely no psychologist would ever claim that Russian, Hungarian, and Arabic children who had difficulty in English-speaking schools must be mentally challenged in respect to their verbal capabilities. Yet misinterpretation of AAV as simply failed standard, white English led Jensen 1968 to conclude, "almost half of lower-class Negro children are mentally retarded" (Jensen 1968, 167) (*Nonstandard*, 211). Evidently, this is both a false and extremely dangerous conclusion. The consequences of diagnosing normal, healthy children as "retarded" are obviously very negative.

As Hoffman and Walker (2010) write, "ethnolinguistic variation in a multilingual, multiethnic community has less to do with imperfect acquisition of the majority language and more to do with the way in which speakers actively construct and express ethnic identity" (59). The recognition of the legitimacy of nonstandard variants of natural languages is a necessity for the promotion of racial equality in a society.

In "Objectivity and Commitment in Linguistic Science," Labov discusses the specifics of the failures of the educational psychology of the time and the consequences of these failures for issues of racial equality. One example comes from a test called "the Wepman test" used to determine children's ability to discriminate sounds. The Wepman test would present children with minimal pairs from Standard English to evaluate their ability to differentiate basic linguistic sounds. A major problem with this test was that it included some pairings that, while differentiated in Standard English, were phonologically equivalent in AAV. Such Examples included {pin, pen}, {sheaf, sheath}, {clothe, clove}. As discussed in this thesis, phonological representation makes categorical divisions across continuous acoustically varying signals. Thus, one person can produce the vowel sound in "pen" representing it as distinct from that in "pin" and another can hear the very same sound as identical to that in "pin." There is no right or wrong regarding whether the phonological representation attached to the meanings of "pin" and "pen" are equivalent or divergent. Standard English and AAV simply make different

phonological distinctions. A demonstrated inability to recognize the differences between the phonology of Standard English and the Phonology of AAV led to "consequent misreporting of the hearing abilities of normal black children" (168–9).

Again, the educational psychology in the 60s and 70s was not explicitly motivated by racism. However, a failure to recognize the existence of non-standard variants of English had consequences harmful for racial equality. As Labov writes, "the verbal deprivation of black children was so great that they were [seen as] best treated as if they had no language at all" ("Linguistic Science," 185). Bereiterand & Engelmann (1966) claimed that African American children spoke merely a "restricted code" and possessed no verbal medium in which the learning of concepts could be possible. As Labov describes Bereiterand & Engelmann's view "the only logical answer to the question, 'Where is the squirrel?' is [to say] 'The squirrel is in the tree,' and… children who answered [by saying] 'on the tree' did not show the capacity for logical thought" (Labov 1969a; Baratz & Baratz 1969) ("Linguistic Science," 185).

The arbitrariness of the preference for "in" over "on" in this example can be seen by considering that, in Standard English, one describes people as "on the bus" more commonly than "in a bus," which is surely at least as logical as saying a squirrel is "on the tree." Thus, if AAV is inherently illogical, then Standard English is as well.

While the educational psychology of the 60s and 70s was not explicitly motivated by racism, when the data available were combined with a failure to recognize AAV as a legitimate language, the inevitable consequence was in fact racist. As Labov cites:

> Arthur Jensen argued in the Harvard Educational Review of 1969 that compensatory education had failed even though vast sums had been spent on it; that there were sharp limits on what could be done to improve the school performance of lower-class black children, since most of them were genetically incapable of forming concepts freely; that the only solutions to the educational problems of the inner city were to train black children for lower-skilled jobs by associational methods, and to limit their numbers in the population ("Linguistic Science," 185).

It cannot be emphasized enough that this is an unacceptable consequence. When a writer of status and authority claims that African Americans are cognitively inferior and that whites should "limit their numbers in the population," something has gone horribly wrong.

Linguistic science indeed has the power to do social good. It is through the work of Labov and others on the linguistics of AAV and other non-

standard variants of English that the problems with the educational psychology of the 60s and 70s that led to racist conclusions were brought to light.[2]

Labov's work was foundational for many future studies inquiring into the structures of non-standard variants of natural languages. As Robert Bayley writes:

> It is now beyond dispute that much of the linguistic variation that was previously thought to be random is indeed systematic, and that eloquence, logic, and clarity of expression are not the particular properties of standard languages. Moreover, although public attitudes have been slow to change, work on socially stigmatized varieties, particularly the varieties used by ethnic minorities and members of the working class, has served as important evidence to combat popular misperceptions of such varieties as being illogical and their speakers as incapable of mastering national or regional standard varieties. On the contrary, sociolinguistic analysis has revealed beyond any doubt that these varieties are orderly, complex, and complete linguistic systems (102).

A Pragmatic Alternative

Rejecting common-sense prescriptivism need not mean giving up on any form of natural linguistic prescription. The problem with common-sense prescriptivism that led to racist consequences was the assumption that linguistic prescriptions were grounded in linguistic *facts* in the realist sense. The alternative, which I will label "pragmatic prescriptivism," takes linguistic prescription to be grounded in linguistic *utility*: what best serves one's linguistic purposes relative to a context and (fuzzy[3]) linguistic community. Unlike common-sense prescriptivism, pragmatic prescriptivism is consistent both with approved schools of thought in sociolinguistics and with racial equality.

David Forrest's Wallace's philosophically-under-valued essay, "Authority and American Usage" is essentially a defense of pragmatic prescriptivism. When it comes to "the issues surrounding 'correctness' in contemporary American usage," Wallace writes, "the fundamental questions they involve are ones whose answers have to be literally worked out instead of merely found" (72).

The answers to questions regarding best linguistic usage cannot be "merely found" because prescriptions are not grounded in facts in the realist sense. These answers have to be "literally worked out" in the sense that *our* determination of what will best serve a particular linguistic goal relative to a particular context and (fuzzy) linguistic community, is a process of creation, rather than discovery. Strictly speaking, linguistic prescriptions are better or worse for their purposes, rather than true or false in a realist sense.

While we tend to treat dictionaries as an authoritative guide to the facts of language, this way of thinking is only a heuristic one. Dictionary writers have linguistic expertise, but they do not have God-like powers; they are perfectly capable of making inappropriate judgment calls. To see this one need only recognize that not every published dictionary is identical and, in theory, that *anyone* could publish a list of any definitions whatsoever and call it a dictionary. Dictionary writers do not have linguistic authority simply by virtue of being dictionary writers. They must provide *good reasons* for their prescriptions. "Nobody elected them, after all," Wallace points out, so "whence the authority of dictionary-makers to decide what's OK and what isn't?" (75).

Since answers to linguistic usage problems must be worked out rather than solved, the solutions to the problems of the dictionary writer's authority are both complex and subtle. Essential to a dictionary-writer's authority, Wallace argues, is the use of Ethical Appeal:

> Ethical Appeal… is a complex and sophisticated 'Trust me.' It's the boldest, most ambitious, and also most democratic of rhetorical Appeals because it requires the rhetor to convince us not just of his intellectual acuity or technical competence but of his basic decency and fairness and sensitivity to the audience's own hopes and fears" (77).

Common-sense prescriptivism has no Ethical Appeal, in this sense. The rhetoric of common-sense prescriptivism is dogmatic: "these are the facts and I know them." The work of Labov and other sociolinguists has shown that many linguistic prescriptions are instruments of oppression. But prescribers with Ethical Appeal are not oppressive; they are trying to help those who want help with communicating their ideas clearly and skillfully. Within this pragmatic understanding of linguistic prescription, there is no contradiction whatsoever in the idea of a dictionary or usage manual for non-standard variants of English such as AAV. Wallace writes:

> Fact: there are all sorts of cultural/geographical dialects of American English – Black English, Latino English, Rural Southern, Urban Southern, Standard Upper-midwest, Maine Yankee, East-Texas Bayou, Boston Blue-collar, on and on. Everybody knows this. What not everyone knows – especially not certain prescriptivists – is that… these non-SWE[4]-type dialects have their own highly developed and internally consistent grammars, and that some of these dialects' usage norms actually make more linguistic/aesthetic sense than do their standard counterparts. Plus, of course, there are also innumerable sub- and subsubdialects (98).

When linguistic prescription is understood as pragmatic, giving or taking prescription on usage in one variant of English no more implies the denigration of other variants of English than it implies the denigration of Russian or Japanese. To think otherwise would be like thinking that being a soccer coach implied the denigration of hockey as a legitimate sport. "'Correct' English usage," Wallace writes, "is, as a practical matter, a function of whom you're talking to and of how you want that person to respond – not just to your utterance but also to you" (97–8).

Even if you were a great hockey player, you could not bring your stick on a soccer field. It is for this reason, by analogy, the use of Standard English in certain contexts with certain people can abort communication and can make one seem pretentious and unlikable. "There are," Wallace writes, "– as you and I both know and yet no one in the Usage Wars ever seems to mention – situations in which faultlessly correct SWE is not the appropriate dialect" (102).

"A certain number of traditional prescriptive rules really are stupid," Wallace notes, and "people who insist on them.… are… contemptible and dangerous" (100). Linguistic prescriptions must be put forward for *useful reasons*. The most obvious reasons for linguistic prescriptions are those related to communication: rules against using two-way adverbs to avoid the ambiguity in examples such as "people who eat this often get sick;" rules against using other misplaced modifier types to avoid the ambiguity in "there are many reasons why lawyers lie, some better than others;" and rules regarding the proximity of relative pronouns to their modifying nouns to avoid the ambiguity in "she's the mother of an infant daughter who works twelve hours a day" (Wallace, 93).

These examples of semantic ambiguity, however, are not the only type of justification for linguistic prescription. Strictly speaking, the goals one can try to achieve through language are unlimited. One set of reasons for linguistic prescription that is often under-recognized is a speaker's set of goals related to expressing her own identity. As Hoffman and Walker, again, write, "ethnolinguistic variation in a multilingual, multiethnic community has less to do with imperfect acquisition of the majority language and more to do with the way in which speakers actively construct and express ethnic identity" (59).

In this sense, to think Standard English is inherently preferable to variants such as AAF, Latino English, etc. is genuinely racist, because it is to think the expression of white identity inherently preferable to the expression of identities of other racial groups. As Wallace bravely and intelligently summarizes:

> The real truth, of course, is that SWE is the dialect of the American elite. That it was invented, codified, and promulgated by

> Privileged WASP Males and is perpetuated as 'Standard' by the same. That it is the shibboleth of the Establishment, and that it is an instrument of political power and class division and racial discrimination and all manner of social inequity. These are shall we say rather delicate subjects to bring up in an English class, especially in the service of a pro-SWE argument, and extra-especially if you yourself are both a Privileged WASP Male and the teacher and thus pretty much a walking symbol of the Adult Establishment. This reviewer's opinion, though, is that both students and SWE are way better served if the teacher makes his premises explicit and his argument overt – plus it obviously helps his rhetorical credibility if the teacher presents himself as an advocate of SWE's utility rather than as some sort of prophet of its innate superiority (107).

The political issues associated with the teaching of Standard English cannot be ignored. To what extent other variants of English should be incorporated into our education systems is a question beyond the scope of this chapter. As Labov's work showed, however, *at very least* it needs to be admitted that a learning environment with teaching conducted in Standard English puts students with non-standard native dialects at a disadvantage.

This being said, Wallace's subtle understanding of the political issues essential to the very topic of linguistic prescription demonstrates that it is possible to be a prescriptivist without being prejudiced. Whatever variant of whatever language in which one is seeking to help and educate, one must be a humble advocate of utility, not a pretentious proponent of intrinsic superiority.

When prescriptivism is grounded in utility rather than fact, in the realist sense, it is perfectly consistent with descriptivism, since descriptivism, alternatively, is grounded in fact much more straightforwardly. This point is crucial to this thesis as a whole. The public languages grounding the work of prescriptive grammarians are fundamentally different from the idiolects grounding the work of scientific linguists. When it comes to the linguistic representation in the brain of an individual language user, there are straightforward facts of the matter. Language users simply do represent their languages in whatever way they represent it. When it comes to the language or variant of a language shared by a linguistic community, there are strictly speaking no facts of the matter, in this same sense. Instead, there are communicative and other usage problems to be solved. The role of prescriptive grammar is to *create solutions to these problems*, which it may do to continuously varying degrees of helpfulness.

Analogies with Meta-ethics

The idea that statements about linguistic norms may be meaningful without being true or false in a straightforward way can be made sense of in analogy to various views in meta-ethics. Below I discuss three possible meta-ethical analogies. What is important, for present purposes, is not to determine which particular view is the relevant analogy for meta-normativity in language, but simply to demonstrate the space of conceptual possibilities. This space of conceptual possibility is enough to show that realism about common-sense languages and nihilism about linguistic norms are not one's only options.

Blackburn's Quasi-realism:

Blackburn writes:

> Projectivism is the philosophy of evaluation which says that evaluative properties are projections of our own sentiments (emotions, reactions, attitudes, commendations). Quasi-realism is the enterprise of explaining why our discourse has the shape it does, in particular by way of treating evaluative predicates like others, if projectivism is true. It thus seeks to explain, and justify, the realistic-seeming nature of our talk of evaluations – the way we think we can be wrong about them, that there is a truth to be found, and so on (1984: 180) (Miller, 52).

The meaning of evaluative language, according to projectivism, comes from within us – in our sentiments – and is projected onto the world. Quasi-realism, in turn, endeavors to explain how evaluative language can seem to be applicable to the world independent of our sentiment projections, when, in fact, our sentiment projections are inherent to its very meaningfulness. One could easily imagine a similar philosophical program applied to linguistic, rather than ethical, norms. It is interesting, in fact, that Blackburn uses the more general phrase "philosophy of evaluation," rather than "meta-ethics," suggesting that the theory could be applicable to language, not merely through analogy, but directly.

Quasi-realism about ethics seeks to explain how we can meaningfully say "it's true that murder is wrong," "it's false that breaking promises is the right thing to do," "Jones believes that murder is wrong," etc. without being metaphysically committed to such notions as moral predicates referring to objective properties, moral judgments expressing cognitive beliefs, or moral evaluations being literally true or false (Miller, 52). Likewise, one could easily image a project to explain prescriptive grammatical language without metaphysical commitment to abstract linguistic objects.

In Meta-ethics, the central paradox that anti-realist theories face is called "the Frege–Geach problem." The need for a projectivist philosophy to be

enhanced by a quasi-realist philosophy stems from the apparent logicality of sentences such as: "if murder is wrong, then getting little brother to murder is wrong" (Miller, 58). If moral language is not truth apt, so goes the objection, why does it seem to fit smoothly into truth-conditional constructions?

Blackburn's solution to the Frege–Geach problem makes use of the notion of a person's "moral sensibility." A given person has a set of dispositions to respond with different emotive attitudes to different potential situations. This set of dispositions is identified with a person's moral sensibility. For Blackburn to have an attitude of approval towards the sentence "if murder is wrong, then getting little brother to murder people is wrong" is to have an attitude of approval towards any moral sensibilities that combine disapproval of murder with disapproval of getting one's little brother to murder, in respect to this combination (Miller, 59).

One could easily image a similar scheme applied to one's linguistic sensibilities. Just as, in the moral case, we can treat approval of logical complex moral language as approval of the harmoniousness of an aspect of relevant moral sensibilities, so, in the linguistic case, we may treat approval of logically complex language about prescriptive grammar as approval of the harmoniousness of an aspect of relevant linguistic sensibilities.

Gibbard's Norm Expressivism

Another relevant metaethical theory is Gibbard's Norm Expressivism. Gibbard's views about morality are based in his views about rationality. For him, to say that an action A is rational is not to ascribe A an objective property, or to say something truth-evaluable about A, but simply to express acceptance of some system of norms permitting A (Miller, 96).

With this analysis of rationality, Gibbard is able to construct a truth-conditional meta-language to talk about norms without having to take first-order rationality statements themselves to be truth-evaluable. He writes:

> We can characterize any system N of norms by a family of basic predicates 'N-forbidden,' 'N-optional,' and 'N-required.' Here 'N-forbidden' simply means 'forbidden by system of norms N,' and likewise for its siblings. Other predicates can be constructed from these basic ones; in particular 'N-permitted' will mean 'either N-optional or N-required' (1990: 87) (Miller, 101–2).

While the moral notions "forbidden," "optional," and "required" are not truth evaluable, there can still be facts of the matter regarding what a given system of norms defines to be forbidden, optional, and required. "It is a purely factual matter," as Miller explains the view, "whether, for example, the system of norms constituted by the Ten Commandments forbids adultery, or permits smoking, or whatever" (Miller, 101–2).

Gibbard then defines the notion of a normative judgment J as holding at a "factual-normative world" <w, n> just in case, with the creation of the meta-judgment J' created by replacing all normative predicates with meta-predicates relating them internal to the system of norms N, J' is true at w. To make a normative judgment of J is thus to make the judgment J' that J is required relative to the system of norms N while simultaneously embracing N itself (Miller, 103).

This analysis offers a direct solution to the Frege–Geach problem. Making the statement "if lying is wrong, then getting little brother to lie is wrong" can be analyzed as making the statement "if lying is N-wrong, then getting little brother to lie is N-wrong," a perfectly truth-conditional one, while simultaneously embracing N (Miller, 103).

A major objection to Gibbard's theory, Miller notes, "arises as to how Gibbard can avoid having to provide an expressivist account of rule-following, and thus treat predicates such as N-permitted and so on as normative rather than purely descriptive" (Miller, 109).

The statement "the Ten Commandments forbids adultery" seems purely descriptive, but if acceptance of the Ten Commandments consists merely in the adoption of a set of emotive dispositions, and emotive dispositions are not themselves true or false, it seems problematic just how the sentence "adultery is Ten Commandment-forbidden" could be true or false.

This problem for Gibbard, of course, is not directly relevant. In the linguistic analog case, a solution to the relevant problem is relatively straightforward. What prescriptive rule one is encouraging, one is presumably able to cognitively represent. The system of prescriptive linguistic norms one accepts can then be understood as the set both one represents and to which one has appropriate emotive dispositions. In other words, a prescriptive linguistic rule can be understood as a descriptive linguistic rule paired with a set of emotive dispositions towards it. Since one can certainly grant the truth-conditional cognitive content of statements about descriptive linguistic rules, one can thus grant the truth-conditional cognitive content of statements relating particular utterances to systems of prescriptive norms without having to judge the prescriptiveness itself to have truth-conditional cognitive content.

Best-opinion Theories

Yet another option is that ethical or linguistic prescriptive statements in some sense *are* true or false, but for human-dependent reasons.

Both metaethical theories we have addressed thus far have been non-cognitivist, meaning that they take moral sentences to be neither true nor false. The alternative to non-cognitivism, obviously, is cognitivism: the view that moral language is truth-apt. Cognitivist theories, however, can be either strong or weak. A strong cognitive theory posits the existence of objective,

yet somehow-cognitively-accessible moral facts, while a weak cognitive theory rejects the idea of cognitive access or properties of this kind. Weak cognitivism thus offers another possible anti-realist understanding of moral language (Miller, 128).

A version of a weak cognitivist metaethics is Wright's best opinion theory, according to which moral truth is determined by best moral opinion. On this view, unlike Blackburn's or Gibbard's, moral judgements are true or false, "but their truth is constitutively tied to facts about human opinion" (Miller, 130).

This is yet another way that statements about linguistic prescriptions could be understood as meaningful, without the need for external metaphysical commitment. In this chapter I have not endorsed any of these particular meta-ethical accounts, nor, for that matter, their analogous application to linguistic norms. I hope, however, that I have demonstrated the wide range of possibilities that exist between Platonism about natural languages and nihilism about prescriptive linguistic norms.

2. The Objection from Communication

The Fregean Problems of Objectivity and Communication

The most salient point regarding human language is that people in linguistic communities use it to communicate. The essence of the objection from communication to the biopsychological philosophy of language can be observed in Frege's famous work, "Thought."

Frege notes that no two people can have an identical mental state, for mental states, by their nature, are dependent on the consciousness of their owners ("Thought," 335). For this reason, Frege argues, propositional thoughts cannot be identical with mental states:

> If other people can assent to the thought I express in the Pythagorean theorem just as I do, then it does not belong to the content of my consciousness, I am not its owner; yet I can, nevertheless, acknowledge it as true. However, if what is taken to be the content of the Pythagorean theorem by me and by somebody else is not the same thought at all, we should not really say 'the Pythagorean theorem,' but 'my Pythagorean theorem,' 'his Pythagorean theorem,' and these would be different… the words 'true' and 'false,' as I understand them, might also be applicable only in the realm of my consciousness, if they were not meant to apply to something of which I was not owner, but to characterize in some way the content of my consciousness. Truth would then be confined to this content and it would remain doubtful whether anything at all similar occurred in the consciousness of others ("Thought," 336).

In one sense, Frege's concern with the identification of thoughts with the mental states of individuals is a concern about objectivity and rational disagreement. When I say the Pythagorean theorem is true, and someone else says it is false, but we each have our own, separate thought in mind and, indeed, *necessarily* have our own, separate thought in mind, then it would not be rational for us to disagree for there is no shared thought about which there could be an objective, mind-independent truth. This interpretation seems supported by quotes such as this:

> If every thought requires an owner and belongs to the content of his consciousness, then the thought has this owner alone; and there is no science common to many on which many could work, but perhaps I have my science, a totality of thoughts whose owner I am, and another person has his… no contradiction between the two sciences would then be possible, and it would really be idle to dispute about truth ("Thought," 336).

Call this the logical Fregean problem: the concern that the identification of thoughts with mental states makes the notion of objective truth impossible.

In another sense, however, one can interpret Frege's concern as a concern about the possibility of communication. If thoughts are identical to particular mental states, how can people ever possibly communicate their thoughts? Call this the pragmatic Fregean problem: the concern that the identification of thoughts with mental states makes the notion of communication impossible.

Contra Frege, the biopsychological theory of language defended by Chomsky and his followers identifies the content of language, thoughts, as individual mental states. It is my aim in this section to present a direct solution to the pragmatic Fregean problem. I admit to offering only a partial solution to the logical Fregean problem, though it is also a legitimate concern.

A Metaphysical Challenge

If all that fundamentally exists as meanings are the linguistic representations of particular individuals, how is communication possible at all? Though linguistic communities are fuzzy objects, there must be *some* sense in which *some* part of linguistic representation is *some*how shared whenever two people succeed in a communicative exchange.

This metaphysical challenge is made even deeper when the biopsychological foundation of language is understood to imply, not only the inherently individual basis of one's language, but also the inherently internal nature of one's language's semantic content. As Chomsky writes, "though naturalism does not entail an internalist approach [to semantics], it does seem to leave no realistic alternative" ("Internalist Perspective," 156). "Internalist" here means inside the head. As Chomsky and many of his followers conclude, the

grounding of language in psychology brings with it the grounding of linguistic content.

Not everyone agrees with Chomsky that a naturalist approach to meaning leaves no realistic alternative to internalism. Dretske (1981) and Fodor (1990) have attempted to defend informational theories of meaning that are both naturalistic and externalist. If an account such as Dretske's or Fodor's were correct, then the grounding of communication would be a much simpler problem: we could share meanings because meanings are in the world and we share the world.

The problem with externalist theories, however, is that they rest on a notion of intentionality. Paying Fodor's heroic attempts the respect they deserve, it still appears the case, as Jackendoff points out, that there is no physically realizable causal connection between concepts and objects (Jackendoff, 300).

Robert Stainton has pointed out to me, in personal correspondence, there is a theoretical difference between:
(a) A *semantic* theory such as externalism, which states that external objects and states of affairs are the semantic contents of phrases and sentences; and
(b) A *meta-semantic* theory such as causal informational semantics, which *explains what grounds a semantic theory such as externalism*.

While Stainton is correct to make this distinction, the distinction itself is of merely logical, and not of relevant practical concern. "One cannot make naturalistic sense of intentionality" Jackendoff writes; "it suffers from precisely the same difficulty as 'grasping' language" (Jackendoff, 300). If no meta-semantic grounding for externalism is naturalistically justified, then externalism itself cannot be naturalistically justified either.

Even without considering its lack of meta-semantic grounding, externalism is flawed for internal, first-order reasons. The massive list of objects referenced easily via natural language includes: fictional and mythical characters such as Sherlock Holmes and the unicorn in Ray Jackendoff's dream last night; geographical objects such as Wyoming, the Mississippi River, and the distance between New York and Boston; social entities such as the value of Noam Chomsky's watch, the first dollar Robert Stainton ever earned, Morris Halle's Ph.D. degree, Chris Viger's reputation, General Motors, or the score of tomorrow's Red Sox game; Auditorily perceived objects such as Mahler's Second Symphony or the words "banana" and "despite;" and so on (Jackendoff, 300).

The common-sense externalist theory of reference – which might be identified with the manifest image of reference – thus faces problems at both the meta-semantic and semantic levels. At the meta-semantic level "it is necessary to invoke some mystical connection from the mind to the world," and at the semantic level "the notion of 'objects in the world' [in many cases] is itself suspect" (Jackendoff, 303).

Internalism escapes the ontological concerns of externalism because human concepts play a role in the nature of strange objects. Since we know ourselves to have concepts of strange objects, these concepts playing a role in the objects' themselves existence, thus significantly reduces our epistemic worry as to how they could exist.

Jackendoff thus offers to replace the common-sense, externalist theory of reference wherein "(7) phrase P of language L, uttered in context C, refers to entity E in the world (or possible worlds)" with a conceptualist, internalist theory wherein "(8) A speaker S of a language L judges phrase P, uttered in context C, to refer to entity E in [the world as conceptualized by S]" (Jackendoff, 304).

Jackendoff explains the conceptualist theory as follows:

> In a conceptualist theory, reference is taken to be at its foundation dependent on a language user – just as relativistic physics takes distances and times to be dependent on an observer's inertial frame. And just as it is often convenient to revert to Newtonian dynamics when relativistic effects can be ignored, we can often take (7) as a convenient abbreviation for (8), temporarily ignoring the 'reference frame' – the presumption of agreement among members of a (relatively) homogeneous speech community (Jackendoff, 304).

This gives us a hint of how the problems of this section may be addressed. Where the semantic lexicons and conceptual schemes of various speakers are sufficiently similar, one can talk *as if* common-sense externalism were true. This is one way of interpreting the use of Kripkean rigid designation as a logical idealization, rather than a theory of natural language. It thus provides an idealization for the pursuit of scientific objectivity, offering a partial dissolution of the logical Fregean problem.

At this point, however, we yet have no way to make sense of the notion of "sufficient similarity" at issue. Presumably two semantic reference frames are sufficiently similar when they share a sufficient number of particular semantic representations. But if the Fregean concerns about identification of thoughts with mental states are not answered, there is no sense to the notion of two particular semantic representations being the same.

Returning to our pragmatic Fregean dilemma then: if not only our words, but what we mean by our words is in our heads, in what sense can we share semantic representations, as we seem to when we seem to communicate?

One apparent option would be to take communication to be entirely determined by context, and not at all by individual semantic representations. Scholars disagree as to whether Chomsky thinks that all of semantics should be abandoned in favor of pure pragmatics, or if he merely thinks all *externalist* semantics should be abandoned. Chomsky exegesis aside, there is

reason to prefer the latter, more moderate perspective. The meaning of a linguistic expression cannot be determined *entirely* by context because it must contain some semantic aspects with which the contact can relate. "If it did not," as Ray Jackendoff succinctly points out, "a hearer could in principle know from the context what message was intended, without the speaker saying anything at all!" (Jackendoff, 280).[5]

In other words, if there were not some purely linguistic aspect of meaning, language could never be required to convey a given meaning. Since there are meanings that are communicated that would not have been communicated if not for the use of language, some aspect of semantic representation independent of context must exist. How these representations can be shared remains the heart of the problem of linguistic communication.

The Problem of Other Meanings

Since linguistic reference is dependent on the particular psychological representation of the language user determining it, there is no literal sense in which speakers share a semantic reference in the world. Since semantics must play a role for communication to be possible, there remains a serious challenge to our understanding of communication. Jackendoff is well aware:

> From the standpoint of neuropsychology, we must recognize that the neural assemblies responsible for storing and processing conceptual structures indeed are trapped in our brains. They have no direct access to the outside world. Hence… we must explicitly deny that conceptual structures are symbols or representations of anything in the world, that they mean anything. Rather, we want to say that they *are* meaning: they do exactly the things meaning is supposed to do, such as support inference and judgment. Language is meaningful, then, because it connects to conceptual structures (Jackendoff, 306).

This is to say that meaning is in the head. It is not to say that meaning cannot interact with the world in any way. It is to say that the relevantly *semantic* aspects of our neural anatomy are determined by relations internal to that anatomy itself, rather than by relations between that anatomy and the world. Being itself part of the world, our neural anatomy does interact with the world. Thus, there can be indirect interaction between the semantic representations of one person and another as mediated through the actions they use these representations to create and to perceive. But these actions and the world in which they are acted are not themselves the foundation of meaning; they are only forms of evidence from which meanings may be fallibly inferred.

The solution to (one aspect of) the problem of communication, I posit, is the same as the solution to the problem of other minds. The logical grounding

of belief in other minds – and, I claim, in other meanings – is based on, as Russell famously demonstrated, an analogy.

To rationally defend belief in the existence of the minds of other people Russell writes:

> We must appeal to something that may be vaguely called 'analogy.' The behavior of other people is in many ways analogous to our own, and we suppose that it must have analogous causes. What people say is what we should say if we had certain thoughts, and so we infer that they probably have these thoughts… they behave in ways in which we behave when we are pleased (or displeased) in circumstances in which we should be pleased (or displeased) ("Analogy," 667).

Since we can observe our own mental states and the fact that these mental states bring about our production of certain actions, and since we can observe equivalent actions produced by other people, we can reason from analogy that the actions of other people are likely brought about by mental states similar to our own.

Other people's responses to stimuli resemble our own in ways that behavior of "'dead' matter" does not resemble our own. "As it is clear to me that the causal laws governing my behavior have to do with 'thoughts,'" Russell writes, "it is natural to infer that the same is true of the analogous behavior of my friends" ("Analogy," 667).

It is entirely commonsensical for us to believe in the minds of other people (and, probably, to not believe in the minds of inanimate material objects). It is almost impossible, in fact, to *not* attribute mental states analogous to our own behind the behaviors of other people. Russell's point, however, is not an historical one, but a logical one: "what I am discussing is the possibility of a postulate which shall establish a rational connection between this belief and data" ("Analogy," 668).

The basic logic of this Russellian postulate is as follows. We observe in ourselves that actions of type A are brought about by mental states of type M. We observe in other people actions of type A, and thus presume, by something like a causal law, that they too have mental states of type M ("Analogy," 668).

As an example, imagine the reaction to burning one's hand on a stove: the mental state of pain brings about the rapid removal of one's hand from the stove. Upon seeing one's friend touch the stove and produce the same physical response, one reasonably infers that one's friend has an equivalent mental state.

The case with internal semantics, I propose, is to be logically grounded by means of the same analogical reasoning. While semantic (and syntactic

and phonological) types are private, phonetic types are public, as is written language. This together with the publicity of our physical behavior gives us all the relevant resources required for sound analogical defense of the possibility of communication.

Consider the following cases:

Case 1: A friend produces the utterance "a chair for you." She then brings you a chair and when you sit in it, she smiles.

Case 2: A friend produces the utterance "a chair for you." She then brings you a chair, but when you go to sit in it, she stops you.

Case 3: A friend produces the utterance "a chair for you." She then brings you a small dog.

What can be reasoned about one's friend in these three cases, respectively? For intuitive reasons, let us add the stipulation that the friend is not a first language English speaker, and is thus liable to make mistakes:

In case 1, the friend seems to be doing all the things I would do if I had the internal representation that I had a chair for the other person in the room. It can thus be reasoned by analogy that my friend's internal phonological, syntactic and semantic representations of her public phonetic utterance are the same, or at least contextually "the same enough," as mine.

In case 2, the friend acts as I would if I had an internal representation of "a chair," but does not act as I would if I had an internal representation of "for you." It is evident from the friend's behavior that some miscommunication has occurred. If the friend then proceeded to sit in the chair herself, one might hypothesize that she had mentally mixed up the English terms "you" and "myself" (and, perhaps, that she was somewhat unmannerly).

In case 3, the friend seems not to have the same internal representation of "chair" that I do, and, perhaps, has confused the English terms "chair" and "dog." One could image checking this hypothesis by looking at the dog and then the friend and saying "chair"?

Note that establishing belief in the internal semantic representations of others in this manner does not require that persons or chairs or dogs themselves be the meanings of these representations. All that is required is that we observe regularities in the interaction of our own internal representations and our actions in the world. Though, in the case of other minds, Russell seems to imagine the interaction between the mind and the world as deterministic, this is not a requirement for justified analogical reasoning. The relevant regularities, in either the general mental-state case or the semantic representation case, may be something like statistical generalizations, rather than deterministic laws. So long as they are relatively reliable, the practical analogies remain rational.[6]

Reasonable inference relations between meaning representations and actions are weaker than content relations, and thus do not commit one to

externalism. Firstly, reasonable inference from action to meaning representation, as I have noted, does not require strict causal laws, which are the minimum that would be needed to meta-semantically determine external content. Secondly, even if, as it turns out, there actually are strict causal laws from meaning representations to actions, it would remain an open question of conceptual analysis whether or not these strict causal laws should be taken to meta-semantically determine external content relations. Thus, though externalism being true would certainly bring no problems for this paper, the fact that it probably is not true is in no way detrimental to my argument either.

Communication in Social Context

Social interaction among individuals molds the semantics those individuals represent. In attempting to communicate individuals come to act similarly and thus, by Russellian analogy, have more and more justified belief in their shared semantic representations (Jackendoff, 281). Jackendoff writes:

> I am inclined to think that human beings have a need to 'tune' their conceptualizations to those of others – to have a common understanding of the world. Since we cannot read minds, the only way we can assess our attunement is by judging whether the behavior of others – including what they say – makes sense. To the extent that all members of a community are effective in acting on this drive, there will be a tendency for conceptual convergence, including in the use of language (330).

The desire for linguistic tuning, presumably, is a major factor in linguistic prescription, both explicit and implicit. Reciprocally, adherence to linguistic prescription, even when motivated by other personal reasons, presumably contributes to the tuning process. One seeks to communicate with the (fuzzy or specific) group with which one identifies, and thus looks to tune representations accordingly. At the same time, one wants simply to fit in and be accepted by one's (fuzzy or specific) group, and thus follows explicit and implicit linguistic prescriptions for non-semantic reasons, which continues a circular momentum of group semantic tuning. Through a combination of desire for communication and group identity, it seems reasonable to expect semantic tuning to progress reliably within a given linguistic community until there is external reason for it to digress off course, such as the influence of a (fuzzily or determinately) distinct group.

Linguistic tuning in this sense does not require an abstract mind-independent entity for two people to tune towards. Unlike like tuning a guitar with a tuner that tells the musician if the note is a perfect G, linguistic tuning is like two musicians tuning their guitars to the other guitar. In semantics there is no analog of a perfect G or A minor or what have you. If two people's semantic

representations tune as two guitars tune *to each other*, independently of concern for specific perfect notes, communication between these people will become possible.

I fully grant that some primitive concepts themselves must be identical for any concepts to be similar. This is entirely consistent with the notion of reference frames being more or less similar in respect to how many primitive concepts and combinations thereof the frames share.

Kinds and Communication: a Modest Metaphysics of Public Language

Still, admittedly, I have avoided what some may see as the heart of the metaphysical issue: what can it *even mean*, in a biopsychological, semantically internalist theory of natural language, to say that two linguistic expressions and/or their semantic contents are "shared"? To the die-hard metaphysician, my answer may be disappointing. For those simply concerned with the foundation of scientific linguistics and/or the everyday understanding of communication, however, I think it should be entirely acceptable.

What is required for the possibility of communication is the possibility of two people's linguistic representations and their contents *being of the same kind*. Regarding the conceptualization of kinds, Jackendoff writes:

> Consider the possibility of a cognitive structure that has descriptive features… but lacks an indexical and a valuation. I suggest that this is just the structure we need for kinds or types… what a kind really lacks is the possibility of pointing to it: one can only point to instances of it. Omitting the indexical feature from the concept would have exactly this effect (319).

A kind itself, on this account, is not a thing independent of its instances. It is merely a commonality consisting within the instances themselves. With this understanding of the conceptualization of kinds, we can quite consistently say that two people share the representation of a linguistic term or its content (or hopefully both) without saying that there is some entity independent of either person's representations which is the kind itself.

As Jackendoff writes:

> In the present approach… [a kind term such as] 'Professor' simply has a sense without a reference. The sense of a phrase is built up compositionally, and if the composition happens to provide an indexical feature, then we get a referring phrase (322).

Kinds terms, in Jackendoff's analysis of internalist semantics, do not directly refer. Instead, their meaning simply determines their instances. Applying this system to semantic representations *themselves* allows us to completely deflate (an aspect of) the apparent metaphysical paradox of communication. By

Jackendoff's explanation of kinds, we can understand the semantic representations of two people as the same kind simply in so far as we may make the same descriptions of them. Communication is possible in so far as people could possibly have semantic representations of the same kind in a given context.

Two representations, in fact, may simply be *similar* to the extent that *some* descriptions apply to both of them. Thus, *partial* communication is also possible. Two representations are similar to a degree determined by the number of descriptions that apply to them, drawn from a contextually relevant description set. One can never *know* for certain that two people's representations are identical *simpliciter*, since previously unconsidered descriptions of them are always possible. As an ideal, however, descriptively identical representations are a non-contradictory notion.[7]

Though I do not endorse this interpretation, it is arguable that this analysis commits one to an ontology of properties, say, one property per description. *However*, it certainly does *not* commit one to an ontology of specifically semantic natural kinds. There is no necessary reason that laws must range over semantic kinds, as opposed merely to neural kinds. There is also, though, no reason they must not. Whether a rigorous science of semantic communication is possible is an empirical question.

The Inter-subjectivity of Science

It may be objected that my representations and those of another, say, "Sarah" may only be identical or similar *as (meta-)represented by me and Sarah*, but, if the act of communication under consideration is an act of communication *between me and Sarah*, then nothing more can be required. This is generalizable to whoever is involved in whatever communicative exchange.

I have thus far responded to the pragmatic Fregean problem, admittedly, much more directly than the logical Fregean problem. I admit the perspective presented here is not necessarily one consistent with the notion of perfect scientific objectivity. I offer only the partial dissolution to the logical Fregean problem by noting that, in so far as the pragmatic Fregean problem is solved, the *practice* of science remains perfectly coherent, if not a certain metaphysically robust *philosophy* of science. Perhaps a stronger solution to the logical Fregean problem remains possible.

Concluding Remarks on the Manifest Image

As noted, we do not *seem* to be drawing analogical inferences every time we communicate. Nor are we applying Jackendoff's explicit analysis of semantic representations, rejecting kinds as unique entities. Communication is *manifested* to us *as if* it involved direct, unmediated access to something independent of our biopsychological representations. Once the analogical

foundation that logically grounds communication is brought to light, and once Jackendoff's semantic system is considered explicitly and then accepted, however, naturalistic explanation of the complex workings of what *appears* to us in this simple form can be understood as the actual foundation of human communication.

Internalist semantics, in fact, offers a framework to respond to a Moorean objection to the biopsychological philosophy of language that may be underlying the objections I have addressed. This Moorean objection, again, runs, roughly: "but we *know* there are commonsense public languages!" The response to this objection is as follows.

Knowledge claims, presumably, presuppose reference to known objects. In this case, English, French, etc. are the known objects in question. But where reference is understood internally, presumably then knowledge must be understood internally as well. So to say we *know* that commonsense public languages exist does not contradict the thesis that language is biopsychological.

From the perspective of the scientific image, the manifest image of commonsense public languages can be understood as resulting from the idealization away from largely shared particular semantic reference frames. When this idealization is in place, we can speak *as if* commonsense public languages simply exist. This is perfectly consistent with recognizing that, when we move back to the perspective of the purely scientific image, this idealization is removed and the only languages that exist are in the minds of particular individuals.

This also addresses the objection that commonsense public languages "supervene" on collections of biopsychological idiolects in a way that somehow gives rise to unique logical properties. For it is not that the commonsense public languages are an ontological *addition* to the world of biopsychological idiolects, rather, they are arising from the cognitive *subtraction* of consideration of unshared characteristics. This makes commonsense public languages things perfectly sensible to talk about, without the need to accord them any fundamental ontological status.

This understanding of the manifest image of public languages also makes sense of the notion of nonstandard dialects. Since what counts as a public language depends on how individuals mentally represent the characteristics of sets of idiolects, those sets of idiolects mentally represented in relation to *cultural identity* can be individuated in ways culturally arbitrary sets of idiolects cannot. It is my hope for future research that this understanding may be used to address the basis and ethical consequences of dialect discrimination in societies.

NOTES

1. "Non-standard Negro English."

2. Indeed, these problems were brought to light, not just in science, but also in a court of law. Labov himself testified in a trial in which a school board in Ann Arbor, Michigan was required to submit to the trial judge within thirty days "a plan defining the exact steps to be taken to help the teachers to identify children speaking Black English, and… to use that knowledge in teaching such students how to read Standard English" ("Linguistic Science," 193).

3. The linguistic community is "fuzzy" in the logical sense that it does not have clearly defined borders. There will always be some people for whom there is no fact of the matter as to whether they do or do not count as part of a given linguistic community.

4. Standard White English

5. Likewise, if nothing approximating a shared language played an explanatory role, with context doing it all, I could communicate as seamlessly with (what one now calls) a monolingual Urdu speaker as I do with an English speaker, given the same shared context.

6. Looking back on his argument from analogy in his 1959 book, *My Philosophical Development*, Russell writes:

> [U]ndoubtedly, it is through experiences of my own that I am led to believe in the minds of others; and, undoubtedly, as a matter of pure logic, it would be possible for me to have these experiences even if other minds did not exist. Part of our reason for believing in other minds is derived from analogy, but part is derived from another source which has a wider application.
>
> Suppose you compare two copies of the same book and find that they agree word for word, you cannot resist the conclusion that they have a common cause, and you can trace this common cause backward through compositors and publishers to the author. You do not find it credible that the author's body went through the motions of writing the book without his having any thoughts meanwhile. Such grounds for admitting other minds are not demonstrative in the logical sense. You might have experiences in a dream which would be equally convincing while you still slept, but which you would regard as misleading when you woke. Such facts warrant a certain degree of doubtfulness, but usually only a very small degree. In the immense majority of cases, they justify you in accepting testimony if there is no evidence to the contrary (195).

While Russell granted that the analogical argument was not deductively air tight, we continued to believe it offers reason to believe in a conclusion, *when there is no evidence to the contrary*. Since, in the case of semantic representations, we have no positive reason to think the ideas of others should be different from our own when their behaviour is as ours would be, we may assume as an inference to the best explanation that they are.

7. Assuming the spatiotemporal properties of the representations to be semantically irrelevant.

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EXPLORING COMPLEXITY THROUGH LITERATURE: REFRAMING FOUCAULT'S RESEARCH PROJECT WITH HINDSIGHT

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ABSTRACT. This article constitutes an extended review essay of Michael Foucault's *Language, Madness and Desire: On Literature*, Philippe Artières, Jean-François Bert, Mathieu Potte-Bonneville, and Judith Revel (eds.), Robert Bononno (tr.), University of Minnesota Press, 2015, 158 pp. A shorter version of this article was published as a book review in *Notre Dame Philosophical Review*, March 2016, Unique Identification Number 2016.03.28. In performing this review the article seeks to illuminate Foucault's core ontological and epistemological themes that developed in these early commentaries on literature and that were to inform the philosophical orientation of his social science investigations, including madness, psychiatry, medicine, the prison, sexuality and the care of the self. The article suggests that Foucault's early works on literature establish a thesis of philosophical materialism which articulates many of the themes of post-quantum complexity science as they affected the social and physical sciences in the late twentieth and twenty-first centuries.

Keywords: Foucault; literature; Sade; philosophical materialism; post-quantum complexity science

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Language, Madness and Desire: On Literature, originally published in French as *La grande étrangère: À propos de literature* in 2013, comprising Foucault's comments on literature, constitutes a welcome if late addition to the Foucault archive of accessible books. It presents Foucault's views on literature presented in different contexts and formats over the period 1960–1971. It is based

upon typed transcripts of oral presentations given by Foucault in the form of radio broadcasts and lectures. The editors have rendered these presentations as literal as possible correcting errors and punctuation for the purposes improving readability, but being careful to comply with Foucault's original intentions. The book also includes a valuable assemblage of notes and biographic information about the editors. The first section, "Language and Madness," comprises two radio broadcasts presented by Foucault in 1963. They were originally part of a series of five talks for a program titled as "The Use of Speech," broadcast by RTF France III, produced by Jean Doat, a television and theatre actor and writer. The five broadcasts, titled "Celebratory Madness," were initially presented on a weekly basis. The last two, titled "The Silence of the Mad" and "Mad Language" are reproduced in this book "because of the mirror structure they employ and their focus on literature" (p. 6). The other three focus more directly on madness, or at least the language of the mad, and were left out on this basis. The second section, titled "Literature and Language" reproduces a lecture Foucault presented to the Facultés universitaires Saint-Louis in Brussels by the same title. Here Foucault re-examines the major themes that appeared in his writing on literature from the early 1960s, referring to writers such as Bataille, Blanchot, Sade, Cervantes, Joyce, Jakobson, and others. It is here that Foucault locates the historical emergence of literature in its modern form in the period from the end of the eighteenth to the early nineteenth century. Foucault's interest here is in the way that language is encoded within the literary form of discourse and what function literature plays in relation to discourse in general. In this lecture, Foucault's early concern with archaeological investigations concerned as they were with identifying literatures core discursive features becomes apparent as he asks the question, firstly, "What Is Literature?" and secondly, "What Is the Language of Literature?" His excursus proceeds from Gutenberg's invention of printing to the emergence of the book, where, finally, "literature finds and founds its being" (p. 64):

> Although the book existed, and with a very dense reality, for several centuries prior to the invention of literature, it was not, in fact, the site of literature: it was merely a material opportunity for transmitting language….But in fact if literature fulfils its being in the book, it doesn't placidly welcome the essence of the book (besides, the book, in reality, has no essence, has no essence other than what it contains); that is why literature will always be the simulacrum of the book. It behaves as though it were the book, it pretends to be a series of books (p. 64).

What distinguishes literature is its transgressive language, "a mortal, repetitive, redoubled language, the language of the book itself" (p. 65). In literature, says Foucault, it is the book that speaks. The third section, titled "Lectures

on Sade" comprises two lectures given in 1970 at the State University of New York at Buffalo which illustrates and adds depth to Foucault's views on literature and which also signal many of the themes that were to emerge in his later book length studies. The first lecture was on Flaubert's *Bouvard and Pécuchet*, the second on Sade's *La Nouvelle Justine*, which, as the editors note, Foucault says was written "entirely with an eye to the truth" (p. 95). Foucault's interest in Sade had developed before and after *The History of Madness*. Sade, as the editors note, represented "countermodernity" as that author concerned with "politics and truth," as "the transgressor subject to defamatory judgments and censorship," who "condemned the justice of the ancient regime" (p. 95). In addition, in the fifty-three page manuscript, as the editors continue, for Foucault, Sade represented a "'sergeant of sex,' the promoter of a disciplinary eroticism accompanying the implementation of an instrumental rationality" (p. 96). What is important about this book, and these lectures and radio broadcasts, is the indication they present at an early stage of Foucault's scholarly career, of the way his analysis of literature informs and is informed by the central themes to emerge later on in his major works.

As the editors point out in their excellent and very detailed introduction, it was in his unrestricted reading in the library of the École Normale Supérieure that Foucault "deconstructed an order of discourse" through his close reading of literature. They elicit the support of Daniel Defert in his chronology in *Dits et écrits*, to flesh out the detail of Foucault's engagement. We are told that Foucault "read Saint-John Perse in 1950, Kafka in 1951, Bataille and Blanchot in 1953, followed by the progress of the *nouveau roman* (including the work of Alain Robbe-Grillet), discovered Raymond Roussel in the summer of 1957, the authors associated with Tel Quel (Philippe Sollers, Claude Ollier) in 1963, reread Becket in January 1968" (p. viii, summary). During his travels to Uppsala and Warsaw in the 1950s, Foucault both read literature and taught courses, from his favorite poet at the time, René Char, and from Sade to Genet.

The relationship with literature, which this book explores, constitutes a magnificent testimony, claim the editors, to understanding the way Foucault's philosophical mind-set developed, as simultaneously "critical, complex and strategic." They point out how many of these literary gestures, insights and motifs are incorporated within Foucault's great works thus rendering "fiction and poetry as touchstones of the philosophical act" (p. x). While this is by no means original or untypical amongst French philosophers (witness Bachelard, Sartre, Merleau-Ponty), Foucault, they argue, utilizes such literatures (narratives, epics, poetry, comedies, etc.) to demonstrate and inform his archaeological conception of discourse in relation to "both the order of the world and its representations at a given moment" (p. x) in order to reveal "just how much our way of organizing discourse about the world owe[s] to a series of

historically determined divisions" (p. x). Literature, they point out, in Foucault's hands, becomes "strategic" (p. xi). On the one hand it furthers the archaeological project in order to enquire into the distinctiveness of the literary discourse, and position it in the field of discourses. But, more than that, Foucault seeks to assess the form and function of a literary discourse to reveal the "concerted incertitude of morphology" in the sense of "a rigorous and uncontrollable polyvalence of forms" (Foucault, 1999, p. 27). This ontological thesis of radical linguistic or discursive indeterminacy by which any one translation can always be replaced by another, and which establishes the autonomy of discourse from the real is a thesis shaped by Foucault's early readings of literature. On its own, of course, as Foucault (1963) made clear in his book on Raymond Roussel,[1] literature has no specificity or strategic centrality. The thesis of the literary then turns out to be the thesis of discourse as autonomous, strategic, and constitutive which as the editors say "escapes the dynasty of representation … which, depending on the situation, can be: inaudible, scandalous, unclassifiable, untranslatable, undecidable, fragmentary, aleatory, inconstant, vertiginous" (p. xii). Finally, literature functions as strategy in that it opposes established and settled meanings "destroying the economy of narrative, which involves the construction of a battlefield against the hegemony of meaning" (p. xii). Literature, thus constitutes, "the establishment of another mode of being of discourse" (p. xii).

The editors note that by the end of the 1960s this "strange relationship to literature seemed to dissipate" (p. xii). They accept here the conventional understanding of Foucault's oeuvre as passing between distinct modalities each characterized by a different onto-epistemic figure or grounding. The early period is characterized by the priority of the discursive over non discursive practices. The order of discourse constitutes an historical determined order through which actions and relationships and practices are organized. I doubt myself whether Foucault ever really jettisoned this heuristic although he did seek to reassert the priority of the extra-discursive material practices, or rather he endeavored perhaps to reassert the centrality of non-discursive practices whilst not abandoning the thesis as to the autonomy of the discursive, albeit, an autonomy that was contingently and variously enabled and restricted. Both of these orders – the discursive and the non-discursive – would be needed in order for Foucault to articulate a new model of determination about the world. This displacement of literature is a matter of record, however. As the editors put it: "the gradual abandonment of the field of literature as a 'duplication' of Foucault's own research can be attributed to the desire to extend his enquiry to broader themes – this time presented in terms of power and resistance" (pp. xii–xiii).

This displacement of an obvious concern with the literary at the end of the 1960s and a greater concern with power and resistance, and by extension,

the political, which eventually leads to "the transition to a collective dimension" where it becomes apparent that "the muffled roar of battle is anything but a *literary* metaphor" (p. xiii). Finally, they note that at the end of the 1960s, Foucault also abandoned the figure of the "outside," and committed himself to a model of difference inside history, i.e., an "internal history," giving rise to the question "of how we might, from within a certain epistemic and historical configuration, from within the 'network of the real' deployed by a certain economy of discourse and practice at a given moment – in short, from within the grammar of the world as historically determined – unearth and reverse connections, shift lines, move points, hallow out meaning, and reinvent equilibria" (p. xiv). It is this problem they state, "very clearly revealed in his work on literature, that will continue to haunt Foucault: the possible overcoming of historical determination of what we are must be conceived not in terms of a contradiction, but in terms of compossibility" (p. xiv). The extent to which we can from within history "free ourselves of those determinations [that constitute us] and paradoxically establish a space [always internal] of a different speech or a way of life" (p. xiv).

It is this last suggestion that what was central to Foucault's philosophical project as a whole, including the possible overcoming of determination in terms of compossible futures that suggest to me that Foucault's engagement with literature saw the preparatory development and fine-tuning of what is central to his oeuvre as a whole. If so, there is an important sense in which Foucault's early engagement with literature continues to haunt even given its visible presence appears displaced by the end of the sixties. Not just parallels between the literary and madness as signifying phenomena whose infinitely flexible sign systems create spaces for secret, marginalized and chaotic discourses, but literature itself attests to the creative power of language to both traverse and transcend the social field. A space of compossibility for divergent or heterogeneous things; the accidental nature of chance occurrences, or "branchings;" these core insights that inhabit the discursive in Foucault, and were developed later in more philosophical terms by Deleuze in his books on Leibniz, Hume, Spinoza, and Bergson, can be clearly seen here in these early lectures and talks on Foucault's engagement with the literary.[2] In his radio talk, "Mad Language" of 1963, Foucault's constructivist ontology of language is already clear. "Words, their arbitrary encounter, their confusion, all their protoplasmic transformations are sufficient in themselves to bring into being a world that is both true and fantastic" (p. 28).

The importance of language is highlighted here in these lectures. He has said in his interview with Claude Bonnefoy that "language is what we use to construct an absolutely infinite number of sentences and utterances" (Foucault, 2011, pp. 65–6). Moreover, says Foucault, "the body itself…is like a language node" (p. 26). In "Mad Language," Foucault invokes Freud, who understood

well that "our mind was a wit" (p. 26), "a kind of master craftsman of metaphors" which "[takes] advantage of all resources, all the richness, all the poverty of our language" (p. 26). Reason therefore can be infinitely transcended for speaking is a form of freedom which allows for madness, and madness is that medium which "permits the unrestricted seepage of language outside itself" (p. xii). In this sense, literature represents both a "crystallization" and "transgression" of language.

In "Why Did Sade Write?" the first part of Foucault's lectures given at the University of Buffalo in March 1970, Foucault "uses" Sade to analyze amongst other things, the role and function of writing. I will focus on this here because of the role it plays in enunciating Foucault's developing onto-epistemic orientation that resists and escapes previous models of determination and which influences his project overall. For Foucault, writing constitutes a material force that "enables us to push the reality principle as far from the borders of the imagination as possible" (p. 108). The first function of writing, therefore, is to abolish the barrier between reality and imagination" (p. 108). Therefore, says Foucault,

> writing is the principle of repeated enjoyment, writing is what delights or enables us to repeat…writing will serve to erase the limitation of time, it will enable the limits of exhaustion, fatigue, old age, and death to be wiped away. Through writing everything will be able to begin again perpetually, indefinitely, fatigue, exhaustion, death will never appear in this world of writing….The second function of writing, therefore, is to erase the limitations of time and free repetition for itself… it is precisely in this world of writing that temporal limits vanish (p. 109).

Here is a new relational holism which is not the classical Hegelian holism of old, but one where subject and object, ideal and actual, discourse and real, are prized apart in a conception of discourse and extra-discourse, where difference is retained within a historical variable and contingent model of unity which now only occurs at the limits of the material; i.e., at the limits necessary for life to sustain itself. Within unity, difference proliferates. Although Foucault does not utilize the concept, "holism," as such, he does invoke Sade's concept of "system." As such this relational holism is articulated with reference to a concept of "system" and a principle of interconnectivity. Writing plays a central role alongside a similar importance for language and speech. For one role of writing "…is not simply to introduce indefinite repetition … it is also to exceed" (p. 109). Foucault's predilection for a correct onto-epistemic orientation causes him to classify himself in *Speech Begins after Death* as a "diagnostician" (2011, p. 45). In this, he claims to follow Nietzsche for whom "philosophy was above all else a diagnosis … for the disease of culture" (2011, p. 46). Foucault "uses" Sade to elucidate these points. But

his interest was no more in the author than it was in mental illness. As he argued in "What Is an Author?" the author is a "function" of discourse, a conception which by the end of the decade would witness the author's demise and "death." Foucault's own article on the author was originally couched in the context of Roland Barthes essay "La mort de l'auteur," written in 1967. Barthes asked:

> Who is speaking thus? Is it the hero of the story…? Is it the individual Balzac…? Is it Balzac the author…? Is it universal wisdom? Romantic psychology? We shall never know, for the good reason that writing [écriture] is the destruction of every voice, of every origin. Writing is that neutral, that composite, that oblique space where our subject slips away, the [photographic] negative where every identity is lost, starting with the identity of the very body which writes (Barthes, 142).

Foucault's answer was that "the author's name serves to characterize a certain mode of being of discourse…. The author's name manifests the appearance of a certain discursive set and indicates the status of the discourse within a society and a culture" (p. 211). In this, the author is a subordinate figure: "the author does not precede the works; he is a certain functional principle by which, in our culture, one limits, excludes, and chooses; in short, by which one impedes the free circulation, the free manipulation, the free composition, decomposition, and recomposition of fiction" (Foucault, p. 221). In every day parlance, says Foucault, we represent the author as a "genius," an "inventor;" but this is the opposite of what he really is. In this sense, the author as we know him/her is "an ideological product, since we represent him as the opposite of his historically real function" (pp. 221–222). In reality, "the author is … the ideological figure by which one marks the manner in which we fear the proliferation of meaning" (p. 222). "Perhaps," says Foucault, "it is time to study discourse not in terms of their expressive value or formal transformations but according to their modes of existence. The modes of circulation, valorization, attribution, and appropriation of discourses vary with each culture and are modified within each" (p. 220).

The discourse of literature is both transgressive and singular. Through literature, Foucault establishes a new onto-epistemic orientation to space and time as real resulting in perpetual novelty and creativity. With literary figures like Sade, Roussel or Artaud, Foucault argues that their mode of literature emerges from "deep within them," from their "uniqueness, their particularity, their symptom, their anxiety, and finally their illness" (p. 58).

So, writing constitutes a technology of repetition and multiplication, as that which "exacerbates," "augments," and "multiplies without end" (p. 110). It pushes thought and imagination ever outwards: "every time we write we prepare to exceed new limits. Writing exposes and is witness to the opening

up of infinite space before it in which images, pleasures, and excess are multiplied without limit" (p. 110).

It not only opens up space; it constitutes agency and freedom: "It expresses the unlimitedness of pleasure with respect to reality, the unlimitedness of repetition with respect to time, is at the same time the unlimitedness of the image itself; it is the unlimitedness of the limit itself because all limits, one by one, are exceeded. No image is stabilized once and for all…" (p. 110).

So, paradoxically, the "author function" of writing individuates as socially and historically constituted individuals and discourses become differentiated within the culture structured as an open series of possibilities within a network of constraints. Writing, for Foucault, is that material activity which spatializes, individuates and alters, thus is a mechanism for creativity, novelty and uniqueness. It opens up "an infinite space before it in which images, pleasures and excess are multiplied without limit" (p. 110). Finally, says Foucault, anticipating a complexity science which was still embryonic at the time, writing renders reversibility impossible. Through writing, the subject "can no longer turn back." Writing, like action in general, establishes the agent as absolutely unique. As the post-quantum theorist might say, action within curved space/time differentiates the agent from their social and historical origins of their constitution. While Foucault came, at the end of the 1960s and after, to apply these insights with reference to the social sciences, in this book they are extracted from his analyses of literature and especially from his essay on Sade. It is Sade, we are told, who eliminates limits and introduces irregularity in an uncertain world. It is Sade who "erases the limits between the licit and the illicit, the permitted and the not permitted, of the moral and the immoral" (p. 112). It is through Sade that "writing introduces desire into the space of the indefinitely possible and always unlimited possible" (p. 112). It is Sadean discourse that "unique individuality" is conceptualized. Writing establishes "the illimitability of desire and expression." Sadean literature establishes its materiality through signs that can be read, corrected and revised indefinitely, says Foucault. Finally, Sade defines four elements (God, Nature, Soul, Law) which form a "network" or what Sade terms a "system" (p. 139) where the elements are "infinitely recombinable," adaptable "like crystals," to construct discourse "absolutely specific to a situation or an individual" (p. 139), a process Sade refers to as "the irregularity of individuals" (p. 140): "Every individual is irregular and his own irregularity is manifested, is symbolized, in his system" (p. 140).

The consequential novelty and uniqueness mean that Sade's characters "cannot be substituted for one another, cannot replace one another, and remain isolated from one another" (p. 140). It is this revised onto-epistemology that overcomes all past determinations that Foucault will project outward in his social science studies, of madness, of medicine, of psychiatry, of sexuality,

of epistemology and of discipline. The great contribution of this little book is that, through Sade, Foucault makes clear a revolutionary reconfiguration of the prevailing order of chance and constraint, or at least in the way it needs to be addressed. He even compares Sade's logic to that of Russell and Descartes. Constituted within history, individuals – now – no longer are the straightforward echoes or reflections of their cultural group or class. As Sade teaches us, systems of "infinitely recombinable" elements can generate "perpetual novelty:" "This consists in distinguishing … individuals who cannot be reduced to one another, individuals who are characterized by their system, because the systems differ from individual to individual" (p. 139).

Like Leibniz's monads, in each system, the whole is refracted differently, like prisms, ensuring, as Foucault writes: "that Sade's libertines cannot be substituted for one another, cannot replace one another, and remain isolated from one another" (p. 140).

Finally, Foucault ponders as always the issue of madness and its meaning. Although not in this book, he told Claude Bonnefoy at the end of the 1960s: "What astonishes me, what I keep wondering about, is how it is that a work like this which comes from an individual that a society has classified – and consequently excluded as ill, can function, and function in a way that's absolutely positive within a culture….It is this positive function of the negative that has never ceased to interest me" (Foucault, 2011: 58–59).

Foucault's *Folie et Déraison: Histoire de la folie à l'âge classique* had occupied his research in the years prior to these lectures and radio broadcasts, and Sade's madness is broached indirectly and a possible meaning of madness alluded to when Sade rejects all authority – God, Nature, Law, Soul – and has no reason to deny death.

> Isn't this the greatest offence against nature – to give up, to accept death? For nature has created us, but no sooner have we been created that it abandons us, leaving us with nothing more than the need to survive, the only trace, in a way of the gesture it made in creating us. From that moment on, when we renounce the need to survive and turn the need to survive into the need to die, we turn against nature, we scorn nature, we commit against ourselves the greatest crime imaginable, and at that moment, it is obvious that it is also the greatest pleasure (p. 142).

Is this what madness is, then? Is madness the abandonment of a commitment to life? A derailment from what seems immanent to life? Is this what is being expressed in this lecture on Sade? I wish I had read these little gems years ago. It is as though they, belatedly, that is, here and now, answer a nagging question and fill in a piece of the puzzle regarding the Foucault I have been searching for all these years. Here, in literature of all things, written in the early part of Foucault career, Foucault finds an ontology of physics and

the world that he could not find easily in the theory of physics or chemistry or the philosophy of science at the time he was writing. It is "mad" Sade that blazes forth full of insight to explain how things are, and how the world works. It is odd that these small radio talks, and a couple of lectures, one in Brussels and one in New York, fill so many gaps and articulate so much of his oeuvre, and that they have also waited so long to be released in the readily accessible form of the book, making us "work out" the coherence of his program before having these little "summaries" to guide us, as it were, after the event.

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NOTES

1. Published in English as *Death and the Labyrinth* (1986).

2. An affinity can be noted in relation to historical determination and compossibility between this position of Foucault as noted by the editors, and Deleuze's notes in *Cinema II*, drawing on Jorge Luis Borges, that as Leibniz postulated, contradictions that can co-exist and that "several mutually incompatible worlds do in fact exist" (p. xiv).

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UNAMUNO'S MIRROR-GAMES: ON THE SEEMING OMNIPOTENCE AND MEANINGFULNESS OF WRITING IN THE GRAMMATICAL VOID

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ABSTRACT. Miguel de Unamuno wanted the readers of some of his novels and plays to seriously doubt whether they are fictitious characters, for such a doubt should lead them to fervently crave for immortality. In this article, I argue that, even though the doubt raised by Unamuno is unintelligible from a grammatical standpoint, it may at least be vaguely imagined, which is just what he needs in order to maintain a vicious circle generating faith that allows us to understand the purpose of his work and, by extension, to try to fill the reader's life with meaning.

Keywords: Unamuno; meaning; immortality; Wittgenstein; certainty; knowledge

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1. Introduction

Imagine as vividly as possible that you suddenly become blind and that, once you have comforted yourself with other sense impressions, you go deaf. Imagine that you subsequently lose not only your senses of touch, smell and taste, but also the very feeling of your members, so that you remain as an inert thing that cannot even opt for suicide. You still might take refuge in your thoughts and memories, but imagine that they gradually fade until you preserve nothing more than the mere awareness of existing. But imagine that you also end up losing such awareness. Then you are not even entirely alone, for you are already nothing, to the extent that you are not even aware of your

nothingness. This fear of ceasing to exist beats in every line of the Spanish philosopher, playwright, poet and novelist Miguel de Unamuno (1994), who considered it impossible to live quietly while truly taking for granted that one's own consciousness will disappear: in his opinion, thinking about the extinction of consciousness provokes a vertigo that cannot be cured by reason. Thus, it is not biological or physical death but the dissolution of consciousness which terrifies Unamuno (1954), for he was convinced that the value and meaning of everything depends on consciousness: indeed, consciousness constitutes the guarantee to be and exist both for the universe and for the individual. On the one hand, the world exists inasmuch as it is reflected and known by consciousness, which also gives it a purpose. On the other hand, Unamuno emphasizes, following Senancour, the impossibility of conceiving ourselves as not existing. Although he is not able to imagine how nothingness − understood as the extinction of consciousness − would be like, he was gripped by the idea that his consciousness, and by extension his identity or feeling of being himself, may dissolve forever.

This terror of death was motivated to a large extent by the deep mark that the deaths of some relatives, especially that of his six-year-old son in 1902, left on him. Yet terror of the dissolution of consciousness was also largely due to the fact that Unamuno associated the consciousness of being oneself with the effort to survive and go on being, that is, the effort of constantly trying to flee from being nothing. His work was addressed to readers sensitized to the possibility of losing their consciousness, but it was also intended to alert the passive individual who is indifferent to such idea. For Unamuno assumed that, once his reader had fallen prey to terror of extinction, he would aim at being all, as that is the only means to escape from being nothing. However, the objective should not consist in ending up being all, but in aiming or wishing it without ever succeeding: if someone ended up being all, he would no longer be himself because his individuality would have mixed with all and it could not be distinguished as an unique and nontransferable one. Starting from the intuition that this aim of being all should never be fulfilled, Unamuno will focus his work on the clash or embrace between reason, which denies the possibility of maintaining consciousness after death, and the wish that we become immortal and do not lose our consciousness even after having died. In his opinion, the certainty that death entails the dissolution of personal consciousness would make our lives impossible as much as the complete conviction that personal consciousness persists after death, as both would plunge us into the deepest quietism. Yet he thinks that each of us has doubts about both alternatives. Far from trying to remove this uncertainty, Unamuno wants to fan the flames of such doubt because he locates in the very basis of human life not an unconditional faith free from all doubt, but a faith which arises from doubt and uncertainty. The sense of

life no longer lies in achieving a definitive goal − because establishing oneself in perfection would entail sinking into nothingness − but in continuously fighting uncertainty in order to maintain one's own consciousness. In this way, faith arisen from uncertainty becomes a source of hope that fills man's entire life, so that Unamuno strongly suggests that each individual should ardently crave for immortality.

Unamuno's work, especially his novels, grows against this background. Indeed, he finds the novel to be an excellent resource for illustrating the idea that every authentic individual lives in that permanent tension − between the opposite extremes of faith and reason, desire and reality − which generates the tragic sense of life. Precisely because there are people indifferent to this tragedy, Unamuno aims to shake them and raise their awareness of it. To this effect, the plots of his novels are unclear and leave too many loose ends. In fact, the narrative is generated as each character's anguishes and desires are expressed. Unamuno's pen stops neither to paint different shades and nuances of the landscapes nor to draw specific personality traits, but serves as an instrument to facilitate that the novelist's inner conflicts pour out. Thus, dialogues and situations often arise in which characters do not really seem to be interacting with each other: rather, these characters are hardly described or developed because each one of them is a means to express, depending on the moment, a given craving, doubt or regret. In order to express thirst for immortality, Unamuno often resorts to fictional characters who, despite evidence, struggle desperately to assert their existence by trying to develop a soul. This resource allows him to show the ontological fragility of the human being; but in addition to this, the fictional character serves Unamuno as a means to illustrate that an individual is really free only when he ends up doubting whether he is something more than a shadow or fiction. It is not in vain that Unamuno often presents his characters as his own dreams or creations, while he usually considers himself as a dream of God. This creates, as Ferrater (1985) pointed out, a hierarchy of dream comparable to the hierarchy of being; therefore, man appears midway between the extremes of God and the novel's characters. Unamuno disrupts this initial hierarchy by presenting God as each man's dream or by showing how characters make their author doubt his own existence. Furthermore, this hierarchy is continually challenged by Unamuno because of his total refusal to make a clear choice in favor of a given conclusion and to the detriment of the contrary one: from his standpoint, truth does not lie halfway between two extremes, but is reached by continually being torn between both contradictory extremes. As a result, Unamuno elaborates complicated mirror-games that distort reality by confusing it with fiction. A clear example is the way in which the author argues with his characters and finally seems to doubt who is real and who is fictional: this happens in *Niebla* (*Mist*), a novel written in 1907 and pub-

lished in 1914 (Unamuno, 1996). Another mirror-game, which is closely linked to the previous one, leads a famous fictional character to become aware of his nature: this is the axis around which *El Hermano Juan* (*Brother John*) revolves, a theatrical play written in 1929, published in 1934 and premiered in 1954 (Unamuno, 1992). In this article I intend to analyze the mirror-games developed in both works in order to reveal Unamuno's purposes and tricks, but above all, to clarify to which extent it is coherent to expect that the reader doubts whether he is a fictional character so that, once trapped in such doubt, he ardently wishes to become immortal. To carry out this analysis I will base myself on the work of a philosopher who, in principle, has absolutely nothing to do with Unamuno: I am referring to Ludwig Wittgenstein's *On Certainty* (1997), for it emphasizes a categorial distinction between knowledge and certainty which is not only very easy to understand, but also particularly useful to achieve the mentioned objectives. That said, I turn to a brief exposition of this distinction not by explaining complex philosophical arguments, but by giving simple examples on Unamuno's life.

2. Wittgenstein's Categorial Distinction between Knowledge and Certainty

To begin with, Unamuno, like any one of us, could communicate verbally with many people − e.g. by giving lectures at the University of Salamanca, talking to his wife Conchita, or greeting his neighbors − because they shared a number of linguistic practices. Similarly, the use of language he made in any of his works is comprehensible to his readers as he complied with the grammar or set of rules of all those linguistic practices they shared. Many of these practices or uses of language contain the possibility of making knowledge-statements necessarily linked to doubt. Thus, Unamuno might say at a given moment that he knew his wife had just entered their house because, even though he had still not seen her, he had recognized the sounds of her footsteps; nevertheless, it is possible that he were wrong. For Wittgenstein knowledge is necessarily grounded, so that it is always linked to the possibility of doubt and mistake. Conversely, there are many things we are certain of: this is not due to a mental state of conviction, but to the fact that our grammar allows no doubt on this regard. As an example, however much Unamuno attempted to call into question basic certainties, he never stopped being sure or certain that his name was Miguel, that he had a body, and that '2+2=4' even without becoming aware of such ungrounded certainties. They are not thoughts or ideas we have, but spontaneous attitudes which are shown in whatever we say and do. Indeed, these attitudes are so basic that doubts or mistakes about them are incomprehensible, as there is no place in our ordinary use of language for such doubts or mistakes. At some point, Unamuno might

make a slip of the tongue when saying that his name was not Miguel but a different one; yet as Ariso (2015) pointed out, recognizing that it was a mere slip shows that such an isolated anomalous use cannot affect his certainty regarding his own name. Moreover, Unamuno was certain of the meaning of the words he used when speaking or writing in Spanish, although he might have made a mistake when elucidating the meaning of a given word in a language of which he had an inadequate command: that could happen, for example, when transcribing one of the many quotations in multiple languages that appear in his works.

The set of all certainties makes up a world-picture which is not adopted at will, but it is acquired from early childhood by absorbing certainties as we take part in a large number of linguistic practices, that is, as we fully interact with people and our environment. When two or more people share the same world-picture or similar ones, they may convince each other by providing grounds on a given issue. To take a case in point, Unamuno rejects the arguments supporting the immortality of the soul: for, in his view, it cannot be proved that the soul is a simple substance other than the physical body, which disintegrates with death. Even if we are not convinced by Unamuno's ground, we can understand it. Yet when two people do not share the same world-picture, or rather they have world-pictures which differ in crucial aspects, they cannot convince each other regarding some of the issues on which they disagree: at most, one might persuade the other by offering his own world-picture. If in 1914 Unamuno had not been notified of his dismissal as president of the University of Salamanca, but instead had been told that he had not held that position from 1901 because he had been living since then submerged in a fantasy world, he might end up assimilating such a thing. However, this would consist not in accepting a simple ground, but in replacing a large number of certainties with others. Hence, his world-picture would change drastically.

3. Unamuno's Mirror-Games in *Niebla* and *Hermano Juan*

After having set out this brief reference to Wittgenstein's *On Certainty*, I will now describe and analyze the main mirror-games developed by Unamuno in *Niebla* and *Hermano Juan*. Beginning with *Niebla*, I will focus on chapter XXXI, in which Augusto, the novel's protagonist, visits Unamuno, the novelist, to ask him whether he should commit suicide after having been abandoned by his fiancée. To clarify my exposition, I am going to make a distinction between Unamuno as novelist – hereafter Unamuno_n − and as character – henceforth Unamuno_c. This distinction does not appear explicitly in the novel because Unamuno limits himself to narrating his conversation with Augusto in the first person singular, as if he had really taken place in

such a discussion: in fact, this is a very useful resource to dissimulate the mirror-game set forth as follows. At the beginning of the conversation, Unamuno_c claims to know as much about Augusto's life as Augusto himself: to prove this statement, Unamuno_c comments some intimate aspects, especially Augusto's intention to commit suicide. Yet from the very moment in which Unamuno_c begins to talk with Augusto, they necessarily already share a linguistic practice, so that Augusto acquires all the rights conferred by such practice, e.g. requesting a justification of his interlocutor's knowledge-statements. Thus, when Unamuno_c tells Augusto that he exists only as a fictional character or as a product of his author's fantasy, Augusto advocates caution because maybe Unamuno_c is wrong and perhaps what happens is just the opposite of what he thinks. At this point Unamuno_c admits he feels scared, as Augusto has a life of its own. In making reference to this fear, Unamuno_n intends to illustrate the turning point at which Augusto seems to cease being a character totally submitted to the will of his creator and become, as Gillet (1956) remarked, an autonomous and independent character. But in my opinion, this is simply an epistemological aspect. Let us make an aside to shed light on this issue.

Paradoxical as it may appear, no one can say that he knows what he has in mind, for it would be ridiculous to state: "I know I am thinking about my next book," "I know I am remembering what you told me yesterday," etc. Since in this case there is no epistemic distance to use the verb "to know," Augusto cannot know what he has in mind at a given moment. It may be argued that Augusto could know what he had in mind if Unamuno_c told him, but this testimony would not even be enough to justify such knowledge-statement. By way of example, Unamuno_c might say that, at a particular time, Augusto was thinking about his beloved Rosario. If this were true, Unamuno_c's testimony would not add anything new to Augusto's certainty that he was thinking of Rosario. Yet if Augusto denied that he was thinking about Rosario, we should conclude that only one of them could be right: either Augusto is lying or Unamuno_c is wrong. Nevertheless, it seems absurd that Unamuno_c might be wrong in this respect, for he is not explicitly differentiated from Unamuno_n in the narration. In this sense, we must bear in mind that if Unamuno_n had been a historian or a biographer who narrated the ups and downs of a real character basing himself on documentary evidence −such as diaries, letters, oral testimonies, etc.−, such proofs would serve as grounds allowing us to state that Unamuno_n knew what that real character had in mind at a particular moment in time. In the present case, however, it is out of place to say that Unamuno_n knows what Augusto has in mind: precisely because it is just Unamuno_n who *dictates* Augusto's mental contents, he cannot open an epistemic gap between himself and his character. This epistemic gap would only exist if it were possible for Unamuno_n to ignore

what Augusto had in mind, in which case he could *discover* it through some telling evidence; but it can only be concluded that Augusto has something in mind taking as a reference the narration and his creator's will.

That said, I am going to disclose the mirror-game that underlies *Niebla*. At the beginning of the conversation with Augusto, Unamuno_c maintains his identification with Unamuno_n by playing the role of omniscient novelist who cannot have doubts about any issue relating to the novel, as it is he himself who dictates what happens there. However, Unamuno_c's certainty − that his interlocutor is a fictional character – is interpreted by Augusto as a knowledge-statement which, as such, must be justified with compelling grounds. In principle, it could be expected that Unamuno_c did not allow Augusto to call this certainty into question. Yet Unamuno_n decides that Unamuno_c feels frightened and begins to harbor strong doubts about the mentioned certainty because he regards it now as a knowledge-statement. Exactly then an epistemic gap is opened between Unamuno_n and Unamuno_c: while the first goes on being entirely certain of his role as omniscient novelist, the second starts to entertain serious doubts about such role. Whereas, in principle, there was no distinction between both of them − so they necessarily shared certainties, aims and will −, Unamuno_c does not even know what Unamuno_n has in mind any more: therefore, the plot development becomes an enigma for him. Nonetheless, this is only a one-way dissociation, because due to their character-author relationship, Unamuno_c does not constitute any enigma for Unamuno_n. Along with this dissociation, a complete epistemic gap is opened between Unamuno_c and Augusto. As a result of this, Augusto is a character whose mental contents, reactions and even fate no longer depend on Unamuno_c's will, but only on Unamuno_n's. Just as there is an epistemic gap between any of us and our fellow beings, thereby requiring grounds to utter knowledge-statements on them, there is also an epistemic gap between Augusto and Unamuno_c that makes them peers. Nevertheless, Augusto becomes a peer not from an ontological standpoint but from an epistemological point of view, as the only peculiarity of Augusto is his ability to make statements which, by Unamuno_n's will, lead Unamuno_c to doubt.

Chapter XXXI of *Niebla* turns progressively into a desperate struggle between Unamuno_c and Augusto: the former intends strenuously to maintain the unlimited power afforded by his author status, whilst the latter tries to defend at all costs his alleged autonomy. Unamuno_c dogmatically affirms certainties which Augusto regards as knowledge-statements to be justified. Hence, when Unamuno_c denies that Augusto has an inner logic or his own way of being, Augusto firmly rejects such dogmatism and vehemently demands a ground to demonstrate his being wrong. Moreover, Augusto requires Unamuno_c to prove – with convincing grounds – that he is the fictional character instead of Unamuno_c himself. Since such grounds cannot

be provided, Unamuno_c cannot convince Augusto that he is a fictional character: faced with this impossibility, he simply repeats that Augusto exists only in his fantasy. After all, no ground is surer than Augusto's certainty of being a man of flesh and blood. If a novelist told any of us even our most intimate secrets, we could admit that he had guessed or discovered such intimacies in some way. Yet if someone took this testimony as a basis to conclude that he is a fictional character, it would be out of place to say that he had been convinced of it: he would have simply been persuaded. Stated otherwise, he would have ended up assimilating a world-picture other than his own, but not because the grounds provided when trying to persuade were surer than the assertion of the certainty they were intended to justify, i.e. that he himself is a fictitious character. The mere fact that someone confesses that several grounds have convinced him of being a fictional character does not confer any legitimacy to such grounds: for, from a grammatical standpoint, these grounds will only be valid if they are surer than what they are aimed to justify. But due to the epistemological split I have described, the development of the novel acquires an ontological nature when Unamuno_n decides that Unamuno_c and Augusto become aware, not without regret, of being fictitious characters. Whilst Augusto admits his lack of substantiality because of being a literary character, Unamuno_c realizes he is a fictional character dependent on Unamuno_n. Yet even though Unamuno_n's role is that of a creator God, he is marked as a fictitious character too: for Augusto, unaware of the dissociation between Unamuno_n and Unamuno_c, finally claims that his interlocutor will also die because he is a fictional character who will no longer be dreamt by God. Unamuno_n skillfully suggests that he himself has also become aware of being a fictitious character. Right at the end of the novel he is visited in dreams by the late Augusto, with whom he talks for a while: of course, it is Unamuno_c, once again, who dialogues with Augusto. But as soon as the conversation is finished, Unamuno_c disappears and Unamuno_n presents himself in the narration waking up deeply distressed because he dreamt of dying. In this way, Unamuno_n adds a new mirror to his plot by appearing as a real man of flesh and bone who, anyway, is aware of being a fictional character dreamt by God.

The idea of the fictitious character aware of his nature will be developed by Unamuno some years later in his play *Hermano Juan* (*Brother John*). As Perojo (2013) points out, Unamuno identifies Brother John – or simply John – with the current theatrical image of Don Juan in Spain, that is, José Zorrilla's *Don Juan*. Yet Unamuno eliminates the title "Don" because his character Juan will no longer be the great seducer, but the seducer seduced, a puppet in women's hands. Now he is the brother inoffensive for women and, at the same time, a close brother with whom Unamuno intends to identify the reader. In the prologue to *Hermano Juan*, Unamuno explains that when he

thought about the staging of his novel *Niebla*, he realized it is absurd that a flesh and blood actor plays a character who claims to be real while the man who represents him as well as the very author are fictitious characters. At that time he concluded the most appropriate solution would be that a historical character like Don Juan proclaims from his perspective, on the stage, that he knows what he represents, i.e. he plays a character who is constantly − if I may say so again − representing himself. To put it another way, Don Juan seeks immortality through his lovers, who remember, love and dream of him. Unlike his acting partners, Unamuno's Juan is aware of being a fictional character, so that the theatre is, from his point of view, the world itself. Juan is sure that both he and his acting partners exist in the theatre in which they represent their parts, but he encourages them to question whether they exist beyond the theatre and whether Unamuno himself exists. Just because of his awareness of being a fictional character, he cannot endure the insubstantiality of his being, which leads him to show his hunger for immortality by vehemently stepping on the stage floor while shouting that he wants to live in that world. Although this would require that someone remembers, loves or dreams of him, the distressing awareness of his own nature − together with the acting partners' passivity and low attractiveness − facilitates that readers tend to identify themselves with Juan and end up adopting his problem. Yet as Torrente (1986) remarked, the mise-en-scène of this play leaves a serious problem. For even though theatre allows performers to express the difference and even the conflict between face and mask, that is, between what one is and what one appears to be, it does not permit them to manifest with these same means the identity between what one is and what one represents.

4. Analysis of Unamuno's Proposal

After this brief presentation of *Hermano Juan*, I can now begin to analyze the coherence of Unamuno's proposal to question whether we are fictional characters, so that this doubt finally leads us to fervently crave for immortality. To this end, I will focus on two basic issues: on the one hand, the novelist's alleged omnipotence in *Niebla*, and on the other, the seeming meaningfulness of the protagonist's discourse in *Hermano Juan*. Let us start with *Niebla*. In chapter XXV, Unamuno already said he was the God of his characters: after all, it seems obvious that his role of novelist enabled him to do as he pleased with the fate of his characters. Nevertheless, the novelist's alleged omnipotence has some grammatical limits against which Unamuno collides without possibility of success. As seen above, chapter XXXI of *Niebla* shows a growing tension between Unamuno_c's attempt to persuade and Augusto's demand of grounds. This tension will only disappear if one of

the contenders gives in: either Augusto admits that he is a fictional character, or Unamuno_c recognizes that he cannot provide grounds to justify his statement and, therefore, he stops claiming that Augusto is a fictitious character. Back home, under the burden of the death sentence imposed by Unamuno_c, Augusto is persuaded that he really is a fictional character, an empty shell. Nonetheless, Augusto also tried to persuade Unamuno_c of being a fictitious character, thereby generating a new tension or uncertainty that remains unresolved. This tension does not disappear because Unamuno_n, and by extension the reader himself, is aware that Unamuno_c is another fictional character. Thus, Unamuno_n plays with the ambiguity that Unamuno_c is a character who, in a sense, does not stop being Unamuno_n, over whom the dark shadow of being a fictitious character then hangs too.

Obviously, the novelist may appear in the plot to warn one of the characters not only that he directs his fate at his whim, but also that he is a mere fictitious character. This is one of the many things that the author may allow himself in his novel. Yet as much as the novelist himself would strive to prove to the protagonist that he is a fictional character, our grammar does not contain grounds to demonstrate such a thing. It is true that Unamuno_c gives some grounds when he proves to know Augusto's most intimate secrets, but these grounds are not surer than Augusto's certainty of being a person. Of course, Unamuno_n may relate that Augusto began to rebel until he was persuaded of being a fictitious character a bit later: these are all decisions of the novelist. But persuasion, understood in Wittgenstein's sense as the assimilation of a world-picture offered by another person, depends neither on the persuader's will nor on the persuadee's (Ariso, forthcoming). If the persuader could decide if his attempt to persuade is successful, it is expected that no attempt would end in failure. Regarding the persuadee, he can show at most a willingness or favorable mental state towards the conversion; however, as the attainment of a certainty is totally independent from any mental state, it must be concluded that someone is persuaded not because he wants it so, but because it is something that *happens* to him. Hence, Unamuno_n's decision that Augusto becomes persuaded of being a fictional character might have been narrated as a mere fact that happens spontaneously without anyone deciding. Yet this conversion or persuasion is decided by Unamuno_n to prevent Augusto from killing Unamuno_c. Furthermore, Augusto attains the certainty of being a fictional character almost immediately, in a too easy way, as if it were simple to adopt suddenly a new world-picture. In short, as Unamuno_n cannot convince Augusto in any way, he decides that Augusto becomes persuaded as if by magic because Unamuno_c is not able to withstand the doubts generated by Augusto. Regarding his readers, Unamuno_n can also at most try to persuade them of being fictional characters, as there

are no grounds surer than the reader's certainty of being a flesh-and-blood person.

What I have just commented on the novelist's alleged omnipotence in *Niebla* is very closely related to the aspect I will now address: I am referring to the seeming meaningfulness of Juan's certainty of being a fictional character. When Juan asks his acting partners in a very excited state whether they also exist beyond that theatre in which each of them plays his role, they try to follow the conversation but fail to understand him. In fact, Elvira begs him not to keep on talking about this issue because she is becoming dizzy. Just as it had happened in the discrepancy between Unamuno_c and Augusto, Juan and his acting partners have different certainties and, by extension, distinct world-pictures: that is why it is so difficult for them to understand each other. In *Niebla*, Unamuno_c's fear and disorientation are due to the crack he feels in his world-picture. In *Hermano Juan*, the protagonist causes Elvira's dizziness when suggesting her that all of them are fictional characters. But, contrary to what might, in principle, be assumed, Juan is not offering Elvira a different world-picture: for Juan speaks from a grammatical vacuum, from chaos. According to the main diagnostic manuals of mental disorders, the fixed belief that one experiences his feelings, impulses, thoughts or actions not as one's own, but as being entirely directed by another person or external force, constitutes a delusion, i.e. the delusion of being controlled, which is characteristic of various forms of schizophrenia (see American Psychiatric Association, 2013; World Health Organization, 2004). It should not be forgotten that the mere fact of calling into doubt a certainty so basic as our being human persons instead of empty shells, regardless of whether grounds are adduced to justify such doubt, constitutes a clear example of radical skepticism. But Wittgenstein made clear that this position is senseless, as calling a certainty into doubt – above all, if it is a certainty so fundamental as the one mentioned above − entails to undermine the whole world-picture or background against which doubt makes sense because such world-picture is not more certain than a certainty within it. A doubt makes sense only if it is manifested against a shared world-picture which allows us to be sure about, among other things, the meaning of the words we use and that, moreover, makes it possible to distinguish between true and false. Yet despite appearances to the contrary, we cannot understand Juan. Even though his sentences are uttered in proper and refined Spanish, they are alien to our world-picture because they revolve around Juan's certainty of being a fictional character. Due to the grammatical gap opened up between Juan and us, we cannot even know what can be expected from Juan, e.g. what he would count as evidence and what not, and by extension, what he would allow to be counted as true and false. Proof of this can be seen in the fact that Juan's reactions and comments are entirely unforeseeable – which allows Unamuno to appear as a

God who directs his characters' fate completely at will −, to the extent that if Juan claimed someone had died or was still alive, we would not even know what kind of death or life he was referring to.

5. Conclusion

In view of the above, it can in principle be concluded that Unamuno's proposal is incoherent. By analyzing the novelist's alleged omnipotence in *Niebla*, we have seen that no one − not even a fictitious character − can be convinced of being a fictional character, so that the only option is to persuade him. Nonetheless, the analysis of *Hermano Juan* has shown that such attempt to persuade could not be carried out because there would not be any different world-picture to assimilate, but mere chaos or a grammatical vacuum. We may intuit or try to imagine how it would be like to be a fictional character, but we cannot give ourselves an idea of all the implications that this would have for our life, just as we could not communicate with anyone who were really certain of being a fictitious or even dreamt character. We may intuit in which such a thing would consist, but without fully understanding it: this idea could, at most, be represented on a novel or a stage, and yet in a problematic way. At this point it can be objected whether we can wish something that, far from being able to be clearly explained or understood, could at most be vaguely intuited. Obviously, the answer to this question is affirmative, as the practitioners of some religions do not only wish but also firmly believe in eternal life even though they are hardly able to explain how such a life would be like or even what it would look like. Yet instead of fostering a firm and unconditional faith which leads to view askance any remark opposed to the certainty in which such faith is based, Unamuno proposes a faith fed by uncertainty, i.e. the constant conflict between wish and reason, without such conflict ever being definitively solved, so that the desire and pain which constantly sting consciousness never cease. Since Unamuno's proposal is so diffuse, the desire to achieve it must be so strong that such desire contributes to give form to the object of faith. This creative aspect of faith is reflected in Unamuno's remark on the episode in which Don Quixote meets a group of traders whom he obliges to confess that there is no maiden fairer in all the world than the peerless Dulcinea − a woman hardly conspicuous for her beauty − although they had never seen her. When the traders half-joking request a portrait of the lady before making the confession, Don Quixote replies: "If I were to show her to you, what merit would you have in confessing a truth so manifest? The essential point is that without seeing her you must believe, confess, affirm, swear, and defend it" (Cervantes, p. 26). As Unamuno (1987) says, Don Quixote wanted those men, who had eyes only for the material realm of wealth, to confess there is

a spiritual kingdom in order to redeem them despite themselves. That is just what Unamuno wants to do with his readers: to redeem them despite themselves.

Yet bearing in mind that reason will lead the reader to disbelieve the possibility of reaching immortality, it is essential to induce a burning desire and need to become immortal in order to maintain the conflict, so that life is supplied with a particularly tragic sense. From my point of view, what Unamuno needs to keep that tragic conflict alive is not an object of faith which can be unveiled as easily as Dulcinea's face by contemplating a portrait, but just an ambiguous and incoherent object of faith of which it can be intuited, at most, some hopeful feature without it being possible to unveil it fully. Thus, I think that, paradoxically enough, Unamuno's proposal can be understood as a vicious circle generating faith, for which it is preferable that the object of faith is ambiguous and even senseless. Even though it can hardly be intuited in which this object consists, Unamuno intends this vague intuition to be supported by such a strong faith that hope emerges by fighting against reason. The ultimate aim is not, therefore, to rely on reason to end up unveiling a certainty or object of faith which provides peace and security, quite the opposite: the final goal is to throw the reader into doubt in order to force him to fight desperately to keep his faith alive and, thus, filling his entire life with meaning. That is why Unamuno urged to think not only with the brain, as I have tried to do in this paper, but also with the whole body and with all the soul, with the blood, with the bones, with the heart, with the lungs, with the bowels and with life itself, i.e. just as he wanted to be read.

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INDETERMINACY OF TRANSLATION AND INNATE CONCEPTS: A CRITICAL REVIEW

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ABSTRACT. It is widely considered in cognitive science that Quine's Indeterminacy of Translation argument has been overcome by empirical evidence that indicates children have innate constraints on the way they learn concepts. This paper will review experimental evidence that purports to show that the indeterminacy of translation has been overcome using the tools of modern cognitive science. It will be shown that the attempts to demonstrate that innate concepts exist while compelling are not demonstrative while we have compelling evidence that pre-linguistic concepts exists the evidence is less clear in the case of innate concepts. By reviewing this experimental literature it will be shown that while it does offer compelling evidence that Quine is incorrect on his theory of how children learn their first language the evidence does not have much significance for Quine's Indeterminacy of translation argument. By close textual analysis of Quine's argument it will be shown that innate constraints on learning cannot be used as a way of overcoming the Indeterminacy of Translation argument unless there was a further argument that proves that these purported innate constraints cannot be modified as we learn more about reality. It will be shown that no convincing argument exists which demonstrates that our concepts cannot be modified as we interact with our environment and social group. Hence it will be concluded that the Indeterminacy of Translation argument remains untouched by contemporary cognitive science.

Keywords: indeterminacy of translation; concept; underdetermination; innateness; pre-linguistic; cognitive science

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Introduction

Throughout their careers, both Chomsky and Quine have dealt with Underdetermination (henceforth UD) in different ways. Whenever Chomsky encounters UD he seeks to overcome it by postulating innate constraints; in contrast, Quine treats UD as a fact of life which simply has to be lived with. In this paper I will discuss the Indeterminacy of Translation (henceforth IDT). Chomsky argues that the IDT amounts to nothing more than UD. He argues that the UD in physics is overcome by our innate science-forming faculty, and that UD in language raises no more difficulties than UD in physics. In the case of language, the IDT is overcome by innate constraints imposed by the rules of our language faculty.

Chomsky's interpretation of the IDT has been accepted by the vast majority of contemporary cognitive scientists and they have proceeded to flesh out his proposal that the IDT can be overcome by innate constraints. However, when cognitive scientists are concerned with the IDT, they are typically interested in only one area of it, the inscrutability of reference. They typically argue that the inscrutability of reference is a form of UD in concept acquisition and that this UD can be overcome by postulating innate concepts which we use to learn our first words. In this paper I will consider the attempt by contemporary cognitive scientists to overcome the inscrutability of reference by postulating innate concepts. Furthermore, I will analyze what effect the supposed overcoming of the inscrutability of reference by postulating innate concepts has on the indeterminacy of translation argument.

I will review three key experiments which purport to overcome the problems raised by Quine and will show that while these important experiments are not a proof that Quine is wrong about the process of a child learning their first language they are very suggestive that Quine is on the wrong track. However as I will show in the paper even if Quine is wrong about manner in which a child learns his first words and concepts, this fact is of little significance. Quine's indeterminacy of translation is concerned with adults with a fully functioning conceptual scheme, so a child having innate constraints on the interpretations they give to experience is little evidence that adult users whose concepts develop over a life time in a culture will be subject to the same constraints; unless of course it can be shown that human concepts do not develop over time. Given that there is no evidence that human concepts do not change over time, and no evidence that the way such concepts change is determined a priori, then we have no reason to assume that innate constraints will overcome the indeterminacy of translation.

Over the last fifty years it has become more and more common for people in the cognitive sciences to discuss the IDT as though it were a problem which has been overcome by discoveries in psychology. However this research

typically ignores the fact that even if innate constraints do overcome the UD facing the child as they learn their first language such constraints will have little effect on the IDT as Quine conceived it. It is important that Quine's arguments for the IDT are explored in their full complexity instead being merely a tool used for cognitive scientists to argue for innate concepts. Cognitive scientists have long ignored the actual complexity of the IDT and this paper redresses this balance by showing where Quine's views have been undermined by empirical research and the areas where Quine's argument remain as strong as ever.

1. Indeterminacy of Translation and Underdetermination

Most contemporary cognitive scientists follow Chomsky in arguing that the IDT amounts to nothing more than UD and that this UD can be solved by postulating innate concepts. In particular they are interested in problems of inscrutability of reference and argue that the fact that children do not fall foul of the inscrutability of reference can be explained by the fact that children are born with innate concepts.

In his book *The Language Instinct*, Stephen Pinker presents the inscrutability of reference as a form of UD:

> A rabbit scurries by, and a native shouts, 'Gavagai' What does gavagai mean? Logically speaking, it needn't be 'Rabbit.' It could refer to that particular rabbit (Flopsy, for example). It could mean any furry thing, any mammal, or any member of that species of rabbit (say, Oryctolagus), or any other member of that variety of that species (say, chinchilla rabbit). It could mean scurrying rabbit, scurrying thing, rabbit plus the ground it scurries upon, or scurrying in general. It could mean footprint-maker, or habitat for rabbit fleas. It could mean the top half of a rabbit, or rabbit meat on the hoof, or possessor of at least one rabbit's foot. It could mean anything that is either a rabbit or a Buick. It could mean collection of undetached rabbit parts, or 'Lo Rabbit hood again, or 'It rabbiteth,' analogous to 'it raineth.' The problem is the same when the child is the linguist and the parents are the natives...Figuring out which word to attach to which concept is the Gavagai problem, and if infants start out with concepts corresponding to the kind of meanings that languages use, the problem is partly solved. (1994: 156)

Pinker then goes on to cite the research of the psychologist Ellen Markman (1989) to show that it is indeed the case that children are born with concepts which constrain the types of meanings that words can be given. It is Pinker's view that Quine's problem is a problem of UD which is solved by the fact

that the concepts that children are born with will place innate constraints on the type of meanings that children can attach to words.

The child psychologist Paul Bloom draws a similar conclusion to Pinker:

> These problems of reference and generalization are solved so easily by children and adults that it takes philosophers like Quine and Goodman to even notice that they exist. If we see someone point to a rabbit and say 'gavagai,' it is entirely natural to assume that this is an act of naming and that the word refers to the rabbit and should be extended to other rabbits. It would be mad to think that the word refers to undetached rabbit parts or rabbits plus the Eiffel Tower. But the naturalness of the rabbit hypothesis and the madness of the alternatives is not a logical necessity; it is instead the result of how the human mind works. (2000: 5)[1]

The Harvard linguist Cedric Boeckx echoes the claims of the above thinkers:

> Yet, if you think about it, the Gavagai situation is the one we all faced as children trying to acquire the meaning of words. How did we guess that elephant refers to that big grey animal with a long trunk? Because someone pointed to the animal and said elephant? But how did you know what exactly was being pointed at? Surely the finger couldn't point at the whole elephant; it was your cognitive bias that interpreted the act of pointing in that way. (2010: 41)

So the above quotes clearly indicate that, within the realm of cognitive science, it is common-place to follow Chomsky and view the inscrutability of reference as a problem of UD, and indeed as a problem which can be solved by postulating innate concepts. Pinker, Bloom and Boeckx are speaking only of the inscrutability of reference as it affects the child learning his first words. Chomsky goes further: he is arguing that the IDT is a form of UD which can be overcome by postulating innate concepts. He does not explicitly demonstrate how the IDT is overcome by innate concepts; rather, he merely points out that the situation in physics raises the same problems as the IDT problem. In the case of physics the problem is overcome by a science forming faculty, whereas in the case of the IDT the problem is overcome by our language faculty. His reasoning is that is that our innate concepts will ensure that when we are acquiring our first language, we will not think that a word like "gavagai" refers to undetached rabbit part, etc. Rather, we will discover that the word merely labels our innately known concept of "rabbit." The fact that our innate concepts will determine that our words have fixed meanings means that the IDT is incorrect in claiming that there are no facts about translation.

It could be argued that by postulating such innate concepts, these thinkers are merely begging the question against Quine by assuming the very determinacy of meaning which he is arguing against. However, Pinker et al. argue that they are not merely postulating innate concepts in order to overcome indeterminacy. Rather, they claim that there is independent evidence which supports their belief in innate concepts, and this evidence offers reasons to believe that UD will not be something that affects a young child who is learning his first language.

2. Indeterminacy of Translation and Experimental Research

2.1. Evidence for Innate Concepts of Body and Mind

Empirical research in psychology indicates that children as young as four months already display conceptual knowledge. Jean Piaget's experimental research led him to believe that young children at the age of five months do not have an adequate knowledge of objects and that they have to pass through a variety of developmental stages before they will acquire the full concept of an object. Piaget noted that children playing with a ball will not search for it if it runs out of their field of vision. He drew the conclusion that they do not have knowledge of object permanence at this age. As early as the seventies, psychologists such as Bower were questioning Piaget's view by claiming that these babies do not search for the missing objects because of a problem of coordinating their movement. And since the seventies, it has been commonplace to try to test children's concept of an object by using experiments that do not require coordinated sequences of actions. Bower's studies have made surprising discoveries. Here I am citing from Baillargeon, Spelke, and Wasserman (1985):

> Bower's studies have yielded four findings that seem to have provided evidence for object permanence in infants well below 9 months. First, 7-week-old infants were found to discriminate between disappearances that signalled the continued existence of an object (e.g. Gradual Occlusion), and disappearances that did not (e.g. gradual dissolution or sudden implosion). Second, 2-month-old infants were found to anticipate the reappearance of an object that stopped behind the screen, 'looking to that half of the movement path the object would have reached had it not stopped.' Third, five month old infants were found to show disruptions in their tracking when an object was altered while passing behind the screen: they tended to look back at the screen, as though in search of the original object. Finally, 5-month-old infants were found to reach for an object that had been hidden by darkening the room. (1985: 195)

However, Bower's experiments are not conclusive evidence that children are born with concepts of object permanence. Piaget himself claimed in a personal correspondence with Bower that he could interpret some of these experiments in a way which was consistent with his own theory (ibid., 97). Because of the inconclusiveness of the debate between Bower and Piaget, Baillargeon et al. set up more rigorous tests to show that humans are born with concepts of object permanence. Quine, like Piaget, also argued that Bower's experiments did not necessarily show that a 4-month-old child has a concept of an object:

> True, an infant is observed to expect a steadily moving object to reappear after it passes behind a screen; but all this happens within the specious present, and reflects rather the expectation of continuity of a present feature than the reification of an intermittently absent object. (1969: 24)

Here Quine is interpreting Bower's famous experiment to mean not that the young child has a concept of an object, but as indicating that the young child expects continuity in his experiences. Baillargeon et al.'s experiment aimed to test this view of Quine and Piaget's.

They began by testing whether children have what they called The Solidity Principle, which was the principle that a solid object cannot pass through another solid object. An experiment was set up where an object was presented to the child and then occluded. Then another object was rolled towards the occluded object. If the child exhibited surprise that the object moved through the space which seemed to be occupied by first the object, then this would exhibit two things: first, that the child had grasped the Solidity Principle; second, that the child understood object permanence, because he knew the objects still existed when occluded. Baillargeon et al. performed this experiment on four month old children. When completed the experiment showed that four-month-old infants do seem to reason according to the principle of solidity, and the principle of object permanence.

Quine explained Bower's experimental results by saying that the child expected the object to return out the other side of the screen because of an expectation of continuity. The child saw the object-shaped thing move towards and behind a screen. So he expected this object-shaped thing to continue moving in the same direction as it started from; hence, the surprise when it did not move out the other side of the screen. For Quine this in no way indicates that our child has a sophisticated concept of an object. However, expectation of continuity does not explain what is going on in Baillargeon et al.'s experiment. The child is exhibiting two beliefs: first, the belief that object-shaped things do not disappear when occluded; second, that object-shaped things are solid, and hence cannot be moved through. Hence the

surprise the child exhibits when the object appears on the other side of the screen as though it had passed through the original object. Obviously, expectation of continuity does not explain what is going on in Baillargeon et al.'s experiment. So, to account for both Bower and Baillargeon's experimental results, Quine needs to postulate at a minimum that 4-month-old children expect object-shaped things not to disappear when occluded, to move in undeviating paths unless stopped by another object-shaped blob, and to have solidity. A child with knowledge of this sort seems to be clearly demonstrating a complex concept of an object, and a theory which, contrary to what Quine believes, precedes the learning of the syntax of quantification by about 2 years.

Quine argues that "Gavagai" considered as an observation sentence has a clear stimulus meaning and can be correlated with non-verbal stimulation. The same situation occurs when the child says "Mama;" this is an observation sentence which has a clear stimulus meaning. According to Quine, the word is correlated with a scattered portion of what is going on in the child's environment when he speaks. For Quine, the difficulty arises when we try to break down observation sentences into terms and predicates etc. When we tried to break down "Gavagai," the observation sentence, into "gavagai," the term, our problems begin. Our breaking down the observation sentence involves us using analytical hypotheses which go far beyond the empirical data. Quine notes that no behavioral evidence can decide whether "gavagai" refers to "undetached rabbit part," "particular instance of universal rabbithood," "rabbit fusion" etc. If we want to translate the words of the native we must unjustifiably impose our ontology onto the natives. The situation of the child is similar, though there are some notable differences. When the linguist is trying to translate terms like "gavagai" he ends up imposing his own ontology onto the native; however, according to Quine, the child has no ontology. So when the child tries to move from using "Mama" as an observation sentence to "mama" as a term he will have little to go on. The child cannot impose his own ontology because he supposedly has none. As the child begins to gradually learn the apparatus of quantification and syntax, through induction, reinforcement etc., then he will gradually acquire the language of his peers. However, if Baillargeon et al.'s experiment is correct, then when children are learning to speak, their innate concept of object will determine that the UD facing the child learning his first language will be massively reduced.

There is also experimental evidence of children having theories of mind, as well as the theory of objects which Baillargeon et al. discovered. These empirical discoveries indicate that prior to learning their first language, the child has an ontology consisting of objects, agents, and causality etc. which will partly determine how the child interprets the speech of the adults they engage with. So it is typically assumed that the child's innate concepts of

objects and agency will massively limit the UD facing the child as he learns his first language. However, while suggestive, this supposed evidence for innate concepts is derived from the study of pre-linguistic children so it does not directly deal with issues of the reference of words. In the next section I will discuss an experiment which was done on children who are in the early stages of learning their language. The experiment was designed to test whether Quine's claim that children only develop an ontology after they have mastered the syntax of quantification is true.

2.2. Ontology and Language Learning: An Experimental Test

The experimental research that I outlined above purported to demonstrate that children have innate concepts of object and agency. If the evidence is taken at face value, it implies that these innate concepts will ensure that the UD facing the child learning his first words will be decreased. However, this argument runs contrary to Quine's claim that we are only justified in attributing an ontology to children after they have mastered the syntax of quantification. In this section, I will consider an experiment constructed by Soja, Carey, and Spelke which aims to test Quine's claim.

In their 1990 paper "Ontological Categories Guide Young Children's Inductions of Word Meaning," Soja, Carey, and Spelke tested whether the ontological distinction between objects and non-solid substances conditions the projection of word meanings prior to the child's mastery of count/mass syntax. Quine denied that children make any ontological commitments prior to learning the syntax of quantification which helps them master the count/mass noun distinction. Here Quine is making an empirical claim that prior to grasping the count/mass distinction, an agent like Mother, a property like Red, and a non-solid substance like Water are on a par. According to Quine, it is only when a child has mastered the apparatus of divided reference through grasping the syntax of quantification that the child can distinguish these substances. Soja et al. set out to test these empirical claims of Quine's. Before outlining their experiment I will outline Quine's views on language acquisition.

Quine's Position

Quine claims that when young children mouth words such as "Mama," "Water," or "Red," we are in no position to state that they are using the words as terms which refer to the same things which we refer to by the sounds.

> For though we may fully satisfy ourselves that the child has learned the trick of using the utterances 'mama' and 'water' strictly in the appropriate presences, or as a means of inducing the appropriate

> presences, we still have no right to construe these utterances in the child's mouth as terms, at first, for things or substances. (1969: 7)

According to Quine, from our own mature perspective, we have come to view the child's mother as a body which revisits the child from time to time, and water as a scattered object. However, from a behavioral perspective, we have little justification for imputing this ontology onto the child. After making this negative point about our lack of justification for imputing our mature ontology onto the child, he then goes on to make a positive point about the nature of the child's ontology.

> But the mother, red, and water are for the infant all of a type: each is just a history of sporadic encounter, a scattered portion of what goes on. His first learning of the three words is uniformly a matter of learning how much what goes on about him counts as the mother, or as red, or as water. It is not for the child to say in the first case 'Hello mama again,' in the second case 'Hello another red thing' and in the third place 'Hello more water.' They are all on a par: Hello more mama, more red, and more water. (ibid., 7)

Here Quine is clearly claiming that young children who use words, such as "Mama," "Red" and "Water" are not distinguishing them in terms of being respectively Objects, Properties, and Non-solid substances. His reason for arguing so is that we have no positive behavioral evidence to support the claim that children make such distinctions, and in the absence of such positive evidence, there is little reason to impute such a rich ontology to young children. Quine's claim is that we should only attribute to children the ability to distinguish between Objects, Substances and Properties when we have behavioral evidence which supports us making this distinction.

> Progressively, however, the child is seen to evolve a pattern of verbal behavior that finally comes to copy ours too closely for there to be any sense in questioning the general sameness of conceptual scheme. For perspective on our own objectifying apparatus we may consider what steps of development make the difference between 'mama'-babbling infant who cannot be said to be using terms for objects, and the older child who can. It is only when the child has got on to the full and proper use of individuative terms like 'apple' that he can properly be said to have taken to using terms, and speaking of objects. Words like 'apple' are not words like 'mama' or 'water' or 'red' are terms whose ontological involvement runs deep. To learn 'apple' it is not enough to have learned how much of what goes on around you counts as apple; we must learn how much counts as an apple, and how much as another. Such terms possess built in modes of individuation. (ibid., 8)

Now Quine acknowledges that the child may learn "apple" in the same way that he learns "mama" or "red" but he goes on to say that the child will never master "apple" in its individuative use until he gets on with the scheme of enduring physical objects. And in order to get on with the scheme of enduring physical objects, the child will need to master the apparatus of identity, difference etc. Quine claims that to be able to tell if the child has got the trick of individuation down, we need the following:

> How can we ever tell if the child has got the trick of individuation? Only by engaging him in sophisticated discourse of 'that apple,' 'not that apple,' 'an apple,' 'same apple,' 'these apples,' 'another apple.' It is only at this level that a palpable difference emerges between genuinely individuative use and the counterfeits lately imagined. (ibid., 9)

It is at this stage that Quine claims that we are justified in attributing an ontology to the child. Prior to that, attributing an ontology to the child is making an unsupported conjecture which is not justified by the facts. For Quine, our child learns the adjectives "same," "another," "an," "that," "not that" contextually. First the child gets used to various longer phrases which contain them, and he gradually develops appropriate habits in relation to the component words as common parts and residues of those longer forms. He further speculates that the contextual learning of all of these various different particles goes on simultaneously, so that we gradually adjust them to each other as a coherent pattern of usage is evolved (ibid., 10). So the story of child ontology as Quine tells it is that the child's words just represent scattered portions of what goes on and do not distinguish between Objects, Properties and Substances.

So Quine's picture of a child learning language and the ontology which is implicit in this language involves pared down assumptions according to which we attribute to the child no more than is necessary to explain his verbal behavior. Quine treats the babbling which a child begins to emit at the age of 12 months as a form of operant behavior which is omitted rather than elicited. He claims that the family of the child will reinforce the child's verbal behavior (such reinforcement made possible by the child's pre-linguistic quality space) in such a manner that the child's use of observation sentences such as "mama" will reliably distinguish between "mama" portions of the environment, and "non-mama" portions. However, at this stage we cannot credit the child with having an ontology; from the point of view of external verbal behavior we have no reason to attribute to the child a concept of "Mama" as a name of a spatio-temporal object, as opposed to being a name of a mere mass term like "Water." It is only when we engage the child in discourse and he can answer the questions using terms such as "not that mama,"

"same mama," "another mama" etc., that we are justified in attributing to the child a concept of "mama" as an object as opposed to scattered portion of mama environment etc.

Testing Quine's Claims

Soja et al. conducted their experiments to test Quine's claim (1960, 1969) that young children only develop an ontology after they have grasped the syntax of quantification. Contrary to Quine, they claimed that young children have a distinction between different ontological categories prior to grasping the syntax of quantification, and that in fact these ontological categories constrain the process of language learning. They distinguished their views from Quine's in the following way:

> According to Quine, then, when children hear a new word, the meaning they assign to it is determined by procedure 0:
> Procedure 0: Conclude that the word refers to aspects of the world that share salient properties of the perceptual experience when the word is used. (1991: 182)

Soja et al. proposed a different view of the procedures children use when they learn a new word; their procedure assumed that the child had ontological categories prior to learning the syntax of quantification.

> Procedure 1 Step 1: Test to see if the speaker could be talking about a solid object; if yes,
> Step 2: Conclude the word refers to individual whole objects of the same type as the referent.
> Procedure 2 Step 1: Test to see if the speaker could be talking about a non-solid substance; if yes,
> Step 2: Conclude the word refers to portions of substance of the same type as the referent. (ibid., 183)

Soja et al. proposed an experiment which would decide between these two different proposals about how children learn new words.

One way for Soja et al. to test whether Quine was correct, or whether they were correct, was to test how children generalized when they learned words for different objects. If children could generalize prior to a grasp of the count mass syntax this would be evidence that Quine was wrong. They ensured that the experiment was done on children who are below the age of 2 ½, the age at which children master the syntax of quantification. They tested how children generalize words to non-solid substances as well as to objects. If Quine is right that children generalize names by using Procedure

0, then children will generalize names based on shape whether the name originally refers to an object or a non-solid substance.

The Experiment

Twenty-four 2-year-olds from the Greater Boston area were recruited and randomly placed into two groups (informative syntax groups, and neutral syntax groups), with equal numbers of boys and girls in each group. Each testing session began with two familiar trials: one object trial and one substance trial. The stimuli in the familiar object trial were a blue plastic cup, a white Styrofoam cup and cup pieces. The stimuli in the familiar non-solid substance trial were peanut butter and Play-doh. These trials followed the same format as the unfamiliar trials described below. The two familiar trials were followed by eight unfamiliar trials: four object trials and four substance trials which were intermingled. The subjects were tested on each trial on two separate occasions. Eight novel words were used: "blicket," "stad," "mell," "Coodle," "doff," "tanninn," "fitch," and "tulver" (ibid., 187).

Test 1: An unfamiliar object trial in the neutral syntax condition

The test involved presenting the child with an unfamiliar object, e.g. a plumbing T-shaped pipe, and giving the child a name for the object, e.g. blicket. In the neutral syntax condition the child is told "This is my blicket." The experimenter then continued to talk about the object using "my," "the" and "this" as determiners. She and the subject then manipulated the object. The object was then placed to the side and two other sets of objects were then presented to the subject. One set consisted of objects of the same sort as the original but made of a different material, e.g. a plastic T shape; the other set consisted of objects of the same material but a different shape i.e. bits of metal. The experimenter then said "Point to the blicket."

Test 2: An unfamiliar substance trial in the neutral syntax condition

The child was shown an unfamiliar substance, and told "This is my stad." The experimenters referred to the substance using only the determiners "my" "the" and "this." The experimenter and the subject talked about the substance and played with it. In the presentation of test substances, the subject was shown two substances, the original and the new one, and told "Point to the stad." The original substance was in the alternative configuration, whereas the new substance was in the configuration used originally with the named substance. There were four pairs of substances: (1) Dippity-do (a setting gel), and lumpy Nivea (a hand cream mixed with gravel), (2) Coffee (freeze

dried) and Orzo (a rice shaped pasta), (3) Sawdust and leather (cut to tiny pieces), (4) Crazy foam and Clay. Of each pair one member was named and the other was used as the alternative to the original in the test presentation. Each member served in both roles across subjects.

Test 3: Object and substance trials in the informative syntax condition

This condition differed from the neutral syntax condition only in the determiners and quantifiers used when naming the original stimulus. The experimenter introduced an object trial in the informative syntax condition with "This is a blicket" and used "A blicket" and "Another blicket" in subsequent discussions. Substance trials in the informative syntax condition were introduced with "This is stad" and in subsequent discussion the experimenter continued to omit determiners or use "some" or "some more." This was the only difference between the different informative and uninformative trials. In the familiar word trial subjects differentiated the object and the substance trials as predicted.

Word Learning Trials

Subjects differentiated the two types of trials. Responses were consistent with shape and number on the object trials, and were not consistent with shape and number in the substance trials.

What the Test Shows

If before the child has grasped the syntax of quantification the child differentiates in the above manner, this shows that the child is not generalizing the word-based perceptual similarity, but is doing so based on the type of object he is presented with. So, for example, if he was generalizing according to an innate perceptual similarity quality space which focuses on shape then why does this not work for substances? The answer is because the child recognizes that objects and substances are distinct ontological categories. Soja et al. summed up their results as follows:

> In sum, the children chose according to object type when the stimulus was an object and according to substance type when the stimulus was a non-solid substance. There was no effect of the syntactic context: performance was neither facilitated nor hindered by the additional syntactic information.
>
> The data from Experiment 1 show that different inferences about the meaning of a newly heard word are drawn according to the ontological status of its referent. If the word refers to an object, the child's projection respects shape and number, and ignores texture,

> color, and substance. If the word refers to a non-solid substance, the child's projection ignores shape and number, respecting texture, color and substance. (ibid., 192)

From this experiment, Soja et al. claim to have shown that Quine's view of how children learn language is incorrect because the experiment shows that, contrary to what Quine claims, children do indeed have a distinction between different ontological categories prior to grasping count/mass syntax. It also shows that these innate ontological categories are what help a child learn a language and not the apparatus of quantification. Soja et al.'s experiment purports to have shown that children learn words according to ontological distinctions which they exhibit knowledge of prior to learning a language. So their experiment, along with the experiment of Baillargeon et al., purports to show that Quine is wrong in his story about how children develop their concept of an object.

Again, the relevance of this experiment to the IDT should be apparent. While Soja et al. purport to have shown that children have an ontology prior to learning their first language, Baillargeon et al. purport to have shown that young children interpret the meaning of new words using this pre-linguistic ontology. Quine claims that linguists construct their analytical hypotheses by imposing their ontology onto natives. These two experiments try to demonstrate that a child interprets the sounds of his peers by imposing his own innate concepts. So according to this view, there are facts about meaning which are imposed by our universally shared concepts.

2.3. Theory of Mind and Triangulation

Research by Baillargeon et al. which I discussed in Section 1 Part 3 indicates that four-month-old children seem to have implicit knowledge of the following five principles about objects:
(1) The principle of solidity.
(2) The principle that objects are three-dimensional.
(3) Objects tend to move on undeviating paths.
(4) Objects move continuously through space and time.
(5) Objects only move when contacted by another object. (Children make exceptions to this principle when they are viewing intentional objects.)

This work of Baillargeon et al. indicates that children from a very young age have an intricate knowledge of objects; on the other side of the coin the work of people like Simon Baron-Cohen[2] indicates that prior to learning language, normal children view other people as intentional agents with beliefs, desires etc. Furthermore, there is evidence that such children who lack this theory of mind suffer severe language learning difficulties. The evidence for a pre-

linguistic theory of mind has been summed up succinctly by the psychologist Paul Bloom:

> What understanding do prelinguistic children have about the minds of others? Consider first sensitivity to what other people are attending to. By around nine months, a baby will naturally follow its mother's line of regard (Butterworth, 1991), and will also follow her pointing gestures (Murphy and Messer, 1977), at about the same age, babies can monitor their parents' emotional reactions to potentially dangerous situations and react accordingly. For instance when seeing a spider, a baby will be less likely to approach it, if its mother seems fearful than if she seems happy (Zarbatany and Lamb, 1985) and when babies are uncertain or hesitant, they check what their mother is looking at and how she is reacting (Bretherton, 1992)... (2000: 67)

There is, then, some compelling evidence from both a logical and an empirical point of view which seems to indicate that children have pre-linguistic concepts which they use to help them learn their language. Furthermore, it is clear from the empirical studies that children exhibit knowledge of intentional agents and object constancy prior to their learning their first words at the age of 12 months.

This evidence so far indicates the following: prior to the age of 12 months when young children begin to learn their first words, they exhibit a grasp of concepts of agency, object, substance etc. Young children also do not need to grasp the syntax of quantification to have ontological commitments; in fact there is evidence that young children (below the age of 2 ½) have an ontology which constrains the meanings that they can give to words. This evidence is typically used to argue that the inscrutability is overcome by our innate concepts.

2.4. Markman and Word Learning

Markman begins her book *Categorisation and Naming in Children: Problems of Induction* (1989) by discussing Quine's IDT problem and claims that the young child is faced with the same problem as the adult linguist. Her empirical research is conducted to the end of seeing how the child does in fact overcome the problem. She begins by discussing the research of Piaget on young children, which indicates that young children categorize objects primarily in terms of thematic relations as opposed to taxonomic relations (e.g. a spider and a web are categorized together because they are both part of the same theme: the spider building a web).

The fact that children prefer to organize their experiences according to thematic relations poses a serious problem for theorists who claim that innate

constraints on interpretations will limit the problem of IDT. Markman summed up the problem as follows:

> Children seem to readily learn terms that refer to object categories. Their vocabulary is filled with words such as 'ball' and 'dog,' simple concrete nouns referring to object categories. Yet children often notice and remember thematic relations between objects more readily than an objects category. How is it that children readily learn labels for categories of objects if they are attending to relations to objects instead? To take a concrete example, imagine a mother pointing to a baby and saying, 'baby.' Based on the classification studies, we should assume that the child will be attending to the baby sucking on the bottle, or to the baby being diapered. Why, then, doesn't the child infer that 'baby' means something like 'baby and its bottle' or 'baby and its diaper'? (1989: 27)

Therefore, if we accept the results of the categorisation tests, and if we further accept that the IDT is overcome by pre-linguistic biases, then it seems to follow that children will think that words like "baby" will pick out thematic events like "baby sucking on his bottle," and this view runs counter to our intuition of what words typically mean.

Markman proposed a solution to this problem. She claimed that when children are interpreting new sounds, they will typically assume that the new sound refers to a whole object. Markman then constructed a series of experiments which were designed to test this proposal. Markman's proposal is as follows:

> Children may be biased to treat novel labels as referring to whole objects (the whole object assumption) and to treat them as referring to objects of the same type (the taxonomic assumption). (ibid., 27)

Upon testing these assumptions the experimental evidence verified that these assumptions were indeed correct.

Experimental Evidence

Markman's experiment was done on children between the age of two and three, and was designed to test whether children exhibit what she called the taxonomic and whole object assumption. Her prediction was that children should interpret novel labels as labels for objects of the same type, as opposed to objects that are thematically related. And to test this prediction, she organized a test which compared the way children organized objects when they were given a novel object label and the way they organized objects when they were given no label. There were two conditions in the experiment: a no

word condition, and a word condition. In the two conditions the children were shown a target picture; they were then shown two other pictures and asked to select one of them as being the same as the target (ibid., 27).

No Word Condition:

The children were introduced to a hand puppet and told to put the picture they choose into the puppets mouth. The child was then shown a picture such as a picture of a dog, and then told "Look carefully. See this? Find one that is the same as this."

Novel Word Condition:

This condition was identical to the no word condition with one exception. In this condition the child was told that the puppet could talk in puppet talk. They were told to listen very carefully to find the right picture. The puppet gave the target picture an unfamiliar name and used the same name in the instructions for picking a choice picture. For example, the puppet might say, "See this? It is a sud. Find another sud that is the same as this sud" (ibid., 28).

The results of the experiments in the two different conditions are instructive. In the no word condition, the child who had to choose between another category member and a thematically related object, often chose the thematically related object. They selected other category members a mean of only 59% of the time, which is no better than chance. In the novel word condition, the children selected categorically the vast majority of the time. They chose the other category member a mean of 83% of the time, which is better than chance.

So these results supported Markman's prediction that when young children are learning the meaning of a new word they switch to taxonomic understanding of the meaning of the word. In other words, the child will assume that "Gavagai" refers to rabbit as opposed to rabbit running in the grass.

However, this experiment is not directly relevant to the claims which Quine is making in *Word and Object*. When Quine is talking about the inscrutability of reference he typically makes the following point:

> Point to a rabbit and you have pointed to a stage of a rabbit, to an integral part of a rabbit, to the rabbit fusion and to where rabbithood is manifested. Point to an integral part of a rabbit and you have pointed again to the remaining four sorts of things; and so on around. Nothing not distinguished in stimulus meaning itself is to be distinguished by pointing unless the pointing is accompanied by questions of identity and diversity. (1960: 53)

Markman's experiment indicates that children will make a whole object assumption in the new word condition 83% of the time. The relevance of this fact for Quine's concerns is questionable. If a child interprets new words using the taxonomic assumption instead of the thematic assumption, then this is an interesting fact about child psychology but it does not refute Quine's argument. If a child does make the taxonomic assumption for novel words he hears and continues to make this assumption when he uses the word, this will not overcome Quine's concerns. The child may not use "Gavagai" to refer to rabbit running in the grass, however nothing in the experiment can tell us whether the child uses the term to refer to an undetached rabbit part or a particular instance of universal rabbithood. The point of Quine's thought experiment is that we can have no behavioral evidence which can indicate which of these interpretations is the correct one. We can try and find out if we engage the children or native in questioning, for example, are you speaking about a rabbit or an undetached rabbit part? However, in the case of the native we can only ask them when we have learned their language and hence have made assumptions about reference which will be hidden from experience. While in the case of child, we will only be able to ask them after they have learned our language and hence have adopted our ontology. So Markman's experiment does not really touch the issues which concern Quine. In Markman's experiment, it can be decided whether the child is making a thematic choice or a taxonomic choice depending on what objects they pick. However, Quine's example of "gavagai" cannot be decided in such a manner because every time the child picks out rabbit he will also be picking out an undetached rabbit part etc.

3. Evaluating the Relevance of the Experiments

We have seen that a number of contemporary linguists and psychologists view the IDT as a form of UD which faces the child when he is trying to learn his first words. These theorists argue that innate constraints overcome this problem of UD. Merely postulating innate constraints to overcome the problem is question-begging, so the theorists need independent evidence to support their postulation of innate constraints. I have reviewed some different experiments which are typically cited as evidence to support the view that the UD facing the child is overcome because of innate constraints.

The first experiment indicates that children at the age of four months have a concept of what it is to be an object which includes beliefs that it is solid, three-dimensional, tends to move in undeviating paths, moves continuously through space and time, and only moves when contacted by another object. This complex concept of an object exists prior to a child learning language and is clear evidence that the child has ontological commitments

prior to learning language and the syntax of quantification. The second experiment showed that before the age of two and a half when they have mastered the syntax of quantification, children could, contrary to what Quine claimed, distinguish between mass terms and count nouns. The experiment proved that when learning new words for solid substances children generalized based on shape and number, and when learning new words for non-solid substances generalized based on texture and color. This experiment showed that children can distinguish between these substances prior to learning count nouns and mass terms, and in fact this pre-linguistic ontology helps the child learn the distinction between mass and count nouns, not vice versa.

The third experiment showed that when children are learning a new word they are constrained to make a taxonomic assumption when deciding what the word refers to. This experiment is interesting in showing that when children are learning a new word they seem to be constrained in how they interpret the word. However, the experiment does not deal with the concerns of Quine, because even if the taxonomic assumption is in place, this still leaves the question open of whether "gavagai" refers to undetached rabbit part, particular instance of universal rabbit-hood etc.

We saw above that thinkers like Pinker, Bloom and Boeckx follow Chomsky in thinking of the IDT as a form of UD which can be overcome by innate concepts. They typically cite the experimental work of Baillargeon, Spelke, Soja and Markman as evidence that children are born with the innate concepts which will ensure that children will overcome the problems raised by the IDT. I will argue here that despite the facts that the experiments do not refute Quine's position on the IDT they do raise problems for Quine that are suggestive that the UD which the child faces can be overcome based on pre-linguistic constraints.

When Quine speaks of ontological commitment only being possible when we have mastered the syntax of quantification he is primarily talking about an explicit worked out ontology. A child having implicit beliefs about the behavior of objects is of limited philosophical significance. It is only when a creature begins to speak about this and that object, and to make claims which are true or false about objects, that we can really evaluate their ontic commitments. My primary concern is whether any of the three experiments offer evidence that the IDT viewed as UD is overcome by innate constraints.

The three experiments offer no conclusive proof that UD is overcome for children learning their first language because of innate constraints. Markman's experiment's do not demonstrate that a child can decide between "gavagai" in the sense of rabbit as opposed to undetached rabbit part, particular instance of universal rabbithood, or rabbit fusion etc. So her experiments do not conclusively answer the questions which Quine is raising when it comes to the Inscrutability of reference. Nonetheless while Markman's experiment

does not refute Quine's IDT it does have a dialectical advantage over Quine's view in that it is intuitively more plausible. Markman has demonstrated constraints which will determine that the child will attach whole object assumptions to new labels. This fact indicates that children's learning of new labels is constrained by their biological make up. It shows that the way children learn new labels for objects doesn't allow for any logically possible interpretation, their mode of interpretation of new symbols is to some degree limited. This raised the possibility that there exist more fundamental constraints that will ensure that the type interpretation of new terms which Quine raises as possible e.g. "particular instance of universal rabbithood" will be ruled out by our biology. This fact would explain why Quine's various different interpretations of "Gavagai" seem so radically wrong-headed to most humans. Given that Quine's view is so radically unintuitive one could argue that the burden of proof is on Quine to demonstrate more than just the logical possibility of children interpreting "gavagai" as "It Rabbeith" etc. He needs to present empirical evidence to support his position. At this moment in time it is an open question as to whether there exist innate constraints that would rule out the type of possibilities considered by Quine. But until this empirical evidence is discovered Quine is at a disadvantage in comparison to his opponents given the radically unintuitive status of his position on the topic.

It is typically believed that the evidence provided by people such as Baillargeon et al. etc. is evidence of innate concepts, and, indeed, the authors of these papers usually argue in this manner. However, the fact is that they only provide evidence for pre-linguistic concepts, not for innate concepts. It could be argued that if children have pre-linguistic concepts which determine that they will interpret "rabbit" as referring to rabbit then by claiming that the concept *RABBIT* is innate we have solved the inscrutability of reference for a child learning his first words. His innate concept of *RABBIT* will determine that "rabbit" will mean rabbit. Furthermore if our innate concepts determine what the words mean, then this will mean that our analytic hypotheses are fixed from the start. However, the empirical evidence indicates that this argument does not work.

First, the experimental evidence which I reviewed above merely shows that children have pre-linguistic concepts; they do not demonstrate that children have innate concepts. If we assume that a child has a pre-linguistic concept of *GAVAGAI*, the question arises of how the child learns this concept. If the concept of *GAVAGAI* is supposed to refer to Rabbit as opposed to undetached rabbit part, particular instance of universal rabbithood, or rabbit fusion, then one is faced with the question of what evidence the child used to decide amongst these different meanings of the concept? Quine's point was that there was no behavioral evidence which can decide between the various possible meanings of *GAVAGAI*. So if there is no evidence which the child

can use to decide between the various different meanings of *GAVAGAI*, then Chomskians are faced with an APS for concept acquisition. If they want to argue for determinacy about the meaning of the concepts, they need to overcome the APS. A possible way to overcome the APS is to argue that children are born with innate concepts. However, to argue in this manner is to merely beg the question against Quine by assuming the very determinacy of meaning which is in question here. Obviously, by denying that we have innate concepts which determine the meaning of children's concepts, Quine is also begging the question against his opponents. To avoid this case of mutual question begging we need independent evidence for the existence of innate concepts that doesn't involve such question begging.

Cognitive Scientist Susan Carey admits that the experimental evidence typically used to argue for the existence of innate concepts is not on its own sufficient to demonstrate their existence:

> For the most part, the evidence reviewed in TOOC for core cognition does not derive from experiments with neonates. Rather, the evidence for the object representations of core cognition comes from studies of infants 2 months of age or older, and that for core representations of intentional agency comes from infants 5 months of age or older. Five months, and even two months, is a lot of time for learning. Why believe that the representations tapped in these experiments are the output of innate input analyzers, and why believe that the demonstrated inferential role that provides evidence for the content of the representations is unlearned? (2011: 115)

In the "Précis of The Origin of Concepts" Carey offered four independent reasons to believe that certain core concepts were innate and that the rest of our concepts were built up from those concepts using analogy in a process she called Quinean Bootstrapping.

She offered four reasons to support her claim some core concepts are innate:

(1) The fact that a given representational capacity is innate in humans is suggested by the fact that it is manifest in the neonates of other species e.g. depth perception which emerges in neonate rats, and neonate goats. (ibid., p. 115)

(2) The simultaneous emergence of different aspects of a whole system also provides indirect evidence for the innateness of the input analyzers and computational machinery that constitute core cognition... If the generalizations that underlie infant's behavior are learned from statistical analyses of the input (represented in terms of spatio-temporal and perceptual primitives), it is a mystery why all these interrelated constraints implicated in the core

cognition proposals occur at once...statistical learning of regularities would be expected to be piecemeal not, integrated. (ibid., p.115).
(3) Learnability considerations also argue that the representations in core-cognition are the output of innate input analyzers...There is no proposal I know for a learning mechanism available to non-linguistic creatures that can create representations of objects, number, agency or causality from perceptual primitives. (ibid., p. 115)
(4) Success at some task provides evidence of some representational capacity needed to perform it, whereas failure is not necessarily good evidence that the target capacity is lacking (because some other capacity other than the target one may be needed in order for the target capacity to work).

Her first piece of evidence relies on cross species data. Obviously because of ethical constraints on animals we cannot do invasive experiments on humans in the same way we can with other animals. The greater experimental freedom with other animals gives us a greater ability to invasively test what capacities they have with a freedom not available with human children. If an animal shares a trait in common with humans and if invasive experimentation shows that the animal has this capacity as a neonate this proves that it is at least possible for evolution to build up an innate representational system in another species. This is suggestive that humans who demonstrate this ability at an early age are doing so using an innate representational system just like the other non-human animals are. Carey mentions depth perception as a good example of something that emerges in rats and goats as neonates.

This particular argument is not very compelling as it just relies on a bare possibility. The argument "We have evidence that rats and goats have innate depth perception therefore it is possible that humans have innate conceptual abilities" is pretty weak. Sure it is possible that like other animals we have innate capacities; however logical possibility is a weak guide to empirical probability.

Her second argument which centers on the simultaneous emergence of different aspects of a whole system is more compelling. If we do indeed have input analyzers and computational machinery that constitute core cognition, this would explain the uniform way we acquire a whole system in a way that statistical learning from the environment does not. (Statistical learning of regularities would be expected to be piecemeal not integrated.)

As an example of simultaneous emergence of different aspects of a whole system she gives our core competence in object behavior. She notes:

> As soon as infants can be shown to form representations of complete objects, only parts of which had been visible behind barriers, they also can be shown to use evidence of spatiotemporal discontinuity to infer that two numerically distinct objects are involved

> in an event, and also to represent object motion as constrained by solidity. (ibid., 115)

Now if each of these abilities were learned statistically based on exposures the child received then one would imagine that the capacities would be acquired in a piecemeal manner not in the integrated manner that they are. On the face of it this argument is much stronger than her argument number 1. At the very least the argument does indeed switch the burden of proof on to the empiricist to demonstrate why the developmental pattern has the shape it does.

Her third argument centers on learnability considerations: she argues that the representations in core-cognition are the output of innate input analyzers. She argues that there is no proposal for a learning mechanism available to non-linguistic creatures that can create representations of objects, number, agency or causality from perceptual primitives. In her argument the only way we can move from perceptual input to concepts of objects that go beyond bare perception is through Quinean Bootstrapping. This particular argument is very convincing; the fact is that as of now there is no worked out empiricist model of how such core concepts are learned. So people like Carey who argue that core concepts are innate, and who present an explicit worked out model of how more complex concepts are built up from core concepts are at a significant advantage over their empiricist opponents.

Her fourth argument; that while success at some task provides evidence of some representational capacity needed to perform it, whereas failure is not necessarily good evidence that the target capacity is lacking not compelling. In fact the point makes her position weaker. She is in effect making her position irrefutable because any predictive failure of her model can be explained away in an ad-hoc manner.

So overall, Carey's arguments taken together do present some compelling evidence that indicate that certain core concepts may be innate. However, as she would admit herself, the total arguments are far from demonstrative and should rather be treated as indicators that innate concepts may exist as opposed to outright proofs. Nonetheless despite the fact that Carey has not proven that there are innate core concepts she has constructed some compelling arguments give some strong reasons to think that innate core concepts do exist. Furthermore, even without the assumption that there are innate core concepts which limit the underdetermination facing the child. The existence of pre-linguistic concepts presents serious difficulties for Quine's view of the child learning their first language.

Quine is at a disadvantage with his opponents because his position is so radically unintuitive. Given that his position is so unintuitive, the burden of proof is on him to demonstrate that his views are correct and to explain away

why his views are so unintuitive. Here it could be argued that being unintuitive is not really an argument against Quine's position given that lots of scientific concepts are unintuitive; physicists are forever reminding us about how radically unintuitive quantum mechanics is. Scientists remind us that in a lot of scientific research we make discoveries that seem unintuitive and that our intuitions are not a reliable guide to understanding the world. So a defender of Quine could argue that he is not really at a disadvantage to his opponents because of his theories being unintuitive as lots of scientific discoveries are even more unintuitive. This argument though is not very convincing. If we consider a subject matter like quantum mechanics, the theory makes more accurate predictions than any other scientific theory. It is because of these predictions that we accept the counter-intuitive nature of the quantum world. Quine's indeterminacy of translation argument though offers no such predictions, all the theory offers is logical possibility of alternative interpretations of phenomena. Given the fact that his theory is so unintuitive and it offers no advantages in terms of greater predictions over its rivals we have then no compelling reason to accept Quine's counter-intuitive position in relation to meaning. There is a burden of proof on Quine to show that his theory is correct and it is a burden that has not been met yet.

In the "Précis: The Origin of Concepts" philosopher James Hill argued that Quine would be unimpressed with Carey's evidence because it still left room for Quine to maintain his position on the Indeterminacy of Translation:

> It is easy to reformulate Quine's argument so that it poses a direct challenge to Carey's view. Instead of asking about the reference of gavagai, we can ask whether the core concept object refers to three dimensional entities that are bounded, coherent, persisting and that move on continuous trajectories, or if it refers to stages of such entities, or to undetached parts thereof. It is clear that Carey must provide considerations that favor the first possibility in order to secure her claim about the reference of object...there is an alternative interpretation of Baillargeon's experiment. Instead of supposing that Baillargeon's subjects expected that an object first seen at time T would continue to exist, we can suppose that they expected that an object-stage seen at T would be followed by a number of other stages, each linked seamlessly with its predecessor. They registered surprise because the initial stage seemed to be the final stage or nearly the final stage. Equally, Quine would offer reinterpretations of the experiments designed to establish that infants can register and make use of information about spatial boundaries. Instead of showing that infants can discriminate between objects that have separate boundaries, he would say, the experiments can be understood to show that infants can discriminate between parts of objects when they fall within separate boundaries. (2011: 133–134)

Hill is of course correct that a Quinean reinterpretation of the psychological data I have reviewed in this paper is possible. However again all this argument really buys us is bare logical possibility that children will interpret in the suggested Quinean manner, we have no empirical evidence to suggest that this possibility in fact obtains. And Carey's reply to Hill was to the point:

> In the TOOC I concede one of Hill's points: That it would be possible in principle, to formulate anyone of the infants expectancies (such as that revealed by the rotating screen experiment Hill takes as an example), in terms of statistical relations amongst snapshots. I argue against this alternative on simplicity grounds. (ibid., 143)

Carey's reply is an appeal to simplicity. And here she is surely correct. The Quinean position is much more complicated and therefore on grounds of simplicity one is justified in not accepting the Quinean position. For Quine's position to be justified sufficiently one would need positive evidence to support his position and not just an appeal to logical possibility. If all a person has to go on is the logical possibility that theory x or theory y is correct and x is simpler than y then the rational thing to adopt theory x.

I mentioned above that the experimental research I have reviewed has not conclusively demonstrated the existence of innate concepts but rather only demonstrated that pre-linguistic concepts exist. Nonetheless these pre-linguistic concepts do in fact pose some problem for Quine's position. Firstly the experiment of Soja et al. do demonstrate that contrary to what Quine argued children do have ontological commitments prior to mastering the syntax of quantification. So in this sense they refute a key aspect of Quine's theory of language acquisition. Young children do make ontological assumption prior to mastering the syntax of quantification. Furthermore the fact that children uniformly exhibit evidence of conceptual structure at certain key points in their development is suggestive of the existence of innate concepts, and is further evidence that Quine's arguments for the inscrutability of reference are less compelling than those of his opponents.

To be clear, the issue here is not innateness per se, but innate concepts. Human intuitive physics differs from those of apes in some respects, and other creatures in many respects. The differences between these creatures are obviously to do with their innate genetic endowment. However, nativists typically claim that certain intuitive theories of object behavior, the behavior of agents etc. is written into the genetic code of most if not all humans. And they claim that these theories will grow in the mind if children are situated in any normal environment. Nativists do not claim that these concepts are present from birth, e.g. that a person has a concept of object from birth. Rather, that normally developing children will have constraints in the way they interpret

the world, and at fixed developmental points these constraints will result in children having acquiring certain concepts. Ray Jackendoff nicely summed up one Nativist position on concepts as follows:

> The semantic/conceptual sophistication of the very early word learner is examined at length in John Macnamara's 1982 *Names for Things*, and vigorous experimental tradition has ensued, attempting to test exactly what assumptions a child makes about the newly encountered words...This has led to (or has been connected with) fascinating research on how infants conceptualize the physical world and how this changes over the first couple years of life... which has in turn led to parallel experimentation on human primates...What is clearly emerging is that the world of the baby is far from William James's 'blooming, buzzing confusion' or Quine undifferentiated quality space. Children apparently come to the task of learning the world – and the words used to describe it – with a host of built in biases that constrain their f-hypotheses about what the word can pertain to. (2002: 88–89)

It is worth noting that even mad dog Nativists like Fodor don't argue that we are actually born with explicit knowledge of our innate concepts:

> Not even the maddest dog thinks all concepts are innate in the sense of being manifested, i.e. actually or readily activated at birth. Rather, the view is that most concepts are in some important way lying in wait, possessed but not yet manifested. Just what 'possession' comes to is, as we shall see, debatable, but I shall take it as a useful point of agreement and departure for the moment that 'possession' is the relation that Chomskyan linguists think neonates bear to 'Universal Grammar,' before they begin manifesting this grammatical competence. (2014: 112)

So while Nativists of a variety of different stripes think that we are born concepts they do not think that explicit skills of using or thinking with these concepts are there from birth.

Non-Nativists claim that humans differ from other animals because they are innately wired up to be able to recognize statistical regularities in their environment which will help them learn the structure of the world they are born into. The important point to note here is that the experiments of Soja et al. and of Baillargeon et al. do offer compelling evidence of innate constraints on the way children interpret the data of experience and so do tell against Quine's position.

The situation is this: thus far we have seen that we have evidence for innate concepts, though the evidence for innate concepts does not rule out all of the alternative possible extensions of terms that Quine raises. One of the

premises of the IDT, the inscrutability of reference, says that there is no fact of the matter as to whether "gavagai" refers to undetached rabbit part, particular instance of universal rabbithood, it rabbiteth, etc. As we have seen one can avoid this conclusion by saying that we know intuitively that there is a distinction between the various potential references of the term, and we know this because we are innately constrained to interpret "gavagai" as referring to rabbit. There is compelling evidence for the existence of innate concepts and some of these concepts rule out some of the alternative references of words that Quine suggests. As Hill argued above even postulates of innate concepts can be re described to fit with Quinean alternatives, however on grounds of simplicity the Quinean alternatives can be ruled out.

Proponents of views that innate concepts overcome the UD have provided evidence that indicated that innate concepts do indeed limit the hypothesis made by children. Furthermore, it could be argued that we have good inductive evidence that human nature is uniform. Given that human nature is so uniform there is little reason to believe that children will try all of the different possibilities imagined by Quine, rather it is more likely that children will all approach this problem using their innate constraints and will avoid the problem of underdetermination Quine is worried about.

4. The Aptness of the Analogy

I have reviewed some empirical research on the nature of concepts which purports to show that Quine is incorrect about how children develop their ontology. But nothing in this research tells us much about facts of translation; in fact it is only the strained analogy with the situation of the field linguist and the situation of the child that makes us think there is any connection at all. We have seen that thinkers such as Chomsky, Pinker, Markman, and Boeckx, all write as though the two situations were identical. It is my contention, however, that this analogy should be dropped, that we should not compare the situation of the field linguist with the situation of the radical translator. Firstly, the field linguist differs from the child in that the field linguist has an *explicit* theory of the world which will affect how he interprets the sounds of the native, whereas the child supposedly operates using an *implicit theory* which will automatically map certain sounds onto certain interpretations. The linguist will have a total network of beliefs about the world which he will bring to the translation situation. These beliefs will help him translate what the native is saying, but they will also ensure that we end up translating them according to our own lights. It could be argued that this situation is no different than the situation that the child finds himself in, and that the same solution is possible in terms of positing innate constraints on the interpretations the translator can make. Furthermore, it could be argued

that these constraints are justified, given that the translator and the native are both members of the species Homo sapiens and so are subject to the same innate constraints. Such a move, I argue, is not justified by the best evidence that we have available to us at the moment. Even if Homo sapiens are indeed born with innate concepts (as we have seen that is compelling evidence that they are), this would have limited significance for questions of translation.

Let us assume that contemporary cognitive science has proven that humans are born with innate concepts. So when our native begins to converse with the linguist, there will be a plethora of innate constraints which will in some ways determine how communication between the two takes place. These constraints have a lot in common with the types of constraints which Markman, Soja, etc. talk about. Thus, one such constraint will be the fact that the linguist will automatically track the eye movements of the native and try to triangulate with the natives on shared objects of experience. The linguist will use the language of the eyes to try out translations of the native's utterances by mouthing "Gavagai" while looking at the rabbit. But obviously such innate constraints do not entirely determine what an adult is referring to when he uses the terms. An adult speaks about reality and communicates with others based on what he has learned about the world through his scientific education, religious education, social education, etc. When an ordinary adult speaks, he will speak in a language which reflects the ontological commitments of the community which he was socialized in. The discourse of any community will be shot through with assumptions which are justified in light of the total theory of the experts and the citizens of the community. It is possible that a child *may* be born with a folk biology which determines that it sees a moving furry object with eyes as an agent. And an adult may have the same innate bias wired in his brain; however, such a bias will not determine the speech of the adult. Imagine, for example, Putnam's thought experiment that it has been discovered that rabbits are remote-controlled spies from Mars. In that situation, people may be innately biased to see rabbits as agents but would have scientific evidence that this bias was in fact false. Various theories of the world which are learned through pain-staking trial and error will influence what people think they are referring to when they refer to certain entities. When we are trying to understand the discourse of a native, we have no way of knowing what sort of ontological commitments they are adhering to. Do they have the same information about rabbits being remote-controlled spies as we do? The natives could be Platonists, or Nominalists, they could be Dualists or Monists. Without knowing their ontology prior to translation, we will have no choice but to assume that their ontology is the same as ours. This will mean, of course, that we are translating their language according to our own lights. The experiments of Markman, Soja, and Spelke are not really relevant when it comes to facts about translation. The native and the field

linguist may both be members of the species Homo sapiens and hence will presumably learn language subject to the same constraints as scientists like Markman, Soja et al. claim. Nevertheless, the fact that we develop sophisticated theories of the world which go far beyond the crude ontology of children means that understanding the constraints on language learning will give us little to go on in constructing a translation manual when we are trying to interpret our native.

Quine is quite explicit on this point: the IDT argument is separate from questions of how a child learns his first language. When Quine is speculating on how a child learns his first language, he is doing so because he believes that understanding how humans in fact develop their ability to refer will help us better understand the process of reference. And understanding our process of reference better will help us better grasp the process of ontic commitment.

The only way that one could argue from the existence of innate concepts to the inference that translation is determined would be by arguing that our innate concepts remain invariant throughout our lifetime. However there are virtually no theorists who hold this position. One of the most prominent thinkers who discuss the existence of innate concepts, Susan Carey, has built up an entire theory to explain how conceptual change occurs through analogy: a process she calls Quinean Bootstrapping. On her view, the existence of innate core concepts will have no bearing on determining translation for adults. Very few philosophers deny the obvious truism that our concepts change as we get older: Jerry Fodor is a notable exception. A discussion of the debate between Fodor and Carey on conceptual change will show that the minority position held by Fodor that conceptual change is not possible doesn't stand up to critical scrutiny. Having shown this I will argue that the standard arguments for innate core concepts do not refute Quine's indeterminacy of Translation Argument.

Carey contra Fodor/Rey

Throughout his career Fodor has made some extremely controversial claims about the nature of concepts:

> Of course, children and adults often do misunderstand one another in ways that suggest differences in the conceptual equipment each brings to the communication situation. But, prima facie, these would seem to be differences of degree, not differences of kind. (1972: 415)
>
> It seems pretty clear that all sorts of concepts (for example, DOG, FATHER, TRIANGLE, HOUSE, TREE, AND, RED, and, surely lots of others) are ones that all sorts of people, under all sorts of circumstances, have had and continue to have. A theory of concepts

> should set the conditions for concepts possession in such a way as not to violate this intuition. Barring very pressing considerations to the contrary, it should turn out that people who live in very different cultures and/or at very different times (me and Aristotle, for example) both have the concept of FOOD; and that people who are possessed of very different amounts of mathematical sophistication (me and Einstein, for example) both have the concept TRIANGLE; and that people who have had very different kinds of learning experiences (me and Helen Keller, for example) both have the concept HOUSE. And so forth. (1998: 29)

Here we can see that for Fodor some concepts are not only shared between children and adults but are actually shared across scientific eras. He is not denying that in different eras or at different developmental stages people can have concepts that that were not available at different developmental stages eras etc. Rather he is arguing our concepts are invariant throughout a person's life time. Thus concepts like WATER, HOUSE, TREE, RED, FOOD, TRIANGLE, FATHER, DOG etc. are innate concepts that are invariant throughout a person's lifetime. So, for Fodor our innate concept RABBIT will be triggered by an interaction with the environment, and this concept will remain constant throughout our lives. Thus people across cultures or developmental stages will all have the same concept RABBIT. So if the innate concept of RABBIT does not include things like "undetached rabbit part," "particular instance of universal rabbithood" etc. then innate concepts will indeed rule out the indeterminacy of translation not just for children learning their first language but for translators breaking into the language of a previously unknown tribe. So it would appear that for Fodor innate, invariant concepts do indeed show that the indeterminacy of translation does not obtain.

Fodor has discussed the implications for the indeterminacy of translation in relation to his most recent work *Minds without Meanings.*[3] As Fodor rejects behaviorism of any stripe, he begins by sketching Quine's indeterminacy of translation in non-behavioristic terms:

> To put it more in the way that Quine does: If the presentation of a rabbit in the PC causes the informant to say 'gavagai,' then presumably, the presentation of an assemblage of undetached rabbit parts does too, and vice versa. So if mental/linguistic representation requires compositionality, then the semantics of mental/linguistic representation isn't referential. (2014: 130)

Fodor thinks that this argument does not work because his theory does not argue that the content of a concept is just its referent; he also thinks that content is determined by the compositional structure of the mental representation that expresses the concept. He argues as follows:

> To put this interms of Quine's own example, the concept PART is a constituent of the mental representation UNDETACHED RABBIT PART, but not of the mental representation RABBIT; so although the concept RABBIT is a constituent of our thought there goes a rabbit, the concept UNDETACHED RABBIT PART can't be. The moral: what's wrong with Frege arguments is also wrong with indeterminacy of reference arguments. Concepts can't be individuated *just* by their referents; but we never said that they could be. (ibid., 130)

So for Fodor the referent of a concept as well as the possible role concepts can play as the constituents of thoughts will rule out any kind of indeterminacy of reference occurring. Fodor goes on to describe a tracking experiment by Scholl, Pylyshyn and Feldman (2001) which involves subjects tracking a dumbbell (straight rods with weights attached to either ends), in the experiment the subjects were able to track the dumbbell but were not able to track the weight. What this experiment shows is that the subjects tracking the objects were tracking the whole object not the undetached dumbbell parts i.e. the weights. Now obviously this experiment just rules out a subject tracking "an undetached object part" as opposed to the object itself, however it does not rule out the potentially infinite other interpretations possible of the object in question. Fodor cheerfully admits that this experiment does not rule out the other Quinean possibilities but argues that the referent of concepts and their compositional structure will rule out Quinean cases.

A couple of points are worth noting here; firstly Fodor has not proven that compositionality plus the referent of a concept will rule out Quinean cases. Rather he has merely shown one case where compositionality and the reference of a concept rule out a particular interpretation undetached rabbit part, and based on this fact he argues that we have reason to believe that similar results would obtain with across the board and rule out all other Quinean interpretations. This is a dubious assertion which needs much more evidence before it can be accepted. But it does offer a possible solution to the difficulties raised by Quine.

A second point worth considering is the fact that Fodor thinks that the Inscrutability or Reference is a possible objection to his referentialist semantics. This shows that he clearly does not think that that the fact we have innate concepts whose content remains invariant throughout a person's lifetime will by itself determine translation. He is not merely begging the question against his Quine by assuming that innate concepts to overcome the inscrutability of reference. He clearly thinks that more is required to determine translation i.e. constraints imposed by compositionality.

Given that Fodor argues for the existence of innate concepts, and argues that these concepts content remain invariant throughout a person's life, but

does not think that this fact alone is sufficient to determine translation, it is worth delving further into what Fodor thinks concepts are. For Fodor, primitive concepts have their content entirely from the object in the world they refer to. He denies that concepts have intensions, senses, or can be explicated in terms of definitions. It is for this reason that as a defender of referentialist semantics he needs to worry about Quine's Inscrutability of Reference which seems on the face of it seems to pose serious difficulties for any kind of pure referentialist semantics. Ironically while Fodor's purely referentialist semantics needs to deny the inscrutability of reference his argument for the innate concepts relies heavily on Quinean type cases. When criticising Carey from a Fodorian perspective George Rey relied heavily on Quine/Goodman type cases.

The debate between Susan Carey and George Rey on whether her book *The Origins of Concepts* disproves that Fodor's argument against the existence of conceptual change shows the weakness in Fodor's position. As we saw above Carey herself thinks that we are born with some innate concepts and that through a process of semantic bootstrapping we use these innate core concepts to construct more complex concepts that are qualitatively different than the core concepts they derive from. Carey thinks that her evidence demonstrates that Fodor is wrong that conceptual change is impossible. Before discussing the debate between Carey and Rey I will first briefly given an example of semantic bootstrapping of an innate core concept to derive a more complex one that Carey discusses: the concept of integer.

Carey's basic data breaks down into human infants having two basic systems of representation. The first system is a summary analogue representation that is a linear function of the number of individuals in the set (this is an approximate process). This system cannot represent the positive integers possibly because there is an upper bound on the sets that can be represented by analogue magnitudes. Also analogue magnitudes cannot represent the successor relation (2009: 124). The second system is the system that involves one symbol for one each individual. There are no symbols for number at all in this system, just symbols for individual objects, and what can be represented in this system is limited to sets one, two and three.

> These data suggest that the partial meanings of number words seem to be organized initially by the semantics of quantifers – the singular–plural distinction and the meanings of words like 'some' and 'a.' If this is right, then we might expect that children learning languages with quantifer systems that mark numerical contrasts differently from English would entertain different hypotheses concerning the partial meanings of number words. They might break into the system differently. And indeed they do. (Carey, 2011: 64)

Carey goes on to note that a third possible developmental source of natural number representational systems in addition to the pre-verbal systems described above may be the representations within natural language quantifier semantics.

> The stage is now set for a series of mappings between representations. Children may here make a wild analogy – that between the order of a particular quantity within an ordered list, and that between this quantity's order in a series of sets related by additional individuals. These are two quite different bases of ordering – but if the child recognizes this analogy, she is in the position to make the crucial induction: For any word on the list whose quantificational meaning is known, the next word on the list refers to a set with another individual added. Since the quantifer for single individuals is 'one,' this is the equivalent to the following induction: If number word X refers to a set with cardinal value n, the next number word in the list refers to a set with cardinal value n + 1. (ibid., 67)

According to Carey it is through this process that children learn to develop sophisticated concepts of number that go beyond their innate core concepts. Rey has criticized Carey on this point noting that she implicitly presupposes the existence of certain concepts and it is these concepts that are doing the work not any supposed semantic bootstrapping.

The debate between Carey and Fodor centers on the following facts: Carey thinks that it is possible for humans to learn new concepts without hypothesis formation through the use of bootstrapping. Carey thinks that these new concepts created through bootstrapping have greater expressive power than the earlier concepts they were bootstrapped from. Fodor, on the contrary, thinks that all of this involves merely the triggering of concepts that are innately possessed.

Rey makes two points against Carey. (1) It is hard to imagine how bootstrapping can work without the person learning already possessing the concepts being learned, (2) There are an infinite number of concepts that transcend sensory experience and core concepts and there is no way to select amongst these concepts. So in the case of 1 above Rey quotes Carey explaining how a child learns the concept of ordinal numeral list through analogy. But Rey points out in order for Carey's analogy to work the child would already need to possess the concept of SUCCESSOR, therefore Rey argues that all Carey has shown is that the child has begun to MANIFEST a concept that the child already previously POSSESSED not that the child learned a new concept through an analogic process of bootstrapping. While in case 2 Rey presents a series of arguments based on Quine, Goodman, Kripke et al. which purport to refute Carey.

Fodor's two premises of his argument for innate concepts are: (1) All learning is hypothesis confirmation. (2) One can learn new concepts only by creating and confirming hypotheses formulated in terms of logical constructions from antecedently available primitive concepts. Carey denies the truth of both 1 and 2. Carey argues that Rey's two criticisms of her do not work because they presuppose the truth of Fodor's 1 and 2 and we know empirically that Fodor's 1 and 2 are false.

She rejects Rey (and Fodor's) logical construction model where all concepts are either innate or constructed through logical combinatorial devices. Carey holds the opposite view:

> By contrast I argue that computational primitives need not be innate. They can be acquired through learning processes that do not consist of logical construction from innate primitives. (2014: 139)

When sketching why she strongly disagrees with Fodor's claim that all learning is based on hypothesis formation and testing Carey appeals to evidence from the animal kingdom:

> ... A cursory examination of the variety of attested learning mechanisms in the animal kingdom shows this generalization to be wildly off the mark. Rote learning (memorizing a phone number), one-trial associational learning (e.g. the Garcia effect, the creation of a food aversion as a result of becoming nauseous some fixed time after having eaten a novel food: Garcia et al. 1955) and many other types of learning do not involve choosing among multiple hypotheses, confirming one of them. And as we shall see, such mechanisms have roles to play in creating new conceptual primitives. (ibid., 139)

Given Carey's point that learning can occur in a variety of different ways, and these ways do not involve hypothesis formation and testing then it follows she does not need to rule out a variety of different Goodman type scenarios. If learning x involves no hypothesis formation then obviously ruling out an infinite series of alternative hypotheses when learning x is not necessary. Of course, Carey proving in the abstract that some learning is not a result of hypothesis formation and testing is not a proof that the particular concept acquisition she is interested in is not the result of hypothesis formation and testing. In her particular case studies she tries to show that a variety of concepts are not acquired through hypothesis formation and testing.

Carey has an interesting view of what learning involves: she argues that learning is a computational process that requires inputs from environment that can be conceptualized as providing relevant information (ibid., 139). She even argues for domain specific learning which is called learning because it

results from sensitivity to information in the environment. So in this sense Carey would seem to be committed to the view that even if a Chomskian language faculty exists, this faculty gives us the capacity to learn a grammar. This use of the word learning by Carey is not confused or incoherent but it is certainly a wider use of the term "learning" than is typical. However once one is clear on the way she is using the term learning then there should not be a problem. As she is using the term learning, it is false to claim that all learning involves hypothesis formation and testing. She gives a specific example from the domain of Indigo Buntings learning to find the North Star as a clear case of domain specific learning that does not involve hypothesis formation:

> What about hypothesis testing? I take the essential features of hypothesis testing to be two: the learning mechanism must entertain alternatives, and choose among them on the basis of evidence. In no way does Indigo Bunting's acquiring a representation of north consist of choosing among possibilities. The animal doesn't consider any other possibility than the one that is the output of the learning mechanism. Here calling the possible specifications of north a 'hypothesis space' is wildly misleading. (ibid., 141)

Carey notes that despite it being a fact that the Indigo Buntings learn what direction north is it should be clear that they are not forming hypothesis which they test, nor are they making inductions so Goodman type concerns are not relevant. She claims that there are hundreds of these innate domain specific learning mechanisms. Therefore she argues that the concerns raised by Rey and Fodor do not touch her theory of conceptual acquisition and learning.

> Consider encountering a kangaroo for the first time. Such an encounter might lead to the formation of a concept KANGAROO that represents animals that are the same basic level kind as the newly encountered one. No enumerative induction is needed; the concept is what Strevens (2012) calls 'introjected' into one's set of primitives...The concept KANGAROO is not definable in terms of antecedently available primitives using the combinatorial machinery of logic. Before creating this concept, one could not think thoughts about kangaroos, just as before analyzing the center of rotation of the night sky and storing a representation of NORTH so specified, and Indigo Bunting could not set or guide a course of flight according to TOWARD NORTH or AWAY FROM NORTH. Of course the kind of learning mechanism that ensures that creating new primitives for kinds is easy; one need only encounter and individual that one takes to be an individual of a new kind, and store a representation of what this individual looks like. But this

> process involves neither induction nor hypothesis testing among a huge space of possessed but unmanifest concepts. The concept of KANGAROO was not laying in wait in a system of representations available for selection by Bayesian hypothesis testing mechanism." (ibid., 143)

Obviously encountering a kangaroo and then forming a concept KANGAROO is one thing; but when one tries to generalize the concept one will run into difficulties of a Quinean sort. Carey summarizes these difficulties as follows:

> But Rey asks, why are not kinds such as 'object,' 'animal,' 'agent,' 'subcategory of kangaroo,' 'kangadile' (kangaroo until year 2040, thereafter crocodile), or 'undetached kangaroo part,' or an infinitude of other concepts possible glosses of same kind as that object, rather than the kind 'kangaroo'? Why does the learner not form a concept of a particular individual (Oscar) instead of a kind? (ibid., 144)

Carey does not deny that it is possible for adults to form strange categories of the above kind (after all Quine and Goodman managed to do so), however she does think that innate constraints on children's capacity to learn concepts will rule them out for such children. It is important to note that Carey's point here is consistent with the views developed in this paper. Carey is arguing for innate constraints that rule out bizarre interpretations and generalizations of concepts of the type Quine mentions. However she admits that these constraints are not sufficient to rule out Quine/Goodman type cases for adults. It follows from this that in the Quinean situation involving radical translation Carey must admit that the strange translations Quine is worried about are more than possible and that therefore the indeterminacy of translation and inscrutability of reference are real concerns. In other words on the theory of concept acquisition sketched by Carey indeterminacy of translation is not overcome by innate concepts.

Carey points out that the idea that there are basic level kinds in concepts and that some levels are privileged in concept learning (Rosch et al., 1976) is a constraint on concept learning. She points to core cognition as another constraint on concept learning. She admits that such constraints do not rule out Quine type cases but since children, unlike adults, *never* produce such examples, for Carey, this is good evidence that children do not ever consider such conceptual extensions.

Fodor is one of the few philosophers or linguists who argue against the existence of conceptual change. As we have seen his arguments do not stand up to critical scrutiny. Without the assumption that conceptual change is impossible we are left with little reason to think that the existence of innate concepts will in anyway determine translation. Current data from experimental

psychology does show that Quine was wrong in his belief that children only develop an ontology after we master the syntax of quantification, the conceptual abilities of children are far more sophisticated than Quine believed. It is likely that the inscrutability of reference will be overcome for the child learning his first words because of the existence of innate concepts. However none of this has much bearing on the Indeterminacy of Translation. Quine's Indeterminacy of Translation remains a live possibility that isn't ruled out by our current discoveries in developmental psychology.

NOTES

1. While Pinker's and Bloom's arguments on this narrow point are similar, obviously this does not imply that they hold the exact same view on the nature of the mind.

2. See Baron-Cohen (1995).

3. Co-authored with Zenon W. Pylyshyn.

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THE UNDERLYING COGNITIVE MECHANISMS INVOLVED IN CONSECUTIVE INTERPRETING

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ABSTRACT. The purpose of this article is to gain a deeper understanding of significant phases of cognitive processing necessitated to grasp a message, inspect it for its prominent characteristics, and then establish the suitable linguistic structure and attributes required to transfer the message flawlessly in the second language. The current study extends past research by elucidating the character of how communicators configure the messages and how interpreters attempt to encapsulate that meaning with the purpose of reconstructing it in a second language. The findings of this study have implications for the routine of consecutive interpreting in the instruction of interpreters and the importance of cognitive science to command of interpreting and translation mechanisms.

Keywords: consecutive interpreting; cognitive mechanism; translation process

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1. Introduction

Consecutive interpretation is the mechanism of rendering after the speaker has finalized one or more thoughts in the source language and waits while the interpreter conveys that message. Interpreting is an extremely intricate dialogue transaction where language sense, command, translation and production processes (Ahmed et al., 2016) are performed practically in parallel. Patterns of cognitive processing are essential to an interpreter's grasp of how to generate precise construal (Green, 2016), and how to evaluate whether a case entails the utilization of either consecutive or simultaneous interpreting. (Russell, 2005)

2. Evaluating Accuracy in Consecutive Interpreting

Besides the fundamental undertakings common to all kinds of translation endeavor, consecutive interpretation, as a result of the supplementary components of the temporal succession of the translation and the precondition for note-taking, employs cognitive faculties of mindfulness and concentration (Hurd, 2016) which are not characteristic of other kinds of translation. Consecutive interpretation demands neither a reordering, nor a re-coding of the initial information. Intrinsic to the approach of note-taking is the idea of the reorganization of a certain message into its fundamental conceptual elements. The interpreter should make out the information into its abstract configuration before initiating translation, i.e. advancing to convert the information into the target language: the exegesis acquires in consecutive interpretation additional development (Machan, 2016a, b), being reported externally in the annotations of the interpreter. The latter should possess and persistently build up insightful capacities of remembrance, but thus she overwhelms the confines of normal language utilization. (Garretson, 1981) Once regarded as a peripheral enterprise, translation is an essential performance of human exchange, being instrumental in facilitating comprehension of a gradually disconnected realm. Both original text and translation are comparable outcomes of the inventiveness of author and translator. The migration of individuals around the world (Barros-Del Rio, 2016) reflect the practice of translation, the latter being the relocation of messages from one language into another and a mechanism of mediation between texts and cultures. The translator may release the text from the predetermined indications of its primary configuration making it not any longer dependent to the source text (Nelson, 2015) but noticeably attempting to subtend the gap between source author and text, and the possible target language audience. (Bassnett, 2014)

Interpreting for individuals who do not speak a shared language is a linguistic and social performance of interaction, and the interpreter's function is a committed one, regulated by knowledge (Ruthrof, 2016) and grasp of the whole interaction situation. The mechanism of interpreting is entrenched within a discourse process. The interpreting act is impacted by both linguistic and social components (Pera, 2015), e.g. the rank of the actors, degrees of indirectness, and unambiguous comprehension of the advancement of dialogue. Interpreters are all-encompassing actors in direct interpreting who may affect both the orientation and result of an interpreted act. (Roy, 2000) Interpreting is a fundamental informative instrument for individuals who do not experience the same language and culture. The disposal of precise, meaningful, and judicious interpreting assists the improvement, comprehension, and the transfer of knowledge (Stewart, 2016) among cultures. Typified by live and immediate conveyance, consecutive interpreting is an operation in

which satisfactory material is orally communicated (Petcu, 2015, 2016) and supplied into another linguistic and cultural structure. Consecutive interpreting depends upon both precise grasp of the source discourse and flawless conveyance in the target language. Interpreting should bring about target-language discourse via the interpreter's adjustment to the interpretational setting. (Gengshen, 2006)

A translation, as a linguistic sign, is founded on the social interplay between its interpreter and the novel boundary of implicit and actual circumstances of verbalization. The translator is not only a compiler of meanings who re-organize particular linguistic and textual arrangements (Life, 2016), or who construe the text's surface signs and clarify what they indicate, but a participant whose welcoming propensity to the performance of reading is the one of writing. The meaning of the message is not entirely inferable from the semantic characteristics. Language is a structure established within a fabric of evolving unsettledness. Social setting (Alpopi and Silvestru (Bere), 2016) is a chief component in the continuance of the verbal art. The translator represents a first moderator between the sign supplier and the sign perceiver. A certain message may be grasped from quite distinct views taking into account the character of a speech act. (Díaz-Diocaretz, 1985)

3. The Routine of Consecutive Interpreting in the Instruction of Interpreters

Translation encompasses much more than the transmission of messages created in one language into another: it is a textual mechanism that entails a two-fold framework – the source and the target. A translation may be a physical indication of an individual's inspection and rephrasing of someone else's message, and thus may provide distinctive insights into mechanisms of textual alteration (Gerstein and Friedman, 2016): the translator is a resourceful creator who establishes the persistence of text throughout time and space (Weede, 2016), an intercultural moderator and decoder, a force whose significance to the permanence and dissemination of culture is inestimable. Translation may be an extremely questionable undertaking in which a disparity of power relations is manifested in the workings of textual generation. (Bassnett, 2014) As an interpretational approach, adaptive replication is primarily appropriate to settings in which reproducing lexical connotations, syntactical arrangements, and the sentence organization of the source discourse (Peters and Besley, 2016) satisfactorily construe the meaning of units of the target discourse. The interpreter, in adaptive reduction, is not constrained by the speaker's sentence configuration and the words in the source discourse. The interpreter should be responsive and concentrate on obtaining the main notion of a discourse. There should be a setting in which the source

discourse comprises common information (Popescu, 2017), utilization of signs and symbols, superfluous knowledge, or any combination of these (the interpreter may conceptualize or simplify what is hypothetically accommodated). (Gengshen, 2006)

The translator advances from the *aesthetic* to the *artistic* extremity: the accomplishment or concretization of the message is determined by the translator's role as reader/writer. The artistic extremity of the translation is divided and turns out to be the author's and the translator's at the same time when the aesthetic extremity in the reader's sense is achieved. In her role as reader/writer, the translator should comprehend the particular linguistic codes entailed in the operation (Nica, 2016, 2017), the literary styles and the character of the message. As reader, the translator pursues semantic correspondences in other codes at the same moment that she endeavors to shed light on or grasp textual implications in reference to cultural linguistic connections. (Díaz-Diocaretz, 1985)

4. The Importance of Cognitive Science to Command of Interpreting and Translation Mechanisms

The interpreter carries out undertakings characteristic to normal language utilization in the assessment and grasp of the text to be translated, but she should take such a process one phase further by documenting such core or semantic representation as notes. The rendering of such an interpretation provides a more effected and precise evidence of what has been communicated (Scott and Stevens, 2016) than the swift deterioration of short-run memory may commonly allow (Nica et al., 2016a, b), and the interpreter may subsequently carefully advance to the translation of the text at the completion of the speech. Translation requires a transcription of the text into its intrinsic, conceptual form: it entails, regarding consecutive interpretation, an evidence of the outcome of the exegesis. The interpreter's notes reflect the exegesis carried out by the interpreter in the course of grasp. (Garretson, 1981) The requirement for methodical investigation of translation results from the issues experienced throughout the concrete translation process: the latter's wide-ranging criteria may be established and classified, and, eventually, employed in the series of text–theory–text irrespective of the languages comprised. The translator uses standards that surpass the essentially linguistic ones, and an operation of decryption and recoding (Jacquette, 2015) has effect. Translation consists of considerably more than substitution of lexical and grammatical aspects between languages. (Bassnett, 2014)

Inspecting turns throughout an interpreted conversation is an operation that necessitates interpreter involvement in establishing and handling the exchange of turns, involving examining an interpreted act as a social, linguistic event

regulated chiefly by social functions and objectives (Bratu, 2016) throughout the operation of interaction. As the primary communicators in interpreted acts do not master the other's discourse, the interpreter should cogently preserve, amend, and recondition dissimilarities (Leonard and Mercier, 2016) in structure and utilization. The interpreter is a dynamic actor who may impact both the orientation and result of the act, the latter being intercultural and interpersonal. (Roy, 2000) Adaptive addition competes against adaptive reduction. In the former, the interpreter should transmit important messages in the target discourse with the aim of furthering interaction. Positioned at the heart of an active mechanism of exchanging information between speakers from various cultures (Cheng, 2016a, b), consecutive interpreters adjust to the uttered interpretational setting via judicious alteration and choice. The interpretational and situational instances of alteration and choice (Bolton, 2016) obviously prove that when interpreting is viewed as a mechanism of the interpreter's adjustment to the uttered interpretational setting, this brings about a successful rendition. (Gengshen, 2006)

The translator/reader pursues semantic markers in order to make out a text and encrypt it for receivers of a distinct socio-cultural framework. The translator experiences a perception of otherness in connection with the message to be converted, and with that author. The translator as a dynamic reader endeavors to grasp and construe all thematic operators which allow recoding formal arrangements into meanings, displaying and conceiving the diversity of meanings of the textual otherness (Popescu Ljungholm, 2016), to determine its settings as the totality of the author's performance. The interpretation of the message in the translator's view is objectified in the event of producing an object for aesthetic knowledge. (Díaz-Diocaretz, 1985)

5. Conclusions

Interpreters may engage in the cognitive sub-undertakings of interpreting and thus advance the short- and long-run memory and analysis abilities demanded to generate precise target texts. Interpreters who do not assess comprehensively the cognitive processes encompassed in interpreting cannot supply reliably exact (Laudan et al., 2016), meaning-based translations. The sphere of spoken language interpreting has gained from the development of learning translation abilities, bringing about consecutive interpreting ones. When interpreters are confronted with material that is thorny, detail laden, or communicated by employing linguistic arrangements (Carr et al., 2015) that are demanding for the interpreter to produce meaning from, consecutive interpreting should be utilized. (Russell, 2005)

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