A Time Traveler's Note on Proper Names and Definite Descriptions

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1. Introduction

As I understand, one mathematical view sees the real world as built from sets. From elements, we form sets; from sets, we form a collection that contains everything. And mathematics tells us that everything physically exists. Yet, if this is the mathematical way to give a description of the world, there seems to be a gap between physical matters and how we handle them. To fill the gap, we could think reversely when we discuss how we operate our natural language. It is not the case that we first have a complete observation of all the particles and then group them until we have formed the whole world; instead, for a language user or a community, the initial condition is assuming one very large set (or collection) whose size is unknown, that is, the real world. To handle this overwhelming world, we need to appropriately partition it into smaller sets that contain different types of elements to enable ourselves to efficiently talk about one same thing or some same things at a time.

From this perspective, proper names and definite descriptions are seen as primarily fulfilling the task of operating upon the real world set and secondarily or derivatively capable of participating in simulating fictional worlds. With such a view, this essay covers several central discussions. The first is on proper names as referentials and as predicates. Contemporary views are led by Schoubye (2016) trying to reconcile names as predicates into Millianism and Fara's (2015) uniformed predicative-name

analysis [1] . For an introduction of recent referentialism and predicativism views on proper names, see the beginning part of Jeshion (2015, the author questions predicativism). The second discussion concerns the behaviors of proper names and definite descriptions, bearing in mind the difference between descriptivism and causal theory (Frege 1892; Russell 1905, 1918; P. F. Strawson 1950; Searle 1958; Donnellan 1966, 1970, 1974; Burge 1973; Davidson 1977; Kripke 1977, 1980; Kaplan 1990; also integrated in Chalmers 2002, 2011; see also Cumming 2019 for a general introduction of names). The third briefly explores the truth value of non-existence and fictional worlds, the topic discussed in Salmon (1998) presenting a distinction between object-fictional and meta-fictional, and in von Fintel (2004) inheriting a reading from presupposition.

The coverage of this essay is unavoidably ambitious because my aim is to coherently introduce a four-dimensional view adapting to the three-spatial-plus-one-temporal-dimensions (3+1) physical world. To orient the discussions, this essay presents several central claims. First, the only description a proper name abbreviates is that of *being called*, yet a proper name is capable of bringing up the entire object from its birth to its end. Second, there is a crucial difference in the behaviors of proper names and definite descriptions. Third, a co-knowing state may be decisive in exchanging information about the physical world. Lastly, one way to consider the truth value of propositions containing fictional characters is to consider such propositions as about a

[1] After I completed this essay, I encountered the Nominal Description Theory (Bach, 2002) which proposes a descriptive solution of proper names. This essay takes a different approach that results in similar explanations as well as alternative interpretations.

summarized or entailed property of the physically stored coding texts. On the other hand, fictional worlds typically are well-established four-dimensional simulations. This picture places fictional worlds into the real world, but it does not reject the possibility of paralleled real worlds.

2.1 Proper Names: Referential or Predicative

In this section of the essay, a few examples are given to demonstrate how proper names bring us certain objects from the real world. The first example was originally raised as one that has a substitution problem:

1) Eric Blair became George Orwell. (originally in Forbes, IEP)
2) George Orwell became George Orwell.

The proposition "Eric Blair is George Orwell" should be true, as "George Orwell" was simply the pen name used by the British author whose original name was "Eric Blair". Although the two proper names both refer to the same person, the substitution in the second sentence results in something intuitively infelicitous. Referencing Russell's (1919) claim that "we must never have *x*P*x*, *i.e.* no term must precede itself", it could be said that if "George Orwell" is referential in the second sentence, then the sentence violates the "never *x*P*x*" principle. Russell was discussing a serial relation of numbers. The analogy here is that if we see "a person becomes…." as a person gaining or losing one or more properties, then "*x* becomes *y*" implies that *x* couldn't be equal to *y* in the sense that it couldn't be that no property has been gained

or lost[2]. If such is the case, the first sentence also becomes odd because if the names are simply referential, the first sentence also violates the same never *x*P*x* principle, and yet we intuitively consider the first one as felicitous. To understand this, we need to ask this question: how could Eric Blair *become* George Orwell? The first sentence can be read as Blair became the writing Orwell, but I am more inclined to agree that there was a self-naming event (or "baptism") which attached the name "George Orwell" to the person. In my view, a naming event is merely about adding a property of being called to the named object. If we see naming as the act of adding the property of being called to an object, we could interpret the first sentence as *the man who was called Eric Blair became the man who was called George Orwell*. This brings the latter same object one more property and consequently allows "became" to occur at the property level. It seems reasonable then that for a person who has never been named, receiving a certain name would be an event by chance; however, any person who has already been named is necessarily a person called by the name brought by the naming event. This is to say that in our perceived real world, possibilities are gradually eliminated as perceived time passes, and *what could happen* becomes *what could have happened* during the process[3]. One point to note is that even when we annul a name sometime after the naming event, the "once called" is a property that belongs to the past, which makes pulling the named out of the real world set always possible.

[2] An identity can be maintained possibly because we track a person or an object on a trajectory on which points representing the object are sequenced by time *t*. The way of tracking is analogous to first having a number defined as leading an entire series, then seeing every number that follows as gaining or losing compared to the first or previous one, and considering the entire series as maintaining the identity.

[3] I suspect we might put the *de re* / *de dicto* difference (my understanding comes from Burge, 1977) into a timed framework that allows a dynamic of knowing.

Here, my first claim is that the only description which a proper name abbreviates is that of being called. There is *nothing else* descriptive in a proper name. The question to ask is, should we keep the referential usage if being called is sufficient or at least efficient in identifying a specific person about whom we intend to talk from the real world set? The fact is that there is some tension between the referential usage and the predicative usage, and this tension testifies how proper names are distinct from descriptions. To demonstrate this point, a few examples are given here:

3) Born Eric Arthur Blair, Orwell never entirely abandoned his original name…Orwell won scholarships to two of England's leading schools… (Britannica: George Orwell[4])
4) The Indian Animal Farm where Orwell was born (BBC news[5])

Technically, in (4), when the man who was *later* called Orwell was born, he was not Orwell yet, since the self-naming event came much later. Similarly, was it the man who was called Orwell who won high school scholarships? The strategy the Britannica text in (3) employed is to first inform readers that Blair is Orwell and then substitute Blair with Orwell. The succinct BBC news article title in (4) mentioned only the name "Orwell", and the title is still understandable. One explanation is that there is something

[4] Article Title: George Orwell, Contributor: George Woodcock, Website Name: Encyclopedia Britannica, Publisher: Encyclopedia Britannica, inc., Date Published: Nov 12, 2019, URL: https://www.britannica.com/biography/George-Orwell, Access Date: Dec 21, 2019.
[5] "The Indian Animal Farm where Orwell was born," by Suhail Haleem, BBC World Service, Bihar, Date Published:11 August 2014, URL: https://www.bbc.com/news/magazine-28739420, Access Date: Dec 21, 2019.

substantially Orwell in the name Orwell; alternatively, the proper name Orwell may be *more than* the man who is later called Orwell.

Schoubye (2016) brought up two sentences when arguing that the predicativism proposed by Fara (2015) may need to explain why names as count nouns fail to serve anaphoric roles. Here, I borrow the two sentences:

5) I left the duvet outside, but there is another one upstairs. (Schoubye 2016, p.757)
6) I left Paul outside, but there is another one upstairs. (*ibid.*)

Schoubye argued that even when a carefully weaved context presupposes what was said in (6), the sentence still looks infelicitous, while (5) is completely fine. My interpretation of (6) is that Paul is more than the man who is called Paul. The word "one" in (5) fulfills the anaphoric role because those partitioned by common names share the property marked by common names. In (5), the word "one" shares the property of being a duvet with "the duvet" mentioned linearly earlier in the sentence, and thus we know that "another one" must also be a duvet. While in (6), by contrast, if "Paul" is only the man who is called Paul, then hearers would easily infer that "another one" upstairs must be a man who is also called Paul. However, there is indeed another reading for (6), namely, "I left Paul outside, but there is another Paul [who is in every sense identical to the Paul outside or is a counterpart[6] of the Paul outside] upstairs", which seems to be semantically well allowed.

[6] If I am not mistaken, according to Lewis (1968), a counterpart of Paul in this actual world is Paul himself.

As demonstrated earlier, the discussion on the usage of the proper name "George Orwell" strongly indicates an indispensable time dimension. To explain why the *another Paul* reading above is possible, I propose that we employ a four-dimensional framework that adapts to the three-plus-one physical world[7].

2.2 Proper Names in a Four-dimensional Framework

I mentioned in the introduction that we, natural language users, face an overwhelming set from which we need to efficiently pick out objects that we wish to talk about. Since the physical world is comprehended as three-plus-one dimensional, the natural set that we are to handle is spatiotemporally distributed. Our natural language mediates both the process of picking out objects and the process of maintaining a four-dimensional mental *map* of the real world.

The act of assigning a proper name to an object serves the purpose of initiating a tracking history of the named object and especially a co-tracking history among a community that can be enriched with more information thereafter. Such a point has

[7] One could consider that my four-dimensional framework is within a cognitive "dimension." In the Hesperus-Phosphorus example, the planet later referred to as "Venus" was already there at the time when "Hesperus" and "Phosphorus" were given as proper names. Knowing that "Hesperus is Phosphorus" is a process in which 1) two recognized objects become one object; 2) the properties thought to belong to two objects respectively get reattached to the same one object; and 3) the truth value of "Hesperus is Phosphorus" is updated from false to true. Frege's (1892) interpretation was that the proper names have both sense and reference. In his line of thought, sense is public cognitive while reference is objective. Hence, the former reveals the cognitive presentation of things, and the latter reveals things that are in the real world.

As I read on, similar motivation is seen in contemporary two-dimensional semantics (Chalmers, 2006), in which there is a separate cognitive dimension inherited from the Fregean picture. This cognitive dimension accommodates our understanding of the real world that may not give truth values completely fit reality. For Putnam (1962), this is also related to what is necessary or essential, as once recognized properties may not fit how things really are. I agree that the cognitive dimension should be taken seriously, and what I describe as four-dimensional is in fact a model to show what is there on the cognitive dimension. Despite the fact the word "dimension(al)" is understood and used differently, there is nothing conflicting in the views that employ the word.

already been noted by a number of causal theorists (Kripke 1980, and others) though not from the information perspective. If we consider a baby who has just been born to be an object represented by a point that is now distributed in the present snapshot of the natural set, we can say that giving a proper name to this point means we expect to track the baby's existence from birth in the present to the baby's end sometime in the future. Therefore, the *entire* existence of the baby as an object would be distributed in our four-dimensional framework of the natural set as a continuous trajectory. Likewise, the proper name "Paul" in the sentence "I left Paul outside" brings up an entire trajectory that is tracked by the name. In our comprehension, the person referred to is *all of him*, which then allows for the *another Paul* reading. Furthermore, proper names in the four-dimensional framework refer to trajectories, but when they appear in sentences that are either uttered or written linearly, the snapshot that is brought up would then be dependent on the context, the syntax, the tense, and other co-elements of the sentences. For instance, a sentence that linearly begins with "Paul" conjures the entire trajectory of a person named Paul who is known to a speaker and a hearer. If the word "is" comes after "Paul," the words that are said about "Paul" would then be about either the present state or a lasting state of the person. These words can become information that is passed from the speaker to the hearer, and the latter would add this information to the trajectory that has been assigned to Paul and has already been mentally stored. If "Paul" is followed instead by the expression "was…two weeks ago," the hearer would appropriately add this information to an earlier snapshot of the trajectory.

After placing trajectories that are referred to by proper names in the four-

dimensional framework, we may be less bothered by the famous example “Feynman is a physicist” (see Michaelson in SEP introducing this Kripke’s example), which has led causal theorists to question how the specific person is talked about by those who know nothing else but the name “Feynman.” Here is a conversation between a speaker who has no specific knowledge about Feynman and a hearer who has specific information about the physicist:

7) A: Who is Feynman? Someone told me he’s a famous physicist?
   B: The author of *Surely You’re Joking, Mr. Feynman*? His major contribution was in quantum physics.

We can say that when A asked the question “Who is Feynman?” A already knew that Feynman is a person, as demonstrated by the use of “who.” From A’s perspective, there is an object in the natural set that is a person whose name is Feynman, but its spatiotemporal location is unclear. Although A might not know how to place this blank trajectory into the mental map of the real world, it seems that A would likely not have any problems to establish a trajectory for this Feynman that is ready to be attached by various information about the person. In fact, it seems that a trajectory can be established with or without a specific proper name. The only crucial point is that such a trajectory should be about a specific object that typically has a beginning and an end of its existence.

t-difference

One point further to be considered is why we may sense a tension between the referential usage and the "is called" predicative usage of proper names. As mentioned, it seems that a trajectory representing the entirety of an object can be mentally established with or without a proper name. Yet when we have many trajectories to be tracked, it would be almost impossible to efficiently exchange information or to enrich what is privately known and what is publicly known if we had no proper names. We feel the need to give proper names to objects, trade the memorizing burden for the convenience brought by proper names. Moreover, it seems that our memory could only afford to give a limited number of proper names to access and track what matters to us and what is frequently mentioned. Proper names serve as magnets that are attached to certain objects in the natural set in their entirety, and distinct proper names conjure up objects efficiently. The referential and predicative usage are both to be considered in this efficiency understanding of proper names.

It might be significant, however, that there is always a *t-difference* in the referential usage and the predicative usage of proper names. Strictly speaking, it is sometimes difficult to determine the beginning point when an object exists. For instance, a baby could be traced back to a zygote or to an embryo (which affects debates on abortion), and a building that later bears a proper name could be traced back to its first brick or even to its blueprint. A naming event almost always happens at some time *t* that does not exactly match the beginning of an object's existence. This is why an object very often obtains its being-called property at some *t* after or before

it begins to exist. This *t-difference* demonstrates that the primary nature of proper names must be referential, seeing that when we read sentences such as "Aristotle was born…." we do not feel compulsive to question when Aristotle was named. In other words, regardless of when he was named, the name itself is sufficient to refer to all of him, which means that the *t interval* of existence overrides the *t interval* of being called Aristotle.

On the other hand, this means sentences such as "Eric Blair became George Orwell" could be more problematic than the substituted "George Orwell became George Orwell." If referential is primary, we need to explain why "Eric Blair became George Orwell" takes the predicative usage,[8] but now at least we can see why the Orwell usage is particularly troublesome. In expressions such as "Orwell won scholarships," the *t* interval of the being-called property does not match the *t* at which the scholarships were won. Interestingly, native speakers seem to take different strategies to handle the problem. The authors of the Wikipedia entry for "George Orwell" chose to switch "Blair" to "Orwell" when narrating the biographical facts,

[8] My rudimentary observation is that the predicative usage is preferred under certain conditions. Bearing in mind that we are handling the natural set, whether a certain object is successfully brought up or not determines whether the primary referential usage of proper names is sufficient in serving the purpose of exchanging information or not. A predicative usage is seen 1) to pick out several objects that share the property of being called one specific proper name: e.g., "…few Alfreds…" and "…some Alfreds…" (Burge, 1973); 2) to confirm if an object mentioned by a speaker is the object recognized by a hearer by saying, "(Did you mean) THE Marc Jacobs (who is the famous designer)?" (similar sentences are analyzed by Fara, 2015 from a uniformed predicative view). This is highly related to the co-knowing state I will discuss later. Regarding whether one same proper name can be attached to multiple objects (or bearers) or not, my rudimentary view is that if the only description a name abbreviates is being called, then it seems what further filters would be something outside a name, which means my view differs from Segal (2001) in this aspect; and 3) to mark different stages of the one same object, as in "Blair became Orwell." Therefore, I tend to interpret the substitution failure (similar examples also discussed in Burge 1978) from "Philip is unaware that Tully denounced Catiline" to "Philip is unaware that Cicero denounced Catiline" (Quine 1964: Ch.VIII) due to Philip not necessarily not knowing the latter if he does not know Cicero also bears the property of being called Tully.

while the authors of the "Mark Twain" entry chose to say "Twain was raised in Hannibal, Missouri" along with "Samuel Langhorne Clemens was born…"[9]

We see later how the *t*-difference affects the behavior of definite descriptions. One last thing I wish to mention here is that I suspect the referential-predicative usage discussion may also be related to how we interpret rigidity. It could be said that we first refer to a person using the proper name which the person happens to bear in our real or actual world, and then we travel on the trajectory of the person who has been pulled out by the proper name to a *t* before the person was named. We can call this *t* as t_n, and from t_n we can establish a counterfactual trajectory of the person on which the person counterfactually obtained another name. If this is correct, then a proper name that refers to the same person in all possible worlds works in a sense, such as "*This person* could have been named *y* instead."

2.3 Definite Descriptions in the Four-dimensional Framework

To demonstrate how definite descriptions work in the four-dimensional framework, I begin with these two sentences:

8) Istanbul was once the capital of the Roman Empire.
9) The capital of the Roman Empire was once the capital of the Roman Empire.

[9] Both entries were accessed in December, 2019.

The city that once bore the proper name “Constantinople” now bears the proper name “Istanbul.” Here, “Istanbul” has a *t* interval that does not overlap the *t* interval of “the capital of the Roman Empire” in (8). As the four-dimensional framework predicts, “Istanbul” brings up the entire trajectory of the city from the beginning of its existence until its present. Moreover, the definite description “the capital of the Roman Empire,” which fits the property of the city being the capital of the Roman Empire in the past, is a piece of information regarding the city mentioned by (8) that can be attached to the trajectory of the city, but the “once” is quite needed in order to avoid the *t*-difference tension. The substitution for (8) in sentence (9) faces the problem seen in the “Orwell became Orwell” sentence. This time, it is not an issue of how one same object might become the same object; instead, it is how we might distribute the same property of being the capital of the Roman Empire over the trajectory when there is a “was once” *t* interval marker.

The next question to explore is whether the definite description “the capital of the Roman Empire” conjures up the entire city. Let us further consider these two sentences:

10) The teacher of Alexander the Great was born in the city of Stagira.
11) The later teacher of Alexander the Great was born in the city of Stagira.

If we agree that compared to “Aristotle was born….” there is more tension in sentence (10) due to the *t*-difference, then I can safely claim that definite descriptions are primarily concerned with properties. For individuals who do not know who the

teacher of Alexander the Great was, the definite description works as a set operator or filter. It first partitions the real world into two—one part consists of objects in at least one *t* interval being teachers and the other part consists of objects that never have been teachers over their trajectories. After this partitioning, the description finds the property relational to Alexander the Great. For those who know who the teacher of Alexander the Great was, the definite description brings the person up by illuminating the *t* interval of the property being the teacher of Alexander the Great (and perhaps to some extent dims the other parts of the trajectory).

It is known to us that some definite descriptions undoubtedly match multiple objects that either have once bore or now bear the property described. For instance, "the president of the United States" fits 45 individuals either at one point or now, which again testifies that definite descriptions primarily collect properties. There is no reason to believe that definite descriptions are always picking out a unique person or object. In most cases, the descriptions actually can pick out a unique object only because there is something beyond language that helps narrow the natural set down to one object.

The first obvious clue beyond language is, since we have the four-dimensional framework adapting to the physical world, the recognized continuum location in the real world of a speaker and a hearer. If I turn on a radio on a random day in 2019 and hear a sentence beginning with "the president of the United States is visiting New York," I would know that it refers to President Trump. Imagine that I have been teleported to a far future location, and unbeknownst to me the external environment

has been set up to resemble the one I had in 2019. If I turn on the radio, which looks exactly the same as my radio in 2019, and I hear the same sentence beginning with the words “The president of the United States is visiting New York,” I would be justified to still refer to President Trump, while in fact another person is being referred to. In this case, I shaped my belief because of my justified unchanged recognition of my continuum location. Based on the continuum location clue, these two sentences that are logically the same would behave differently when we are operating upon the natural set:

12) The actor is tall.
13) The tall man is an actor.

Both say that there is an *x*, and both say that *x* is a man, is tall, and is an actor. First of all, if the continuum location were not taken into account, it would be impossible to pick out a person based on (12) or (13)[10]. Given a certain location, (12) operates most efficiently upon the set when the property of being an actor most efficiently brings up a unique person. Meanwhile, (13) operates most efficiently when the properties of being a man and being tall can most efficiently bring up a unique person.[11]

Let us further consider Donnellan’s (1966) famous example of martini. The

[10] I tend to say that propositions such as “The table is brown” should receive a truth value when we count the environment or the space from which the table is to be filtered as a condition.
[11] The two sentences also differ in informative contents. (12) describes what is observed, while (13) conveys a non-observational information. This may be related to “topic” and “about” in P.F.Strawson (1964), but there may also be some difference.

expression “Who is the man drinking a martini?” briefly shows that even if “the man” mentioned is not drinking “a martini” but a martini-like liquid, the speaker would be still referring to “the man.”[12] My interpretation of the martini man is, the key that helps the speaker and the hearer narrow down the natural set is firstly the present snapshot restricted by co-perception. In this *sample space* co-perceived, we imagine here that there are ten men chatting together. To efficiently pick out “the man” with “drinking a martini,” the condition is that the drink he has is sufficiently unique in its appearance. Recognizing the continuum location involves knowing *to pick from which part of the real world*. Knowing to pick from which part of the world can sometimes make insufficient knowledge sufficient in picking out an object; such insufficient knowledge in this case can tolerate not knowing what exactly the man is drinking.

The second less obvious clue beyond language comes from co-knowing. This clue has an important implication in our four-dimensional mental picture, and therefore it deserves a separate section.

2.4 Co-knowing and Multi-level Maps

Asher and Lascarides (1998) discussed the role of “semantic and pragmatic knowledge resources” in shaping presuppositions. Although I cannot digest the technical parts of their article, I believe my view would at least be compatible with their picture. As I understand, the essence of presupposition is backward inference. From what has been stated, we can say that if what has been said is true, then the speaker must also believe

[12] Other examples given by Donnellan (1966) often reveal a similar problem caused by personal beliefs betraying objective truth conditions, but I will not explore these in this essay.

some other propositions. Logically, presuppositions are those that need to have a truth value before the presupposed can have any truth value. I agree with Asher and Lascarides and others (e.g. Stalnaker 1973) on the point that presuppositions demonstrate an interaction between or among minds than words. Before I clarify multi-level maps, let me first borrow this example to discuss co-knowing:

l4) a. A: Did you hear about John?
b. B: No, what?
c. He had an accident. A car hit him.
d. He had an accident.??The car hit him. (Asher & Lascarides 1998, p.247)

The sequenced a-b-c is felicitous, while the sequenced a-b-d looks almost indefensible. However, I believe there could be a plausible scenario that makes a-b-d reasonable. From the conversation, we know that A and B must both know who John is. Here, we can build a hypothetical scenario and assume that A and B are two detectives who were following John yesterday. B first observed John from a distance using binoculars and noticed there was a black Benz behaving suspiciously around John. B then passed the binoculars to detective A without saying anything, and A observed the same thing with the binoculars yet said nothing as well. Given this situation, would it be possible for A and B later to have a conversation similar to a-b-d? If the story conceivably justifies the a-b-d conversation, then our question is, how could detectives A and B successfully pick out one unique car from the real world in which there are numerous vehicles—notably a car that had never been talked about prior to the

conversation—and be able to refer to the car using only “the” and a common name “car” without needing to raise the quasi-common name “Benz”?

Co-tracking history was mentioned when we were discussing proper names, and it seems that some kind of co-tracking must have taken place here for both A and B in order to enable the a-b-d conversation. What has been co-known includes that there was a car that behaved suspiciously around John. It must also be the case that A knows that B must also know the fact *and* that B knows what is most likely to be brought up by A, given the conceivable scenario.

Above I have explained the second clue that grounds the behavior of definite descriptions in the four-dimensional framework; what I propose from here is that we have *four-dimensional language maps from individual to community up to public cognitive levels*.

Regardless whether there is more than one physical world, my assumption is that there is at least one physical world that can be perceived as four-dimensional by the human species. The natural language in general is mediating our mental descriptions and explorations of the perceived physical world. The crucial point here is that there is a real world, and there is a way we picture it. If we were omniscient concerning the reality, we would take the entire continuum of the world simply as an ordinary object whose properties are fully clear to us at any time we observe it. However, since we are far less scient, our language metabolizes and grows when our knowledge grows. The language serves as an expanding *map* that constantly has its referring words and propositions verified, revised, and replaced; that is to say, it seems that any precise

scientific description of the natural language would need to demonstrate how the recognized references and recognized truth values shift overtime.

Furthermore, the entire natural language can be considered as an ecosystem in which every single person establishes their four-dimensional living mental map that adapts to the same physical world. We mentally place ourselves into the same overwhelming continuum that traces back to the remote past where there should be a *t* at which there was nothing and that extends to the future where nothing seems to be guaranteed there. Every single person whose spatial exposure to the continuum is limited is contributing their acquainted to their community language map and, even further than this, to the maximal public cognitive map somehow. A local naming event first *registers* the name of a baby into at least one individual's language map; this name then would enter the community language map to which the baby belongs. If one day the baby becomes the president of the United States, then multiple community maps would have a translated name referring to the president. A maximal public cognitive map would be one that collects all of the latest knowledge. Multiple language maps also allow for an implicit *quasi-registration* of objects. Although detectives A and B in the conversation we discussed did not give a unique name to the car, they did provide a quasi-registration for the car in their individual maps and would be able to recall it by referring to "the car that we saw stalking John that day" at some time in the future. This kind of co-quasi-registration would explain why we would more frequently use "the" when we talk to familiar people. We could also consider the notion of co-knowing to be related to co-memorizing and even further related to how our minds are extended.

An exchange of information between two individuals is a process in which the two individual-level maps interact to have their details adjusted in order to depict the one same world better. Exchanges at the community level—but perhaps more frequently within a community than between or among communities—are of a similar nature. Since there are differences in the geographical and cultural distributions of language communities, it is reasonable for different communities to have community-level maps of different overall or partial *resolutions*. For instance, "rabbit foot" has a figurative meaning according to the language map of English, while "rabbit head" refers to a local specialty of a province in China; "rabbit" is related to a specific puzzle about how people backed by different language maps could figure out what exactly is being referred to by a name, which is well-known in the philosophy community. One hypothesis that could be claimed here is that the resolution of a reference system in a certain community depends on the scale or the need of exchanging actual objects and information in that society.

2.5 Nonexistence and Fictional worlds

Thus far I have discussed how our language is *about* and operating upon the real world. Before I conclude this essay, I would like to briefly present my rudimentary view on non-existence and fictional worlds.

Undoubtedly, all fictional worlds are well-established four-dimensional simulations, except for very rare cases such as *Flatland.*[13] However, it is also a fact

[13] The Edwin A. Abbott story contains both two-dimensional and one-dimensional simulations of worlds. Arguably there must be some works that try to simulate higher dimensions, but it is doubtful

that no matter how self-sufficient a fictional world is, we know it does not *exist*. Given this nature of fictional worlds, we have problems in clarifying truth values of propositions involving non-existences. Let us consider these sentences based on the *Harry Potter* series:

15) According to the *Harry Potter* series, Harry Potter dated Chu Chang before he dated Ginny Weasley.
16) Harry Potter dated Chu Chang before he dated Ginny Weasley.
17) Magic wands remember who beat whom.
18) Harry Potter does not exist.

My interpretation is that (15), (16), and (18) are true, while if (17) is true is unknown. To explain, I consider fiction as a special way of *coding* using the natural language, and the production is a world similar to the one in the *Matrix* movie trilogy. Our brain is a special machine that can both code and decode the natural language. Every time we read or recollect a fiction work, we run the coding text with our brain, and the production is a mental simulation of the coded world. The *Harry Potter* series is especially an interesting example, as it first has been turned into eight movies and then later into theme parks. Running the simulation with our brain is an energy-transformation activity that typically consumes pizza, hamburger, and Pepsi costing several dollars. Turning the simulation into eight *re-coded* digital movies consumes 1.2 billion dollars. The investment to the three-dimensional simulations in the theme parks

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that there are many that managed to imagine a coherent perception like the Abbott story did. Higher dimensions are in fact not even compatible with precepting creatures in physics.

being realized in this physical world doubled the budget of the eight movies [14] . Theoretically, if we are sufficiently capable and crazy, we could have a full four-dimensional simulation of the Harry Potter series run with artificial organisms.

It would actually be problematic if we say that our mental simulation has no spatiotemporal extension at all. At least, no matter what kind of simulation a coding is actually realizing, we could say that there exists a coding of a fictional world. This allows us to further say that sentence (15) states the correctly summarized or entailed property of the coding texts that are physically stored in the real world, and therefore it is true.

Sentence (16) is taken as *about* the "if-run-must-be-so" simulation of the fictional world. In the previous discussion in this essay, we see the real world as a set full of objects. Now we are simply adding the fictional world—namely the simulation run by the coding of the Harry Potter series—as another set. The proper name "Harry Potter" not only establishes the trajectory in the simulated world defined by the coding, but it is also decisive in *finding* the set the name is in. Since this is the case, I believe it is reasonable to say that (16) is decisively found by the proper names as fictional, and therefore it is true in the sense that it correctly summarizes what the simulation must be like. On the contrary, it is obvious that "magic wands" in (17) is not decisive in finding the fictional set they should be in, and "magic wands" could find real world objects that are not magical at all. Therefore, we could not tell whether (17) is true or false.

Finally, people generally agree that (18) must be true—only that we are not sure

[14] The point is that all the money was transformed into materials, talented people, and information spread in such as advertising videos and posters.

why it is true. Based on the claims I made in this essay, my understanding of its truth is that perhaps existence should be a property distributed to every element of the real world set, and non-existence should be a property distributed to every fictional "thing" in the fictional world set. Claiming that "Harry Potter does not exist" is to say Harry Potter does not belong to the real world set. Alternatively, it could be understood in two ways, namely that the name "Harry Potter" fails to bring up any trajectory or point in the real world set, and that the name "Harry Potter" picks out a fictional "thing" that bears the property of non-existence. By contrast, the definite description "the king of France" can illuminate multiple trajectories in the real world set, and thus the truth value of a sentence that either begins with or contains "the king of France" would partly depend on a number of factors such as continuum location. Claiming that non-existence is a property seems to violate a Kantian metaphysical principle, namely that "existence is a pre-condition of having properties" which was a notion introduced and discussed by Salmon (1998). *Exist the symbols or expressions, non-exist the constructed* might become a solution, but that would be too much for me to explore in this essay.

3. Final Remarks

We have seen the substitution failure ("Istanbul" and "the capital of the Roman Empire") due to the different behaviors of proper names and definite descriptions. As I understand, there is another kind of failure, and the Hesperus-Phosphorus puzzle is the most famous example of this kind.

Contemporary variations of the kind can be exampled as from "Peter Parker is

Spiderman" and "MJ believes that Spiderman has arachnid abilities", a substitution results in "MJ believes that Peter Parker has arachnid abilities", which intuitively does not follow (See also a Superman example in Forbes, IEP). I suspect we have to view the statement "Peter Parker is Spiderman" to be a piece of information located in the public map or in the omniscient realm, and MJ simply does not have that information for deduction[15]. I would say that as long as we do not have "*MJ believes that* Peter Parker is Spiderman," we do not have "MJ believes that Peter Parker has arachnid abilities," because MJ's individual map could not go beyond what is known to her[16]. This most intuitive way of handling what might be deducted based on what is known could, in fact, be the only way.

In accepting multiple maps and substitution failure due to lacking information, we may feel an implication that we are highly ignorant when considering how overwhelming the real world depicted by mathematics and physics is. If MJ does not have the specific information needed for the deduction, how much more do we not have in order for us to reach true propositions about the real world? However, I am rather optimistic as I believe our natural language may grow with our understanding of the scientific facts (we could also have a formal language run on a computer grow).

The physical world is said to be constantly changing towards a mysterious increase of overall entropy. On the contrary, our knowledge about all the things that are

[15] See also the third purpose of predicative usages in the 8th footnote of this essay regarding proper names as predicates.

[16] It might be seen that we could well have maps containing relational descriptions and propositions. I believe this is also related to the interpretation of the famous Gettier problems (a definite description cannot refer to or "reach" an object outside of an individual's map of beliefs), but I cannot expand my discussion here.

constantly changing is constantly changing (or more positively, improved) into something organized. There must be a way to bridge this picture using precise, reliable, timeless mathematics and logic, and it is my hope that a way can be found for this.

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