Metaphorical Narratives: A Creative and Experiential Approach to Education

Luke Straka

Metropolitan State University of Denver
Abstract

Metaphor and narrative have been suggested as powerful tools for learning, and yet neither have been adequately studied to determine their benefits in the educational setting. Most of the literature on metaphor and narrative in education is limited to justifying metaphor analysis and narrative analysis as a qualitative measure of students’ learning progress and attitudes towards education, rather than as a tool that students can use in order to learn in an academic setting. My hypothesis is that metaphorical narrative would be a useful tool in the classroom for students to learn abstract concepts. I intend this thesis to serve as a rudimentary theory for learning abstract concepts via previous knowledge, as well as a preliminary basis for the formalized study of metaphorical narrative in education. Primary sources demonstrate the utility of metaphor as an organizing principle in learning, as metaphor utilizes schemas and the productive imagination to spatialize and partially characterize abstract concepts. Primary sources also demonstrate the utility of narrative as a meaning-making principle in learning, as narrative is found to be effective at communicating temporality and identity, especially as these are concerned in identifying the self, during reflection, and the other, when empathizing. From this it can be inferred that metaphorical narratives can improve narrative by organizing the abstract concept via a theme and explicate the meaning of that theme through its entailments, which are effectively communicated narratively. A rough sketch of an experimental design to test these claims is proposed for future research.
It may go without saying that education reform has been a major topic of discussion in the United States, let alone much of the rest of the world. Though much of this reform may be focused on things like alternatives to public school, on what bases schools should be funded on, etc., at least part of the discussion has focused on what educational practices best promote student learning. As a result, we have extensive research documenting the benefits of (as well as the attitudes towards) constructivism, situated learning, humanistic theories of learning, learning cycles (e.g., 5E), etc. (Martínez, Sauleda, & Huber, 2001; Hanrahan, 1998; Riedinger, Marbach-Ad, McGinnis, Hestness, & Pease, 2011). The research questions that guide these experiments focus on the teachers and their methods rather than the students as the determining factor of improving the learning process (e.g., Hebert & Durham, 2008). This is only a minor criticism since, after all, the teacher must act as a guide to her/his class if students are expected to gain anything from their education, and so the students cannot be expected to teach themselves independently. At the very least, I will allow this assumption here. However, whether this was the explicit or implicit focus of educational research and theory, the preoccupation with improving teaching strategies (which goes along with reforming teacher qualifications), has lead to an emphasis on how knowledge and learning are transmitted from the expert teacher to the nonadept student, which necessarily requires a standardization of the information presented by the teacher since not every student comes with the same background knowledge. On the contrary, I argue that the better approach would be to understand how learning works and then, based on this knowledge, give students the tools and tasks most effective for students to teach themselves by building up to new knowledge from their current knowledge. A subtle distinction, perhaps, but a helpful first step in shifting our paradigm about education.
In the current writing, I would like to suggest a particular approach to student learning that I think has not received adequate attention in education research, yet has great promise based on preliminary work done in philosophy and linguistics, namely metaphorical narrative. Metaphor and narrative have at least been suggested as powerful tools for learning, and yet neither have been adequately studied to determine their benefits in the educational setting. Of the two, metaphor may receive the most attention with regards to education, especially in the form of concept mapping and concept modeling (e.g., Hay & Kinchin, 2008). There is also literature on the use of narrative in learning foreign languages (Barkhuizen, Benson, & Chik, 2014; Barkhuizen, 2013). Even so, most of the literature on metaphor and narrative in education is limited to justifying metaphor analysis and narrative analysis as a qualitative measure of students’ learning progress and attitudes towards education, rather than as a tool that students can use themselves in order to learn in an academic setting (Jensen, 2006; Martínez, et al., 2001; Barkhuizen, et al., 2014).

It may simply come down to the fact that, because most people use both metaphor and narrative when explaining or teaching a concept, perhaps even in an educational setting by instructors, it is taken for granted that these tools are used in the classroom because teachers necessarily use them when teaching. Nevertheless, just because something is obvious or regularly in use does not mean we should not study it to understand how using it is beneficial. What I would like to suggest further is that the two are less likely to be considered together, i.e. as metaphorical narratives, when it comes to educational research. The recognized utility of metaphorical narratives is largely isolated to counseling as a means of constructing a healthy self-concept (e.g., Schoo, 2009).
My hypothesis is that metaphorical narrative would be a useful tool in the classroom for students to learn difficult, complex, or otherwise abstract concepts, and I will propose a research experiment to test this theory. I intend this thesis to serve as a rudimentary theory for learning abstract concepts via previous knowledge, as well as a preliminary basis for the formalized study of metaphorical narrative in education. The latter point is to emphasize that this topic has received little attention in education research and would benefit from formalization via research findings so that, if applied to education, educators could know exactly how metaphorical narratives are to be implemented in the classroom in order to promote their students’ learning to the fullest. I will start by treating metaphor and narrative separately. Since I am dealing with metaphors as they relate to concepts (as concepts are what students are learning in their education), in section I, I will first outline the essential aspects of concepts, which are their schematic and imaginative\textsuperscript{1} nature, as well as spatiality and partiality. Each of these illuminates an aspect of how we acquire knowledge of abstract concepts from more concrete concepts, and how using metaphors exploits this process. In short, metaphors are the organizing principle of learning. In section II, I will outline relevant aspects of narrative, namely temporality, identity, reflection and empathy. Each of the aspects of narrative will illuminate a more purposive or teleological dimension of knowledge, which makes information more relatable to oneself; and so it is, put simply, the principle of making information meaningful. I will discuss how these elements are relevant to education as I treat metaphor and narrative separately, but their relevance will be made especially clear in section III, when I discuss how metaphor and narrative

\textsuperscript{1} To be sure, imagination is used in narrative too, but it is especially important to emphasize when talking about concepts, which to most may seem less “imaginative” than narratives.
complement each other in the form of metaphorical narrative. From there, I will urge that further research be done to test these claims, and suggest an experimental design for initial testing.

The claim I make is rather bold if I am to suggest that metaphorical narrative would be beneficial to learning of all subjects, and while I am not so confident at this stage to make this claim, I have great optimism for the potential of metaphorical narrative. Still, within the scope of the current writing, and in order to propose an experimental design that may be reasonably carried out, I will limit my claims that metaphorical narrative is beneficial to learning subjects encountered in biology. I choose biology as my subject first, because metaphorical narratives would seem less likely to help a biology student who needs to memorize the various stages in photosynthesis, than an English student who may be studying metaphor as a literary device and narrative as a writing style, or even a sociology student who needs to study the three major sociological perspectives, as these can reasonably--without too much imagination--be accompanied with metaphorical narratives in a way that benefits understanding. Second, Stotz (1998) represents one of very few, if not the only, published proponent(s) for narrative as a tool for learning, and argues for its use in the biology classroom in particular. In this way, my paper may be thought of as an expansion on Stotz’s (1998) paper.

I. Concept and Metaphor

Introduction: What is Metaphor?

A metaphor will be understood here to be more than a mere literary device. By metaphor, I understand what George Lakoff and Mark Johnson (1980) meant by conceptual metaphors. Conceptual metaphors are metaphors that explain how one conceptual domain (i.e., the target domain) is understood and subsequently described in terms of another conceptual domain (i.e.,
the source domain). One of Lakoff and Johnson’s (1980) famous examples of a conceptual metaphor is TIME IS MONEY, where the familiar source domain MONEY is used to understand the more abstract target domain TIME. People often do not explicitly acknowledge such metaphors, but instead express their implicit understanding of time via money in a number of metaphorical linguistic expressions that correspond with the conceptual metaphor, such as “How do you spend your time these days?” or “I’ve invested a lot of time in her,” or “You’re running out of time,” where the italicized terms are based in the money conceptual domain (Kovecses, 2010; Lakoff & Johnson, 1980, p. 8). Therefore, the metaphorical linguistic expressions we come across in our language reflect how we cognitively (but not necessarily consciously) understand these concepts via metaphor.

Lakoff and Johnson distinguish between different kinds of conceptual metaphors. On one hand, metaphors can be structural, orientational, or ontological. Structural metaphors are those “cases where one concept [the target domain] is metaphorically structured in terms of another [the source domain],” or in other words, they serve a cognitive function by facilitating a speaker’s understanding of the target domain by means of the “relatively rich knowledge structure” provided by the source domain (Lakoff & Johnson, 1980, p. 14; Kovecses, 2010, p. 37). So our previous example of a conceptual metaphor, TIME IS MONEY, is more specifically a structural metaphor. There are also orientational metaphors and ontological metaphors, the former being ones that organize “a whole system of concepts with respect to one another,” the latter when we metaphorically understand something in terms of an entire physical thing, either an entity (e.g., a container) or a substance (Lakoff & Johnson, 1980, p. 14). Though structural

---

2 See the first three problems in Graham Low (2008).
metaphors are more applicable to education, these last two types of conceptual metaphor point out important trends in how we conceptualize, or “break up” reality into its “parts” which are real to us.³

One can also distinguish between conventional and new metaphors. Conventional metaphors are those that Lakoff and Johnson (1980) focus on as these are the metaphors that account for everyday linguistic expressions that we rarely ever recognize to be metaphorical. New metaphors, or as Paul Ricoeur calls them, “genuine metaphors[,] are at the same time ‘event’ and ‘meaning’,” which is to say that the target domain is given a meaning not merely through linguistic convention, but because it is given this meaning by the contextual action, i.e. creating a unique metaphor, hence the “event” (Ricoeur, 1991c, p. 307). The event aspect of new metaphors also highlights the idea that metaphors do not merely discover or reveal a similarity between the two domains, but create the similarity. Though this creativity can be attributed to all metaphors, let alone all instances of novel naming, at its conception through what has been referred to as a “meaning baptism,” conventional metaphors lose their novelty as they are standardized in a language or a people’s everyday linguistic communication.

Like conventional metaphors, new metaphors structure the target domain, except these metaphors are “imaginative and creative [and] are capable of giving us a new understanding of our experience” (Lakoff & Johnson, 1980, p. 139). For example, in American English, some linguistic expressions about love reflect the conceptual metaphor LOVE IS MADNESS (e.g., “I’m crazy about her”; Lakoff & Johnson, 1980, p. 141). LOVE IS MADNESS is a conventional

³ In fact, I don’t think Lakoff & Johnson’s (1980) distinction between these three kinds of conceptual metaphor is so helpful since orientational and ontological attributions to abstract concepts apply just as much to structural metaphors. See Spatiality: The principle of organization that structures reality for my reasoning on how orientation and ontological status (namely, being spatial) play a role in all conceptual metaphors relevant to this research.
metaphor, whereas LOVE IS A COLLABORATIVE WORK OF ART would be a creative metaphor, and this creative metaphor has the potential of changing a person’s understanding of love as it highlights collaborative, harmonious aspects of love, whereas the conventional metaphor may highlight other aspects, i.e. the discordant or uncontrollable aspects of love (Lakoff & Johnson, 1980, pp. 141-142).

Since I am interested in finding a new way to conceptualize difficult topics presented to students in their education, we will focus on new metaphors for the purpose of creating new, more intuitive conceptualizations of difficult academic concepts, though we will refer to conventional metaphors insofar as they offer insights into how humans will understand abstract concepts in concrete terms.

The focus of this writing is on how metaphor (and narrative) may help in the conceptualization of abstract or difficult concepts students may encounter during their education. For this purpose, I will limit my analysis to what I will call educational metaphors, or structural metaphors that explain an abstract, academic target domain by structuring it in terms of a less abstract, or experiential, source domain. To better understand why I have limited my thesis to this kind of metaphor, I will now outline the major aspects of these metaphors in more detail.

Schemas: The Psychological Framework of Thoughts and Reality

This language of conceptual “structures” and “domains” that I have used while talking about conceptual metaphors is comparable to what cognitive psychologists refer to as “schemas” or “gestalts,” insofar as they may be characterized as a collection of knowledge or associations assumed under a single concept. The schema is then the “pattern” by which the aspects, or “parts,” of the concept are organized. For example, the schema of a bird (i.e., the whole,
pattern) may be a winged (one part) animal (second part) with a beak (third part) and feathers (fourth part). Such “criteria” (i.e., the four parts) for inclusion in a schema are not rigid, and only includes the most representative aspects of the category, which are epitomized in the form of a prototype (e.g., a robin is prototypical of birds). This is to say that schemas are incomplete or flexible, which corresponds to the structuring in conceptual metaphors, which Lakoff & Johnson (1980) describe as “necessarily partial,” meaning “only part of [the source domain, e.g. money,] is used to structure our normal [abstract] concepts [e.g. of time]” (p. 52).

Even if all schemas, and therefore all concepts, are partial and flexible, there seems to be a substantial difference between that of a bird and that of time. I do not think in any language speakers will use conventional metaphors to conceptually structure the meaning of “bird” since it is something we can assess experientially, whereas time is not so directly understood. The difference must be that concepts like time are abstract, whereas birds are concrete entities we can address with the direct experience of our five senses. What I mean by abstract, then, as pertains

---

4 For more on this, see Partiality: The incomplete yet flexible nature of reality.

5 Though I draw a direct relation between schemas and concepts, I would not do the same between prototypes and either schemas or concepts, in agreement with Jerry Fodor (1998), though not for the same reason he says they must be different (i.e., for differences in compositionality). Rather, I take a prototype to be the “image” (as copy) or actualized approximation of a schema/concept. Due to the flexible and partial nature of schemas/concepts, they cannot be pictured “perfectly” (e.g. I cannot draw for you the final or perfect picture of a dog, such that it says everything that can be meant by “dog”; instead I can only draw you a prototypical, or representative, dog). This is why I can map my concept of, e.g., a dog onto this animal that sits before me, as well as many other similar animals such that the same name “dog” may refer to them all, whereas I cannot point to or perfectly delineate the concept dog. The features I generally attribute to dogs (e.g., furry, wagging tail, barks) such that I am able to label some particular animal when I come across it, and it fits enough of these attributes, as “dog,” are not images either, unless I try to “imagine,” or picture, them. I might be making a subtle distinction here, between knowing a concept and picturing that concept, especially as these may run very closely together in most cognitive processes, yet to make this distinction does avoid the issues of compositionality that Fodor brings up. Indeed, this distinction between picturing and conceptualizing may be rooted in “prejudices [that] tend to identify the notion of image with that of a replica of a given reality,” or what Ricoeur may more simply refer to either as the bias of understanding “image as copy,” or “imagination as picture” (1991a, p. 118, 134). For more on this, see Reality and imagination: A psychological account of what is real.
to this distinction when it comes to conceptual metaphors, is any concept which cannot be
directly experienced in spatiotemporal reality. Abstracts then could be distinguished from
“experiential gestalts,” which Lakoff and Johnson (1980) define as those constituents of our
“basic domain of experience ... [that] characterize structured wholes within recurrent human
experiences” (p. 117). Experiential gestalts furthermore encompass “natural kinds of
experience,” insofar as they are the product of three things: “our bodies,” “our interactions with
the physical environment,” and “our interactions with other people” (Lakoff & Johnson, 1980,
p. 117). Still, this distinction between abstract concepts and experiential gestalts, which I will
hereafter refer to as “concrete concepts,” deserves further clarification, in which case I will need
to treat the philosophical implications of human psychological reality.

Reality and imagination: A psychological account of what is real. Paul Ricoeur
(1991a) offers a theory of imagination by which he suggests the products of our imagination,
fictions, play a role in shaping (and reshaping) our reality, or rather, to emphasize the cognitive
aspect of what I mean here by reality, in shaping what is real to human beings (i.e., an
epistemological theory, not an ontological one). To be sure, this is not some theory of
subjectivism, as though to suggest that anything a person could dream up will suddenly
materialize or otherwise manifest in the perceiver’s reality. To avoid this misunderstanding,
consider theories of imagination to be theories of how human beings picture reality, such that

6 Certain aspects of our interactions with other people, like beliefs, intentions, etc. do not seem to fit my
earlier description of concrete concepts as beliefs and intentions cannot be “directly experienced in
spatiotemporal reality,” yet intentionality in particular I would consider a natural kind of experience only
because humans seem to necessarily apply this concept when dealing with other humans, and in fact
tend to generalize its application, hence personification/anthropomorphism. Though intentionality is a
seemingly abstract concept, I think its experiential nature can be accounted for not as a natural spatial
experience, but as a natural temporal experience. For more on this, see the later definition of concrete
and abstract concepts just before Conceptual Metaphors as the “Experientialization” of Abstracts, as
well as Temporality: The Human-Specific Dimension of Psychological Reality.
with a theory of imagination I would be able to answer the following questions: What are the
*images* in my head, and how am I *imagining* them?

Now consider a conventional philosophical account of imagination: “To have an image of
something is to ‘see’ it in our mind’s eye, without the presence of the actual thing...Image and
perception differ only as regards their *modes of givenness*” (Ricoeur, 1991a, p. 118). Ricoeur
calls this prejudice “image as copy” for short, and criticizes it for the many paradoxes it raises,
the main three being “paradox of the non-physical analogon; paradox of intuitive absence;
paradox of quasi belief” (see Ricoeur, 1991a, p. 118) which may simply be summarized as the
issue of understanding exactly how “an image is a physical or mental replica of an absent thing”.
Perhaps an image is a weakened sense impression of the original, as David Hume suggested; but
here we can see more clearly what implicit assumptions this conventional view holds.

For one, the conventional view holds that imagining is passive. If an image is the residue
of a previous sensation, then we are merely *recalling* that sense experience in memory, rather
than actively *producing* it. This is where Ricoeur (1991a) makes the distinction between the
“reproductive reference” and “productive reference,” the latter being “the ultimate criterion of
the difference between fiction and picture” (p. 121). Though we may admit to some passivity in
reproducing certain images, this alone will not account for our ability to produce fictions. If we
could only passively produce images--if images are merely copies--then we are rejecting the act
of creating fictions, which, even if it is derivative of the copy-images, must admit to some sort of
*work* being done so that the images can be rearranged, placed into new contexts and associations.

What also contributes to this passive assumption of the conventional theory of
imagination is the association of imagining with perception. Ricoeur (1991a) suggests that we
“shift from the framework of perception to that of language,” and that the theory of metaphor will facilitate this shift (p. 121). Ricoeur (1991a) asserts that “image...is not confined to a role of accompaniment, of illustration, but participates in the invention of meaning,” if we only consider that images can be produced by processing language (p. 123). This is what a prototype is, after all: an image (e.g., of a robin) elicited by a linguistic expression (“bird”) standing for a concept (bird-ness). So instead of approaching imagining as a progression from perception to image, Ricoeur suggests we go from language to image. I will illustrate this with an example expression: “Blue whales swim backwards around Saturn.” This expression has surely elicited an image in your mind, one which you may very likely have never produced in your mind before. Even though we may have an image of parts of this expression in other contexts (e.g., blue whales in a sea, or saturn with rings in space), the language itself, which has put these disparate things together, produces a new image, fictional or implausible though it may be. It is this ability to bring disparate things together in language, and to make sense of them despite not belonging together in normal experience, that plays an essential role in conceptual metaphor. If we consider the general principle of metaphor, what metaphor is more philosophically, “metaphor is a deviating use of predicates within the framework of the entire phrase. It is necessary to speak of a metaphorical statement rather than of nouns used metaphorically,” because it is the whole context of the phrase, e.g. the pairing of swimming whales with saturn, rather than these things in isolation, that produces the new meaning (Ricoeur, 1991a, p. 124). To

7 I do not mean to allude to Platonic Forms here, as Plato may have been guilty of the image as copy prejudice himself. I mean something more like the family resemblance, or the partial/incomplete characterization(s) that operate(s) in determining what it is to be, e.g., a bird, or whether such-and-such is a bird.

8 This example has been borrowed courtesy of Shannon Finnegan.
illustrate with an actual metaphor, TIME IS MONEY: the entire sentence produces a “new appropriateness” as we interpret this phrase and relate these disparate things, which (if the metaphor is made conventional, as in this case, or is otherwise conceptually integrated\(^9\) by a person) will create, “at the level of the isolated word, the extension of meaning by which classical rhetoric identified the metaphor,” in this case the new meaning of time as if it were money (hence, “spending” time, “buying” time, etc.; Ricoeur, 1991a, p. 124).

To summarize, imagination here means what Ricoeur (1991a) meant by it: “Imagination--in its semantic sense--is nothing but this ‘competence’\(^{10}\) which consists of producing the genre through the difference, again not beyond [italics added] the difference, as in the concept, but in spite of the difference” (p. 125). To be sure, imagination “is not a question of a passively recorded similitude, but of an active operation, coextensive with the rapprochement performed by the metaphorical statement, and...the entire weight of the operation rests on the copula of the metaphorical statement: X is like Y” (p. 125). Granted, this is technically the form of a simile and not a metaphor, metaphor in principle operates the same was as simile, metonymy, etc., insofar as they all create “pertinence within impertinence” by relating two disparate ideas at the level of the whole phrase (p. 125). In which case, I could instead speak more generally about figurative language--though I want to stay away from this expression because I am not focusing on the linguistic aspects of figurative language, but the cognitive

---

\(^9\) For a person to “conceptually integrate” a metaphor is to make a meaningful association between the source and target domains such that the former guides or informs the conceptualization or understanding of the latter. This conceptual integration I think is key to effective learning via metaphor, since a metaphor, no matter how well it may conceptually structure an abstract concept, will not be much help if it is not meaningful to the learner. Narrative will be introduced later as the added measure by which the learner will be able to appropriate a metaphor in a personally meaningful way.

\(^{10}\) I will take it for granted that human beings have this capacity, whether you call it the “imagination” or something else. Examination into the neurological bases of this capacity would be worthwhile, but is not necessary for the current thesis.
processes elicited by the figurative expressions. I speak of the underlying cognitive principles at work in figurative language as metaphor more for convenience’s sake, though metaphor is most likely epitomical of the various figurative expressions, especially as the literature primarily researches metaphor and not the other kinds of figurative language.

With this understanding of imagination, then, we can treat the image not as copy, but as schema. Hence we may call it the productive, or “schematizing imagination,” so as not to confuse it with the conventional understanding of imagination (p. 126). This is to suggest that schemas, the structure of our concepts, are actively produced by our capacity to imagine certain aspects or “pieces” of our experience (e.g., wings, beak, chirping) as a meaningful whole, i.e. a gestalt (e.g., bird). Still, to adequately demonstrate why “image as fiction” (i.e., productive reference) is schematic, I will next outline the other major aspects of conceptual metaphor besides imagination, namely spatiality and partiality.

Spatiality: The principle of organization that structures reality. The dialogical self theory in psychology conceptualizes the self such that it can account for the human mind’s ability to take various perspectives during internal dialogues, what Meira and Ferreira (2008) call the “multivocality” or many “I-positions” of the self, which are “intrinsic to the identity process” (p. 293, 292). For example, with a dialogical self theory, we can account for such remarks as, “I was not as mature as I am now,” the past I-position necessarily being considered different in order to be contrasted with the present I-position. Theories of the dialogical self emerged in response to epistemological theories that sought an unambiguous distinction between reality and the representations thereof, while also accounting for their relation to one another; however, as noted above, this distinction between reality and representations (as copies of
reality) raises a host of paradoxes and difficulties (Meira & Ferreira, 2008). Dialogical self theory, then, abandons the tenets of these epistemological theories and supports “the integration of fictional processes in the epistemological matrix, in the sense that current theories and concepts [in dialogical science] do not aspire to be identical to the world but are recognized as possible versions of the highlighted phenomena” (Meira & Ferreira, 2008, p. 292). Otherwise, the representation of the self could not be conceptualized as many I-positions, but could only be a single copy of the “real” self that one passively acquires through experience.

To conceptualize the self in this way is not merely to think of the self temporally (as a self with past, present and future), but spatially (e.g., as a past-self, a present-self, and a future-self). It is this spatialization of the self that “makes it possible to re-conceptualize the temporal dimension itself through the phenomenon of juxtaposition [which] refers to the ability the self has to contemplate at one moment in time two or more positions...of the same story” (Meira & Ferreira, 2008, p. 294). I believe that all conceptualizations, and not merely those of the self, similarly spatialize the topic under examination. However, I will only go so far as to demonstrate that at least conceptual metaphors are spatializations. To start, it would be beneficial to clarify what I mean when I say something is “spatial.”

Spatializing our experiences serves typical human needs, down to the ability to point out, e.g., a lake, or distinguish, e.g., between a river and an ocean, though we are “imposing artificial boundaries” by making these ontological classifications (Lakoff & Johnson, 1980, p. 25). That

---

11 The difficulty of talking about spatiality in the context of epistemological reality is that spatiality is ontological insofar as we are making “beings,” or things that exist, out of our experience whenever we spatialize. The key here is to recognize that we are making these beings, which is to say that spatialization is the process of constructing, or organizing, things out of our experience, which, if not organized as ontological things, would be chaotic and impossible to comprehend. Therefore, ontology must be taken here as a psychological phenomenon, not a metaphysical one.
the boundaries we draw onto our experience are to some extent artificial is in part a confirmation of the imaginative aspect of our reality, i.e. that fiction plays a role in our reality. But what else can be said of spatiality? Indeed, it is difficult to say explicitly what spatiality is, though I think this is precisely because spatiality is a fundamental organizing principle of our experience, and as such we cannot do much more than take it for granted. Without spatiality, I could say nothing at all, nor could I think anything. In spite of this difficulty, I will offer the following definition:

spatiality is organization as things by differentiating, relating (finding similarities in different things), and binding (i.e., making no distinction at all). With that said, there are some things that are easier to spatialize than others, namely those things we experience physically (e.g., a human being is easier to spatialize than humanity or society, and money is easier to spatialize than time). This is in part the distinction between concrete and abstract concepts, but we are not quite in the position to define these terms yet, so for now we will have to make do with defining as spatial those things that we consider directly physical (e.g., bodily, material, sensible, taking up space).

If we consider each of the three kinds of conceptual metaphor mentioned above, we will see that each, even if in a slightly different manner, is a structuring of an abstract concept via

---

12 The word choice is important here, because to say that spatiality is the organization of things would be to suggest that the things metaphysically exist before the organizing, whereas what I want to suggest is that the psychological process of spatialization is to conceptualize experience as things, so the process of spatialization makes the things.

13 See What is Metaphor?
Structural metaphors use a source domain to structure the target domain. Here are some examples of structural metaphors:

- **TIME IS MONEY**
- **ARGUMENT IS WAR**
- **LOVE IS A JOURNEY**

Each of the above source domains, money, war and journeys, are spatially defined: money takes up space (as bills, coins), can be exchanged, disposed of, etc.; war occurs in particular locations, uses up resources, destroys people, monuments, environments, etc.; and journeys also span a certain space, from a starting point to finish; whereas time, an argument, and love are not so obviously spatial. And if we were to break up LOVE IS A JOURNEY into its component parts, less complex conceptual metaphors, according to Lakoff (2008), we get:

- **PURPOSES ARE DESTINATIONS** (e.g., “I have almost reached my goal”)
- **DIFFICULTIES ARE IMPEDIMENTS TO MOTION** (e.g., “I cannot get past this problem”)
- **A RELATIONSHIP IS A CONTAINER** (e.g., “I put all my trust in you”)

---

14 The three kinds of conceptual metaphor are classifications Lakoff and Johnson (1980) used and so should be restricted to conventional conceptual metaphors. I am not suggesting that all conceptual metaphors must be spatializations of abstract concepts, especially since poetic metaphors can remain very abstract, but what I do want to demonstrate is that we typically, or naturally, spatialize abstract concepts to make better, more intuitive sense of them. If spatialization is indeed a means to more intuitively grasp an abstract concept, exploiting this fact will facilitate learning abstract concepts in education.
• INTIMACY IS CLOSENESS (e.g., “We have become very close recently”)\(^\text{15}\) (Lakoff & Johnson, 2008, p. 25)

Destinations are spatial insofar as they have a geographical location; impediments to motion (i.e., obstacles) prevent or impede my access to some space; containers are things that have space to put other substances into it; and closeness is obviously spatial.

Ontological metaphors use our experience with physical objects and substances as the source domain to structure more abstract concepts--“events, activities, emotions, ideas, etc.”--such that we can “treat them as discrete entities or substances of a uniform kind” (Lakoff & Johnson, 1980, p. 25). We spatialize abstracts using such metaphors as:

• INFLATION IS AN ENTITY

• THE MIND IS A BRITTLE OBJECT

• VISUAL FIELDS ARE CONTAINERS

Entities, brittle objects, and containers, are spatial insofar as they are comparable to those things we encounter in physical experience (e.g., human beings are entities, gravel is a brittle object, and pots are containers).

Orientational metaphors include the source domains up, down, forward, back, on, off, closeness, etc. (e.g., HAPPY IS UP, SAD IS DOWN, FUTURE IS FRONT, PAST IS BACK) and are unavoidably spatial since orientation assumes spatiality by definition.

\(^{15}\) Of these four conceptual metaphors that compose LOVE IS A JOURNEY, the first may be an orientational metaphor, the second may be an ontological metaphor, the third is most certainly an ontological metaphor (Lakoff & Johnson, 1980, mention metaphors using containers as the source domain explicitly to be ontological metaphors), and the fourth is most certainly an orientational metaphor. The fact that structural metaphors can be restated as orientational and/or ontological metaphor(s) is further evidence for my point made in footnote 2.
If most (potentially all) conventional metaphors are spatializations of concepts that are not directly physical, i.e. abstract, then spatialization must be a natural or intuitive way of organizing our reality conceptually. If fiction plays a role in reality, which would be to admit that “the organizing metaphors are, to a certain extent, literalized, since the phenomena being studied [the target domains], are identified\(^{16}\) with the concepts being used [the source domains],” then we may accept the claim dialogical self theorists make, that “[c]oncepts and reality are taken as identical\(^ {17}\)” (Meira & Ferreira, 2008, p. 292). All of this leads to the conclusion that space is a fundamental process, along with imagination, of creating reality. Indeed, I think these processes are the same (i.e., the capacity to imagine is the same as the capacity to make spatial), but I refer to imagination to highlight the active, creative aspect of the capacity, whereas spatiality highlights the spatial (rather than temporal\(^ {18}\)) aspect.

In case the spatial aspect of the schematizing imagination has not been fully appreciated, I will add one more way to understand the conventional metaphors: insofar as each is spatial, all three kinds of metaphor can be represented using image schemas. Image schemas are visual representations of basic spatial relations (see Table 1\(^ {19}\) for some examples).

---

\(^{16}\) I do not like Meira and Ferreira’s (2008) use of the word “identified” here, though I do like that they say earlier that the metaphors are only “to a certain extent [italics added], literalized,” since identifying with suggests binding, i.e. making no distinction at all, whereas a metaphor has to preserve something of the difference, hence Ricoeur (1991a) defining imagination as “the apperception...of...a pertinence within impertinence” (p. 125). It also cannot be that the two domains are identified with each other because of the partiality of conceptual metaphors, which will be discussed in the next section.

\(^{17}\) In this case, it is binding.

\(^{18}\) A discussion on temporality will be reserved for the section on narrative; see Temporality: The Human-Specific Dimension of Psychological Reality.

\(^{19}\) The image schemas used in this table come from Riemer (2010).
Theories are buildings, of the source domain structures the target domain. For example, in the conceptual metaphor recognized the partial nature of conceptual metaphors from the start, which has a number of depicted as a diagram or image exactly because it is spatial.

So another way you could represent conventional metaphors is using one or more image schemas. The image schemas are a depiction of the underlying schematic structure, and it can be depicted as a diagram or image exactly because it is spatial.

**Partiality: The incomplete yet flexible nature of reality.** Lakoff and Johnson (1980) recognized the partial nature of conceptual metaphors from the start, which has a number of implications. But what is it for conceptual metaphors to be partial? For one, it is how only part of the source domain structures the target domain. For example, in the conceptual metaphor

<table>
<thead>
<tr>
<th>Conceptual Metaphor</th>
<th>Image Schema Name</th>
<th>Image Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g., LOVE IS A CONTAINER (&quot;I am in love!&quot;)</td>
<td>Containment schema</td>
<td><img src="image" alt="Containment schema" /></td>
</tr>
<tr>
<td>e.g., LINEAR SCALES ARE PATHS (e.g., “Unemployment moved closer and closer to 10%.”)</td>
<td>Path schema</td>
<td><img src="image" alt="Path schema" /></td>
</tr>
<tr>
<td>e.g., CONTROL IS UP/OVER (e.g., “I have control over him”)</td>
<td>*Over schema (above sense)</td>
<td><img src="image" alt="Over schema" /></td>
</tr>
</tbody>
</table>

*Key:*
TR = trajector, a.k.a. figure; a moving/movable object whose motion or position is determined in reference to a landmark
LM = landmark, a.k.a. ground; a stationary reference point

Consider the following passage (Johnson 1987: 30–31).
The parts of the concept BUILDING that are used to structure the concept THEORY are the foundation [e.g., “Your theory is grounded in a shaky premise”] and the outer shell [e.g., “She has strong counterarguments to uphold her theory”]. The roof, internal rooms, staircases, and hallways are parts of a building not used as part of the concept THEORY. Thus the metaphor THEORIES ARE BUILDINGS has a “used” part (foundation and outer shell) and an “unused” part (rooms, staircases, etc.). (Lakoff & Johnson, 1980, p. 52)

Also, a conceptual metaphor is partial insofar as a particular source domain will highlight certain aspects and suppress other aspects of the target domain it is structuring. For example, in the LOVE IS A COLLABORATIVE WORK OF ART metaphor, “the active side of love is brought into the foreground...[but this] requires the masking of certain aspects of love that are viewed passively” (Lakoff & Johnson, 1980, p. 141). This is also why multiple source domains can structure the same target domain (e.g., A JOURNEY and MADNESS are source domains that structure the conceptual domain LOVE), each source domain emphasizing and masking different aspects of the target domain.

The broader philosophical implication of all this is that “human experience belongs inexorably to the ‘as if’ domain,” which is to say that our “representations” (i.e., productive references, or image as fiction) characterize how we understand our reality rather than what we understand (Meira & Ferreira, 2008, p. 296).20 This is especially true of the images induced by language, as Ricoeur (1991a) argues:

---

20 In other words, as acknowledged earlier, we are shifting away from a metaphysical/ontological understanding of human perception over to an epistemological one.
To form an image is not to have an image, in the sense of having a mental representation; instead, it is to read, through the icon of a relation, the relation itself. Image is less ‘associated’ with than evoked and displayed by the schematization.

Language remains the bearer of the predicative relation [in metaphorical expressions], but in schematizing and illustrating itself in a pictorial manner, the predicative relation can be read through the image in which it is invested. The seeing created by language is therefore not a seeing of this or that; it is a ‘seeing-as.’ ...To see-as is to apprehend the meaning alluded to in a display of regulated images [i.e., language]. (p. 127)

A friend’s story of a car accident will affect how I understood how the accident occurred due to the particular expressions he uses, for the friend’s story paints a picture “as if” it happened just this way and not, say, how it happened from the perspective of the other driver in the accident. Similarly, using metaphorical expressions like “she drives me wild,” will affect how I understand love, such that I will see love as, or as if it were, madness (Lakoff & Johnson, 1980, p. 141).

But if the structuring in conceptual metaphors is partial, does that make the target concept being structured itself partial? In other words, are the concepts themselves incomplete, such that one cannot give a complete or perfect account of a given concept? In short, the answer is, not necessarily. No person has a complete or perfect account of what time is, otherwise philosophers would not still be debating over this topic. Instead, we highlight particular aspects of time that we can understand, the parts about time that are relevant to our needs, e.g., when getting paid your hourly wages. Then the concept TIME itself seems to be partial, insofar as most of us understand TIME in terms of wages but not in other terms or contexts--though I do not think this is so out of necessity, but rather out of practicality.
Part of the need to use source domains like MONEY, BUILDING, and COLLABORATIVE WORK OF ART, all of which we can find examples of in physical experience, is because it helps us get a handle of the abstract concepts like TIME, THEORY, and LOVE, which we do not have direct access to in experience. Indeed, even concepts that do not seem abstract, like BIRD, may be partial if the person with the concept uses standard criteria such as, has wings, feathers, and beak, flies, and chirps, since, though these may be the characteristics of a prototypical bird, and may be an accurate characterization of most birds, it does not account for all birds (e.g., penguins and ostriches do not fly). As such, our conception of bird is partial since it will likely not in itself account for all potential or actual birds, but even so, many of us will still use these prototypical attributes to understand “bird” as it is pragmatic, e.g. when you want to picture a scenario involving an animal that has not been described in any other way than being a bird, or when you encounter an animal that you want to refer to and what you want to highlight about the animal is encompassed in what you prototypically associate with a bird.

It is not true that all concepts must be partial, since one may refine their definition of, e.g. bird and time, through studying zoology and philosophy, respectively.\textsuperscript{21} I will argue, instead, that at least when initially learning a concept, a person’s concepts are partial, which is to say they are incomplete or imperfect conceptualizations of the thing in question. Also, when discussing particular aspects of a concept, either to emphasize those aspects as they are found to be relevant

\textsuperscript{21} A concept can be “complete” yet still not satisfy the needs of scholars interested in the same concept. Indeed, I think a concept can be complete but inappropriate (I would use the word “incorrect” if it did not have certain metaphysical connotations) insofar as it does not highlight the relevant aspects that we find ought to be focused on for said concept. As such, a concept would be “complete” if its understanding was based solely in formalized conditions that could be agreed upon. Such a definition by criteria can be more easily achieved in certain disciplines, like mathematics, than others, especially the social sciences. And even if a complete concept can be agreed upon, such agreement cannot be based upon the apodictic (metaphysical) certainty that some philosophers, like Rene Descartes, demand.
in a particular context or just in everyday conversation, a person’s linguistic expressions of a
concept will be partial, primarily because to do so is practical.\(^{22}\) This not only makes out
conceptual metaphors to be practical in that they can highlight the aspects relevant to a given
context, but they are also practical for being readily processed and relatable, insofar as they are
structured by concepts that are meaningful or relatable by the learner.

Now we are equipped to answer some questions we had to put aside earlier. We have as
complete a philosophical theory of imagination as we can manage in this writing, but enough to
answer the questions that I suggested earlier should be addressed by a theory of imagination.
First, the images in my head are either copies (i.e., reproductive references) or fictions
(productive references).\(^{23}\) Copies may be reserved to the passive impressions made in working
memory, perhaps some memories of specific events, though how they exactly function in
cognition is not our current concern. Fictions are “interpretations” (in the sense of “seeing-as”
and “as if”) produced “when thought is at work;” examples include “[w]riting a poem; telling a
story; construing a hypothesis, a plan, or a strategy” (Ricoeur, 1991a, p. 122).

The imagination is schematic (Ricoeur, 1991a), i.e. imagination operates as the
schematizing process, since it is the process by which we spatialize and partially characterize our
reality. If schemas are the patterns by which concepts are structured, if the structures are partial,
that is, incomplete and thereby flexible so as to handle outlier instances of a category, and if

\(^{22}\) In other words, this is like the functionalist school of thought in linguistics, but instead of applying it
merely to the domain of linguistic expressions, I am also applying it to concepts.

\(^{23}\) Ricoeur may be arguing that no images can be mere copies, but that all images are productive
references, whereas I am not willing to abandon “copies” since this argument alone does not provide
reason enough to abandon bottom-up psychological processes. I might be willing to consider these
bottom-up psychological processes (e.g., impressions made on us that we cannot consciously help, such
as traumatic experiences) as productive references, only subconsciously or unconsciously so, but
developing such a position would be better suited to a separate paper.
patterns arise from spatially relating parts/aspects so that they can constitute a pattern (i.e., through spatially comparing and contrasting parts and clustering them into one or more categories) which is achieved through the imagination, insofar as it can actively manipulate representations into new contexts or associations, then the imagination is a schematizing imagination.

As to what the difference is between abstract and concrete concepts: **Concrete** concepts may best be defined as natural, directly spatial or temporal concepts, the former of which can be represented by image schemas. We have not discussed the temporal aspect of concrete concepts, and this is primarily because conceptual metaphors capitalize on spatiality, whereas I will claim that temporality is capitalized on by narrative. As such, discussions of temporality will be reserved for the narrative section. All we need to know about temporality now is that it applies to concrete concepts as a basic understanding of animacy. In other words, the temporal dimension of concrete concepts include concepts concerning things with intentions, goals, agency, etc. Intentionality, goal-orientation and agency may seem like abstract concepts, yet there is evidence to suggest that infants make a distinction between inanimate and animate (especially humans) objects (Kuhlmeier, Bloom & Wynn, 2004; Poulin-Dubois, Lepage & Ferland, 1996). These spatial and temporal concepts are all **natural** insofar as, as mentioned before in terms of experiential gestalts, they are experientially basic categories we encounter and/or engage in in typical human experience. So concrete concepts are more readily imagined and spatialized (though potentially just as partial as other concepts), and are grounded in our experience, as processed through our bodies (hence embodied metaphors), our senses, and our innate cognitive processes. **Abstract** concepts, then, would best be defined negatively, as **not**
concrete concepts, insofar as they are more removed from direct experience, or in other words, build from the foundation of the experiential gestalts as secondary, tertiary, etc., concepts.

**Conceptual Metaphors as the “Experientialization” of Abstracts**

An important aspect of conceptual metaphors as they function in everyday language is that usually the target domain is an abstract concept relative to the source domain that informs it, which is more concrete. According to Reza Pishghadam (2011), “[t]he need for metaphorical definitions in our conceptual system comes from the fact that many abstract concepts are not described in our experience. Therefore, in order to understand them we need to use other concepts that are clear for us” (p. 28). To be sure, a review of common metaphors from the Lakoff Conceptual Metaphor database (1994) demonstrates this pattern:

<table>
<thead>
<tr>
<th>Target Domain</th>
<th>Source Domain(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A force</td>
<td>is A moving object</td>
</tr>
<tr>
<td>A problem</td>
<td>is A body of water / a locked container for its solution / a region in a landscape</td>
</tr>
<tr>
<td>A schedule</td>
<td>is A moving object</td>
</tr>
<tr>
<td>Abilities</td>
<td>are Entities inside a person</td>
</tr>
<tr>
<td>Acting on</td>
<td>is Transferring an object</td>
</tr>
<tr>
<td>Beliefs</td>
<td>are Being with a life cycle / fashions / guides / locations / love objects / possessions</td>
</tr>
</tbody>
</table>

For the full database, go to <http://www.lang.osaka-u.ac.jp/~sugimoto/MasterMetaphorList/MetaphorHome.html> and click on the link “index by metaphor name.” You can find examples of linguistic expressions reflecting these conceptual metaphors by clicking on the name of the conceptual metaphor. For example, by clicking “A_Force_Is_A_Moving_Object.html,” you will find such linguistic expressions as “Even small magnets are sources of magnetism that can erase credit cards,” where the noun “magnetism” indicates an “object” (i.e., the spatialization/objectification of the force of magnets), and “source” indicates an origin of motion from which magnetism “moves toward” the credit card, thereby erasing the card.
The above target domains may be considered abstract insofar as they are not experienced in reality as natural phenomena, whereas the source domains generally draw from physical things or occurrences (e.g., “a moving object” can be represented by a path image schema, which is naturally derived from our experience with the motion of physical objects) that we can expect most humans to encounter in their lives\textsuperscript{25}.

I do not claim that all conceptual metaphors we encounter in language are to explain abstract concepts in concrete terms, nor do I claim that a conceptual metaphor, conventional or otherwise, need be a concrete structuring of abstract concepts. Rather, structuring abstract target domains via concrete source domains is a pattern that often occurs for the practical purpose of understanding the abstract concept, or at least to speak of an abstract concept in more understandable terms, such that even a person unversed in the abstract concept may come to relate to it. Lakoff and Johnson (1980) explain that,

\textsuperscript{25} The only exception we might make in the table above is the source domain LOVE OBJECTS in the conceptual metaphor BELIEFS ARE LOVE OBJECTS, since love is an abstract concept and is usually the target domain in conceptual metaphors (e.g., LOVE IS A JOURNEY); but if we consider the entailments of the metaphor BELIEFS ARE LOVE OBJECTS, we will see that insofar as the source domain is a love object, it is something we physically experience, e.g., as a romantic partner or person you are attracted to, either of which is not abstract qua object.
Because so many of the concepts that are important to us are either abstract or not clearly delineated in our experience\(^{26}\) (the emotions, ideas, time, etc.), we need to get a grasp on them by means of other concepts that we understand in clearer terms (spatial orientations, objects, etc.). (p. 115)

This would explain why conventional metaphors primarily consist of abstract target domains and concrete source domains, whereas other conceptual metaphors (e.g., “Juliet is the sun”, whose target and source domains are both concrete) better serve aesthetic purposes, e.g. in poetry.

This pattern demonstrates the generalized function of conceptual metaphors, which can simply be put as understanding ambiguous, complex, or otherwise abstract concepts by structuring them in terms of one’s natural experience. This is a pattern I think we can find in all categorizations or understandings of abstract concepts, namely this process of anchoring the abstract concept in terms of our better known, concrete understanding. I will refer to this process of anchoring, or structuring, of abstract concepts with our experiential knowledge as “experientializing” the abstract concept. We experientialize abstract concepts by relating them to natural kinds of experience, i.e. experiential concepts, whether that be done by giving the abstract spatial qualities (e.g., conceive of the abstract as an object), by embodying the abstract (i.e., by relating the abstract to the body, though since we understand the body spatially, this is just another way of spatializing it), or, as we will see later, by narrating it (i.e., giving the abstract a temporal dimension).

If experientialization is true of conceptual metaphors in everyday language, I argue it is because the experientialization of abstract concepts (i.e., the structuring of abstract concepts via

\(^{26}\) I take “abstract” and “not clearly delineated in our experience” to be the same thing.
concrete, experiential concepts) is pragmatic to the acquisition of abstract concepts. Whereas it would otherwise be difficult to talk about the abstract concept of time, we experientialize it using the conceptual metaphor TIME IS MONEY, which utilizes the imagination to spatialize (and/or make temporal\(^\text{27}\)) and partially structure the abstract concept, thereby finding a way to talk about time using money-expressions. In this way, conceptual metaphors are relevant to an educational context since they use practical and relatable concepts, as the source domain, to explain more difficult concepts.

**Entailments: The Schematic “Parts” that Constitute Abstract Concepts**

Conceptual metaphors have *entailments*, which are the consequential characterizations of the target domain given the source domain that structures it, and each conceptual metaphor has a different set of entailments. For example, the LOVE IS MADNESS metaphor entails a lack of control, among other things (e.g., love is volatile, perhaps even unhealthy), whereas the LOVE IS A COLLABORATIVE WORK OF ART metaphor entails active work, harmony, creativity, etc.

Only part of the entailments of the source domain structure the target domain, as explained in the **Partiality** section above (e.g., in the THEORIES ARE BUILDINGS metaphor, the foundation and outer shell entailments of BUILDINGS structure THEORIES, but the other entailments, such as roof and stairways, do not structure THEORIES), and each source domain

\(^{27}\) You may have already started to wonder how natural experience, or *concrete* concepts, can be spatial and *temporal* when TIME is an *abstract* concept. To be sure, I take time and temporality to be different, the former being an abstract spatialization of the latter, natural concept. Temporality as a natural, experiential concept will be discussed in more detail in *Temporality: The Human-Specific Dimension of Psychological Reality*. 
can be said to offer different entailments to structure the target domain. But if metaphorical structuring is partial, and different source domains offer unique partial structuring of the same target domain, will this not result in different, possibly contradictory, accounts of the same abstract concept? This would appear to be the case, that is, if we took the metaphorical statements to be literal identity statements. However, we know from Ricoeur (1991a) that metaphor is not a mere blending of the two concepts into one, but rather “producing the genre through the difference,” or creating “pertinence within impertinence,” such that while creating the similarity, you preserve the difference. In other words, though we structure the target domain using the source domain, in order to better understand the former through the latter, we still preserve the difference of these two domains conceptually. The conceptual metaphors must be partial then, since if a source domain completely structured a target domain, this would likely result in binding of the two concepts.28

As I suggested earlier, abstract concepts need not be incomplete or remain partial, and with entailments, we can now illustrate how we might “complete” a concept. If the difference between the abstract concept as the target domain and the concrete concept as the source domain is preserved in conceptual metaphors, and we can have multiple source domains that each uniquely structure the same target domain, then each concrete concept that structures the abstract

28 I have still not addressed the potential issue of having different source domains that give contradictory entailments to the same target domain (e.g., LOVE IS A JOURNEY entails that love is passive, but LOVE IS A COLLABORATIVE WORK OF ART entails that love is active). If one should face this issue, one will have to either use her/his best judgment to determine which entailment is correct of the target domain, and from there decide that one entailment partially structures the target domain, while the other does not use this particular entailment to structure the target domain (e.g., the entailment of passivity from a journey structures love, whereas the entailment of activity from a collaborative work of art does not structure love—though other aspects of a collaborative work of art may still structure love) or, one can admit of both entailments and qualify how they apply to the target domain (e.g., love is active when you stay with the person long enough to break down her/his defenses and learn who she/he really is, but love is passive when it is love at first sight).
concept can potentially elucidate a new aspect of the abstract concept, adding a new piece to the puzzle as it were, until, with enough concrete concepts, we can get a clear “picture” of the abstract concept. Table 3 offers a visual demonstration of this point:

<table>
<thead>
<tr>
<th>TABLE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3.a</strong></td>
</tr>
<tr>
<td><img src="image" alt="Diagram 3.a" /></td>
</tr>
</tbody>
</table>

- **3.a**: In 3.a, we only have one concrete concept structuring the abstract concept, and since the structuring is partial, we only have a limited idea of what the abstract concept entails.
- **3.b**: In 3.b, we add more concrete concepts to add unique structuring to the abstract concept, which gives us more entailments to characterize the abstract concept. Theoretically, you could use conceptual metaphors until you have a “complete” account of the entailments of the abstract concept.

Using multiple conceptual metaphors to attain a more complete characterization of abstract concepts will be important when applying metaphor to education, since limiting a lesson to just a

---

29 Ultimately, what we achieve in completing a concept cannot be a *picture*, unless one were to imagine a prototypical picture of the abstract concept (of course, the more abstract the concept, the harder it is to produce such pictures). Instead, the “picture” we achieve is a refined concept which can be explained by the entailments, or “parts” that constitute it. The parts are schematically organized, making for a coherent conception of the abstract.
single conceptual metaphor may lead to an incomplete and biased understanding of the abstract concept that is to be learned.

II. Narrative

Introduction: What is Narrative?

Narrative is a rather ambiguous term that can have a wide application to various topics, and so we will need to define this term to get clear about what is to be meant here by “narrative.” The essential quality of narrative is that it is “the representation of an event or a series of events." ‘Event’ is the key word here, though some people prefer the word ‘action’” (Abbott, 2002, p.12). If there is no event or action being explained, i.e. if what is being explained is not done so in terms of actions or a sequence of occurrences, we would merely be making a statement, assertion, argument, or the like (e.g., “Bob earned an award in a contest” is a narrative, minimal though it may be, whereas “Bob has an award” is not).

Colloquially, we often conflate the term “narrative” with “story,” yet in narrative sciences (e.g., narratology), these two are often distinguished. Story is an aspect of narrative, namely the “event or sequence of events (the action),” and is to be distinguished from the narrative discourse, or “those events as represented” (Abbott, 2002, p. 16). In analogy to metaphor, story is to conceptual metaphor as narrative discourse is to metaphorical linguistic expression, since a narrative discourse is a particular linguistic expression of a story in the same way that a metaphorical linguistic expression is a particular linguistic expression of a conceptual metaphor. We could break up story further into two parts, the events and the entities involved in the events. Abbott (2002) suggests that entities are the more essential of these two components since, as Abbott puts it, “What are events but the actions or reactions of entities?” (p. 17).
Though an alternative name for “entities” may be “characters,” Abbott (2002) claims that this term may be too narrow, since we can have narratives about, e.g., “the story of an atom...or an experiment involving the interaction of chemical elements, or the history of shifting landmasses, or the evolution of planetary systems” (p. 17). However, such narratives that only involve entities and not characters, which is to say these are narratives about natural events involving non-animal things, seem to lack something relative to narratives that involve characters with beliefs, goals, etc. An explanation of how a particular piece of sodium metal reacts with chlorine gas to produce sodium chloride, or the history of continental drift, with the shifting of the tectonic plates causing the separation of the earth’s continents as we know them now from the supercontinent Pangaea, seem to lack a narrative quality that we come to expect from what we more typically refer to as stories, such as those found in novels, Hollywood movies and Broadway plays. This narrative quality is called “narrativity,” or “the sense of someone ‘telling a story,’ of a performance, of narrative ‘for its own sake,’” for which, however, “there is no definitive test that can tell us to what degree narrativity is present” (Abbott, 2002, p. 22). Though narratology may not be able to offer us an explanation as to what gives something more or less narrativity, I would like to suggest that something about the lack of characters in the above examples causes a lack of narrativity, though they may be narratives nonetheless. Stories that involve a character or an interaction of characters possess a temporal dimension, unlike stories about chemical reactions, given the animacy (hence, “action”) of the entity or entities involved. This is not a mere motion of inanimate objects or unconscious forces, but more specifically refers to actions of agents characterized by intentions and goal-oriented acts.
As mentioned before, narrative has a broad application, and it has been utilized in many fields. These applications include narrative therapy in psychology, narrative inquiry in qualitative linguistic studies and foreign language education, analyzing the perspectives and biases of popular culture, analysis of literature, transformational learning—especially autobiographical learning—in adult education, narrative has been used to explain the human capacity for “mind-reading” in Theory of Mind, and narrative has been the basis of philosophical theories of hermeneutics and semantic innovation (Clark, 2010; Karpiak, 2010; Randall, 2010; Wright, 2010; Barkhuizen, 2013; Barkhuizen, et al., 2014; Abbott, 2002; Oatley, 2011; Ricoeur, 1983). Here I am primarily interested in narrative’s application in education, but since one of the major benefits of narrative learning is the potential to personalize one’s education, I will not currently limit my analysis to any particular sort of narrative. Instead, I will look at the primary benefits of narrative as they may apply to education and use these benefits to highlight what should be sought in educational narratives. The first of these benefits is the intuitive expression of temporality in narrative, and so, to better appreciate this point, I will now further develop the definition of temporality.

**Temporality: The Human-Specific Dimension of Psychological Reality**

To start, I want to divorce this quality I am calling “temporality” from the concept of time, especially as it is conceived in traditional philosophies, since the latter is strictly speaking an abstract concept, yet I will argue that the former is a natural, concrete concept that we operate under during everyday cognition. To help illustrate why I conceive of temporality so, I will use Ricoeur’s (1983) understanding of time based on his analysis of Saint Augustine’s *Confessions*, Book 11, which in short is the “theory of the threefold present” (p. 19). Ricoeur (1983) argues
that “the measurement of time owes nothing to that of external motion [and that] the mind itself [possesses] the fixed element that allows us to compare long periods of time with short periods of time” (p. 18). We should not think of past, present, and future as external things to be measured (which is a kind of metaphysical stance) but as subjective measures that are made in the internal “present” by an attentive mind. As such, past, present and future can be restated as the three aspects of our present, as memory, attention, and expectation, respectively.

There is evidence in the literature to suggest that temporality is natural as an experientially basic category of thought. Infants as early as five months old have been found to be able to distinguish between humans and inanimate objects, though how the infants are making the distinction is still uncertain; e.g., whether the distinction is between “animates versus inanimates, intentional agents versus non-intentional objects, or humans versus other objects” (Kuhlmeier et al., 2004, p. 101). Whatever the precise distinction is, such data suggests that “infants possess...an implicit knowledge about the nonmechanical cause for human action” (Poulin-Dubois et al., 1996, p. 34). Poulin-Dubois et al. (1996) conclude that by the age of 9 months, infants “are sensitive to the types of motion associated with animate and inanimate objects,” the former having an autonomous onset of motion, irregular trajectory, and a motion that is affected at a distance (e.g., pointing, smiling), the latter having a caused or dependent motion, a regular, usually linear, trajectory, and a motion that is affected by direct physical contact (p. 21, 34). This sensitivity makes sense evolutionarily since making such a distinction would help the developing child distinguish between “objects” that could react to it and potentially harm it, versus inanimate objects that will only move if directly interacted with, and therefore pose no immediate threat. It is also important for survival for a child to be able to
distinguish a human from other objects, since a child is reliant on an autonomous being to feed and protect it, and so needs to learn to direct social behavior to the right “objects.”

The question remains how this natural conception of animacy or autonomous activity is related to temporality. Indeed, “temporality” may not be the best term for this basic mode of experience. Still, I will define *temporality* as the general qualities attributed to animate “objects,” especially humans, such as autonomy\(^{30}\) (or self-initiated motion), intentionality, purposiveness, and goal-oriented behavior. As Ricoeur (2010) comments:

> [i]n this regard human life is profoundly different from animal life\(^{31}\) and *a fortiori* from mineral existence. We understand what action and passion are in virtue of our ability to utilize in a meaningful way the entire network of expressions and concepts which the natural languages supply us with in order to distinguish ‘action’ from simple physical ‘movement’ and from psycho-physiological ‘behavior.’ Similarly, we understand the meaning of project, goal, means, circumstances, and so on. All such notions taken together make up the network of what could be called the *semantics of action*. (p. 433)

It is because of this aspect of “action” that I call it temporality, in relation to Ricoeur’s characterization of the threefold present as referenced earlier. The semantics of action are temporal in the sense that they incorporate memory, attention, and expectation, all of which play

---

\(^{30}\) I am not trying to make the broader argument here that freewill exists and that determinism is falsified; rather, I only want to assert that psychologically we understand this concept quite naturally, as it contrasts with our understanding of inanimate objects as completely subject to outside influences.

\(^{31}\) Though I think most adult humans will be comfortable with distinguishing human and other animal life in this regard, it is not so obvious that infants make this distinction, since animals are surely animate rather than inanimate. Nonhuman animals may constitute an ambiguous grey-area when it comes to the animate-inanimate distinction, which makes it easy to attribute typical human qualities to animals, such as emotions, desires, and thoughts--and this is not entirely inappropriate either. Still, even if a further distinction of animacy into human animacy and nonhuman animacy is necessary, I would still claim that the former is natural, even if not fully developed or distinct from the latter in infancy, since this distinction between human and nonhuman animals is naturally made in everyday expressions, but also serves social needs, which do no concern other animals.
a role in how we understand autonomous, intentional, etc. behavior. For example, I can explain my friend’s autonomous action of jumping off a building if I give an account of the events leading up to his action, such as having unsympathetic parents, breaking up with a girlfriend, and dropping out of college, his memory of (or rumination on) which contributed to his depression, until he could not take it anymore. I could also explain why a friend is taking a particular graduate course in terms of her expectations, as it is her goal to complete her doctorate, and she understands taking such-and-such course now during her sophomore year as a means, though only one step closer, to reaching her anticipated goal. Furthermore, the semantics of action are temporal in the sense that they cannot be understood as an isolated thing or spatial object, but necessarily have duration or “length in time,” which, though it may be spatialized and broken up into parts (e.g., a goal may be broken up into its inception, the individual steps towards the goal, and the achievement thereof), is best understood as a unity of these parts, as it is only in the combination of its parts that its action-oriented semantics emerges (e.g., a goal is not just one of its parts, but all of its parts when taken together).

Narrative should be especially effective at expressing temporality since narrative discourse offers a format to express agency and purpose in the terms we most readily encounter them, namely in persons acting, and these events can be narratively detailed to provide relevant context and coherence in theme or plot to make the intentions and goals of the entities all the better understood. So though temporality qua agency is not a necessary dimension of narration, it is effectively communicated in narrative, perhaps more so than in other means of expression.

---

32 This expression, “length of time,” is a metaphorical one, in which time has been spatialized as a physical/spatial object whose “length” can be measured, but this is not in fact how temporality is understood qua natural concrete concept.
To be sure, let us examine first of all this coherence, this unity, this wholeness in human action, and see how narrative expresses it.

**Identity: The thematization of agents, actions and events.** Narratives are frequently recognized for their benefit in expressing or (re)creating person’s identities (Clark, 2010; Karpiak, 2010; Randall, 2010; Coffey & Street, 2008). This is often found in autobiographical work, where adult learners or therapy patients narrate their life story to define who they are and what their personal mission is. However, the general principle at work in such autobiographical exercises I think has a broader implication if we look beyond how it affects the individual personally. We tell stories about friends or people we just met to characterize who they are; we explain certain actions as being good or bad, or having a malicious or altruistic intention; we characterize various events, whether in our personal history or in the broader history of humanity, as milestones, epochs, etc.—all of this may be called the thematization of agents and actions. When it comes to narrating, we naturally seem to thematize the entities and/or actions involved. Even narratives that are not temporal, e.g. describing a chemical reaction, is thematic insofar as we are characterizing the entities in the chemical event as reacting due to physical laws which are mechanical in nature, rather than describing it in teleological (e.g., “God willed it”) or mystical terms (“It is witchcraft”), say from certain pre-scientific perspectives, which are different ways to thematize the same event.

To thematize an agent or action is to understand that agent or event as a whole or complete personality or event, whereby the constituent behaviors or actions are unified as one thematically. A theme of an agent or event is really a spatialization of that person or action(s),

---

33 By “thematization” I do not mean the technical term as it is used in linguistics, but simply to give a theme or characterization of an agent or action/event.
since we have categorized it as a “thing,” e.g. as a hero or as courage, yet we thematize these actions as a way to facilitate our temporal thinking, e.g. we expect heroes will behave in a certain way, and we suppose the hero had such a past that it informs his current heroism. What is temporal about this thinking, then, is that we cannot think of an action *qua* action or agent *qua* agent as a mere collection of its constituent parts, but rather we understand the constituent parts (e.g., a person’s particular behaviors or an event’s discrete occurrences) *through* the theme it is assumed under. For example, I may view “Captain Sully” as a hero for his emergency landing of a commercial airplane on the Hudson River, and in fact many do thematize his personality as such, and thereby I am more likely to view his previous actions in light of this theme, say, when reading his memoir, as well as his future actions. If I were to encounter an action that did not seem heroic given his heroic personality, I will have to adjust or qualify his theme (say, if he did some not-so-heroic things in the past, I may chalk it up to him having a less heroic personality, which he had to develop over the years; or if he later did a not-so-heroic thing, I may think he is not so heroic after all). The point is, when thinking or talking about Captain Sully, I will try to summarize his actions and experiences according to some theme, which for persons is more often referred to as an identity. This would be especially true if I were writing his biography.

Whether writing a biography or simply narrating what happened to you at work one day, we can often draw from the narrative some theme, some identity or perspective (e.g., she was a hero; my coworkers are incompetent) that the narrative conveys based on whatever thread ties the events together into a coherent, unified idea. This is more evident in things like literature where an author expresses a theme through motifs, but even if the themes we encounter in
everyday narratives are not so grandiose, we nevertheless thematize the people and actions we talk about.

*Identity*, then, is simply the theme by which we categorize (i.e., spacialize) an entity, action, or event (i.e., a sequence of actions). Identities are particularly *temporal* when dealing with agents, who have a history, which is to say their unified personality can be accounted for by the agent’s memories, attention and expectations, unlike mere entities. The psychological unity of past, present and future are indicative of agency/intentionality, though this temporality also makes the identity of agents more dynamic and open to change. Despite this contingency, we intuitively understand the identities of agents based on our regular interactions with human beings.

Among those regular interactions, we often differentiate those identities we assign to ourselves and those we assign to others. We may call an identity in which one is thematizing the self a reflective identity, and contrast it with identities we assign to others as empathic identities. This distinction will prove helpful insofar as it illustrates one’s perspective on such broad subjects as learning and education. Whether the other being thematized is a particular teacher or the education system at large, knowing a student’s, or having the student reflect on her/his own, attitude towards the other based on how she/he identifies the other can illuminate how said student is dealing with her/his education. A student who sees his teacher as a collaborator may have a more productive educational experience than another student who sees her teacher as an authoritarian. We will now examine reflection and empathy in more detail to see how they play a role in education.
Reflection: A process of self-appropriation and meaning-making. Reflection must first of all be a necessary process of narration; as Clark (2010) explains, “[w]e access [experience], reflect on it, [and] make sense of it through languaging it, which is to say, through narrating it” (p. 5). Indeed, without reflecting on the experiences we want to recount and describe, we cannot begin to narrate it. This initial reflective process is essentially what we discussed earlier as thematizing, or assigning an identity, but what we did not discuss then is that, insofar as narration is a reflective exercise, it is also a creative one that utilizes the imagination. Randall explains that

our sense of who we are as individuals--our identity--assumes the form of an unfolding narrative fabric. Part memory, part imagination, this fabric stretches back into the past for as far as we can remember and ahead into the future for as far as seems pertinent to our current concerns. (p. 27)

Insofar as identities are a product of the imagination, reflection is a creative process that allows us, within reasonable limits, to define and redefine who we are. Randall (2010) again supports this thinking:

Memory by memory, story by story, all of it is open to “reconfiguration”.... Through asking why we have kept the memories that we have and not forged other ones instead, and through looking at those we have retained from multiple points of view, all of our internal text\(^{34}\) has immense transformative potential. (p. 32)

\(^{34}\) By “internal text,” Randall (2010) means “what we think of as ‘our life’...an edited rendition of our existence per se that we experience, subjectively, as an intricate, internalized text” (p. 27). Though it may not be in the same terms Randall would use, I take internal text to mean the same thing as what I have described as identity.
Though we cannot change the fact that certain events have occurred to us, and we cannot alter
the memory of these events to such a radically subjective extent, how we interpret our story
thematically--how we identify with these events--is more obviously open to interpretation, such
that we can take very different messages from the same sequence of events--the same story--
based on what identity we see them through--the narrative discourse by which we represent the
story. Put another way:

Though the events of the past can clearly not be changed, our perception of them can.
The remembered past--the past, not as it happened but as we have internalized it,
textualized it, storied it in memory and imagination; the past not as it is in itself but as it
is for us--is anything but fixed. Rather, it admits of endless reworking, endless
restorying. ...The remembered past is very much an open text, its openness a function of
the complexity of our experience of time itself. (Randall, 2010, p. 30)

Reflection also allows individuals to “become aware of and possibly reappraise held
assumptions” (Karpiak, 2010, p. 20). This is obviously helpful in education if a student holds a
false or plain incomplete opinion about an educational topic. But reflecting on the self similarly
can help one bring up implicit assumptions about how one learns, or even whether one can learn.
Clark (2010) claims that “how we conceptualize the self is foundational to how we conceptualize
learning” (p. 6). If I viewed myself as stupid or uncreative, I may avoid academic topics that are
stereotypically viewed as challenging or for smart people only and limit my educational
opportunities. If, on the other hand, I were to define myself in such a way that learning were an
important aspect of my identity, then I would allow myself a more fruitful educational
experience. This is the self-appropriation of learning, making learning a part of one’s self-
concept. Of course, I do not claim that a solution to improved education is this simple, namely making students appropriate learning into their identity, as this must happen with the more specific subject matter encountered in individual classes. For example, students would need to self-appropriate the lessons on photosynthesis in order to learn the material in a meaningful way, rather than memorize it through rote repetition. This then is what makes reflection so important: insofar as reflecting on one’s identity allows for the self-appropriation of new information, reflection is a meaning-making process.

A major insight of transformative learning theory, which simply put is learning to be conscious of how you conceptualize yourself so you have more control over your identity to have a more healthy outlook on life, is “the individual’s capacity to use critical reflection and other rational processes to engage in meaning making” (Johnson-Bailey, 2010, p. 82). Consider that when writing an autobiography, “[t]he author, in the course of writing, steps back and reflects on the meaning of those salient events and experiences, and on any emergent patterns” (Karpiak, 2010, p. 15). This is all to say that reflection cannot be a merely passive or detached recall of previous experiences, but involves the active process of organizing these experiences according to some theme, and this theme is exactly the meaning that we give these experiences we recall. Reflection does not have to be isolated to past experiences either; we can frame our current experiences as well as our expectations for the future in terms of these themes, and it is only by giving these temporal thoughts a meaning, something that we can relate to our self-concept, can we truly call it “reflection.” As such, I will define reflection as any meaningful appropriation of an identity to the threefold present (i.e., the psychological past, present, and/or future), or more simply, the self; and the appropriation is meaningful exactly because it is made
towards one’s self-concept (e.g., to self-appropriate is to say “this is what this event/entity means to me”).

Narrative, insofar as it is a reflective exercise, cannot then merely be an uninvolved, disengaged description or recitation of an event/entity’s qualities. Narrative, at least as I see it being useful in an educational setting, requires reflection. Now this should not be a hard thing to accomplish if the author writing the narrative is given the freedom to write his/her own narrative, since to take new information and identify it with one’s self will require that the author relate it to previous knowledge, knowledge which the author is very likely to already identify with. This is why narrative will be most beneficial in education when the students are allowed to write their own narratives, and not supplied with another author’s narrative. A narrative personally crafted allows the author to appropriate the knowledge directly to the self based on the author’s interests and current background knowledge. I will propose that narratives used in the classroom be written by the students themselves on the basis that it allows the students to reflect on how the class material relates to them personally.

**Empathy: Contextualizing the self in relation to others.** Narrative does not have to be a merely personal exercise of reflection; on the contrary, because every narrative may be assumed to have an audience, we must also account for the “other” in the narrative. How we choose to interpret this “otherness” of the narrative will show still more useful qualities of the narrative. On one hand, the “other” taken simply as a narrative’s (intended) audience suggests that narrative is a useful tool for communicating the author’s background knowledge, depth of understanding, and unique way of understanding a given topic to her/his audience. This can serve a number of purposes: it can reveal the student’s background knowledge to inform the
teacher or another student what foundation she/he will build new information off of, it can
demonstrate the student’s level of understanding of a topic of study based on the details and
complexity of connections she/he makes to previous knowledge, and it can express what aspects
about the topic of study interest the student. From all this, it is difficult to gather how exactly a
narrative should be used in a classroom setting and whether all of this information that narratives
can potentially provide is needed. This will be discussed later in Section III.

What is interesting about this “other” is that it suggests an audience can empathize with
the narrative and its author. This is why Johnson-Bailey argues that using narratives in education
would be practical:

Each of us can relate more easily to an idea in the form of a story. Indeed, our society in
general has master narratives that define and direct our patterns of meaning....

Consistently we use these frames to guide our interpretations and categorizations of our
daily world. (p. 77)

We empathize with narratives to the extent that stories are a familiar means of processing
information. This can boil down to as simple a point as it is easier to understand, e.g., Einstein’s
theory of relativity if we know what motivated this theory in the first place. By telling a story in
which we account for the intentions, motivations, contextual factors, etc., an audience has an
easier time relating to the author.

The empathy could supposedly go even deeper if the narrative is particularly emotive. If
an audience could relate to Einstein’s character on an emotional level, it should be easier to relate
to him and thereby understand his perspective on the laws by which physical reality operates.
What exactly is it to empathize? Fritz Breithaupt (2011) offers what he calls “the most general definition of empathy as the capacity of an observer to receive access to the emotional state or intellectual awareness of another being or fictional construct” (p. 273). This does not require that the empathizer appropriate the other being/construct’s emotional state or awareness as one’s own, yet the empathizer is in some sense sharing in the experience of the other being/construct. This is what is referred to in Theory of Mind as “mind-reading,” which is “the imaginary transposition of oneself into the ‘shoes’ of another individual or fictional construct” (Breithaupt, 2011, p. 273). Similar to metaphor’s “pertinence through impertinence,” empathy preserves something about the difference between the self and the other while creating a similarity or coherence between the two. Then empathy for another requires a conception of the self.

On the other hand, the reverse may be true as well: a conception of the self requires the conception of others. In other words, identities are never isolated, self-contained categories, though they may seem so when we spatialize them (e.g., categorize “myself” as something distinct from “that other person,” or “the rest of society”). Hence, Johnson-Bailey points out that, while “[t]he narrative process can be instrumental to transforming perspectives on the individual level...this way of examining meaning making largely ignores the idea of the community narrative or the concept of culturally bound group learning experiences” (p. 80). I would argue that no self-identity is complete without it being in relation to some other thing, especially when being negotiated within a narrative. Narratives cannot consist of isolated events or entities--events themselves are a sequence of actions, and so are not separable qua events--but in its temporal and thematic nature, necessarily unifies the constituents of its story into a whole.
Likewise, when narrating the self, whether autobiographically or just as a witness representing his/her subjective take on some event, it is unavoidably assumed under the theme of the narrative as a whole, and this is accomplished through the relations made between the self and the other(s) involved in the narrative. Therefore, the identity that one assigns to the events and/or persons in a narrative need not be limited to the self, but can expand to a society, or just another person, and while one may not relate to this society or other person as to confuse it with oneself, the other may become meaningful in the process of having one reflect on how his/her self relates to the other. This could take the form of an answer to such questions as, “Do I identify with this culture?” or “What is my place in this society?” or “What do I like about my community and what do I want to change about it?” or “What is my relationship with this person,” or it could simply be “Do I like this person?”

The “otherness” that is in relation to the self in narratives may be called the “context” of the self, as the other(s) in our stories flesh(es) out the self, providing a more complete picture of our identity. That makes empathy any meaningful appropriation of an identity to anything other than oneself, i.e. the self’s context, yet is understood in relation to the self. We should also qualify our earlier definition of reflection as an appropriation of an identity to the self in relation to one’s context.

Given how we have defined empathy and reflection, we begin to see how each is dependent on the other, and suggests that we have a relational self. Indeed, the general concept of empathy and Theory of Mind admits to the remarkable ability that humans have to take another’s perspective, almost as if the empathizer were experiencing the same things as the empathizee. This empathic capacity has neurological evidence in the form of mirror neurons.
Though the exact operation and implications of these neurons is controversial, they do indicate that the same neurons in the motor areas of the brain that fire when performing an action, e.g. throwing a ball, also fire when observing this behavior, e.g., when observing a baseball player on the field throwing a ball (Zunshine, 2011; Oztop, Kawato, & Arbib, 2013; Casile, 2013). At least, this is generally accepted to be true of goal-oriented motor operations, like the manipulation of objects. This ties into the temporal dimension of cognition that has been discussed in this section as the natural interpretation of autonomy or intentionality. To take this insight a step further, some neuroscientists also suggest that there is a link between the development of language and mirror neurons, that language developed out of the ability to take another’s perspective (Perlovsky & Ilin, 2013; Borghi & Cimatti, 2010). In other words, mirror neurons not only enable perspective-taking, i.e. empathy, when observing another person act, but also when reading or hearing a story about another person act. So in just describing how, e.g., Haili winds up and throws a baseball to Carl with all her might, you will empathize with Haili throwing a baseball at the neuronal level. Lakoff (2008) attributes this empathic response to the imagination, saying the mirror neurons “are active not only when acting or perceiving the same action, but also when imagining that you are perceiving or performing an action” (p. 19). While the link between imagining, alternatively referred to as “mental simulation,” and empathy lacks explicit scientific evidence, it is unlikely that the ability to imagine/empathize with another person or event is not at play when learning new skills and concepts (Lakoff, 2008, p. 19).

Now we can address narrative as it relates to education and learning. Our interest is to use narrative (along with metaphor) in an educational setting to promote effective learning, for which reason we will limit our focus to narratives that have an academic theme or identity. This
theme will undoubtedly relate to each student’s personal identity as the students relate their self to the context of the course material, but the course material is the new information that students need to familiarize themselves with and eventually appropriate, so all reflection within the narrative will be centered on identifying, i.e. thematizing, the particular course material/lesson. I have also suggested throughout this section, much like I did (albeit more explicitly) in Section I, that the narratives will use background knowledge the narrator is already knowledgable of to convey new, more abstract information. Now, these parameters do not narrow the scope of narrative for our purposes by much, yet I will propose here that there are three unique narrative approaches for meeting the educational task posed: Autobiographical narratives, fictional narratives, and hypothetical or applied narratives.

Three Types of Educational Metaphorical Narratives

**Autobiographical narrative.** Autobiographical narratives have already been described to some extent, but we will revisit its particular benefits summarily here. Autobiographical narratives will thematize the target academic concept to be learned in relation to the self. The lesson can be related to a defining moment in the student’s past like a milestone (e.g., a student relating mitosis to the birth of his/her baby sister), or it can be related to a very specific past experience that a student recalls (e.g., a student relating mitosis to the first time she/he went fishing with her/his family). However, because the narrative will need concrete events/actions and persons involved in the narrative to most effectively elicit meaningful empathy for the abstract concepts to be learned, the narrative should not rely solely on broad, abstract autobiographical themes--e.g., “Mitosis relates to my life because I have always wanted to be a biochemist.” For one, making such general connections makes no reference to the specific
content to be learned about mitosis, and two, the desire to be a biochemist is too general.

Though this would serve well as the general theme of the narrative, the narrative discourse needs to consist of concrete scenarios about one’s past that can be analogized with the particular details of mitosis. Here is an example: “The centrosomes are my parents, the chromatin me and my brother, and the membrane is our house: The interphase of mitosis is like when our family got along before the divorce, my brother and I are relaxed like the chromatin is not condensed into chromosomes, and my brother and I are caught up in our own worlds like the nucleolus is still present. The prophase is like when my brother and I started to notice our parents not getting along, my brother an I get tense when we see our parents, like the chromatin condenses into chromosomes, our proverbial bubble bursts like the nucleolus starts to disappear, and our parents distance themselves from each other like the centrosomes move to the opposite ends of the cell. The prometaphase is like when my brother and I get involved in our parents’ arguments, like how the chromosomes start moving to the center of the centrioles’ microtubules. The metaphase is like when our parents discussed the divorce with us, and our parents set us straight about how they planned to have half custody of us both, like the chromosomes are aligned along the center of the cell to ensure that each new nucleus gets a copy of each chromosome when they split in the next phase, etc., etc.”

The benefit to such narratives is that a student can relate a lesson directly to her/his personal identity through past experiences.

Fictional narrative. When discussing empathy earlier, one definition mentioned that empathy could be towards not only “another being” but also towards a “fictional construct.” A

35 Apologies for the sad example. Certainly, students’ narratives do not need to be based on such unpleasant experiences, but if that is what is occupying the student’s mind and it is a connection the student freely makes with the educational material, it should not be dismissed as it will make the lesson all the more meaningful to the student and make for a more relevant learning experience.
fictional construct could be your favorite character from a movie or a made-up character of your own imagination. A fictional narrative would thematize the target academic concept in terms of a fictional character, rather than the self as in autobiographical narratives. Again, the narrative must deal in concrete scenarios with particular, experiential details, in order to strengthen the empathetic connection to the abstract target concept. Fictional narratives may be preferred over autobiographical narratives since fictional narratives allow greater creative freedom. Not only does the student have more options regarding which character to relate the target concept to, but the experiential scenarios do not even have to be “realistic”36. For example, the student could analogize mitosis to some science fiction scenario involving a cloning machine—as long as it is described in concrete terms, such that the student could reasonably imagine experiencing the scenario.

**Hypothetical/applied narrative.** These narratives can involve the self or a fictional character (or both), but rather than relate the target abstract concept to either of these characters and/or their actions, the student must come up with a scenario, either based in a real-life story (e.g., inspired from a report in a newspaper) or made-up, in which the target concept must be applied. The student will be narrating a kind of thought experiment in which the he/she sets up the initial conditions, applies the academic concept, and hypothesizes about the outcome. For example, hypothetical/applied narratives could be constructed as answers to the following questions: “How would the phases of mitosis differ in a cancerous cell?” or “What would happen if the chromosomes did not split evenly between the two daughter cells after they divide?” or

---

36 While the scenario can be fictional and as creative as the student wishes to make it, it should adhere to a narrative logic that the narrator, and most audiences, could follow. That is, the narrative should not be “unrealistic” or confusing like a poorly-told story. Every story has a logic that organizes its narrative, and this should not be neglected. This may require that students practice their narrative skills, if they struggle with this logic.
“How might a scientist go about fixing a cell that abnormally splits and cannot self-repair?”

Such narratives could be used to promote *ad hoc* research that extends beyond the scope of class lectures, or the student could conduct an experiment to test her/his hypothesis. Hypothetical/applied narratives provide the opportunity to show how academic lessons can be relevant given how the knowledge is used now, how experts wish to use it to address contemporary issues, or how one might use it in the future. These narratives can also allow the students to test out the limits of their understanding of the concept in question.

### III. Metaphorical Narratives

Now that we have discussed conceptual metaphor and narrative at length, we will briefly summarize what has up until now only been implicated piecemeal, that is, how these two complement each other in the educational setting.

**Theme and Entailment**

Since we are interested in using a narrative that a student can empathize with, we want to encourage students to use narratives with descriptions of concrete, experiential scenarios, but at the same time, each student’s narrative should have a theme that unifies the details of the narrative into a coherent whole. As you may have picked up from the discussion on narrative, this theme, which will guide the construction of each student’s narrative from start to finish, will be a conceptual metaphor. Themes, a.k.a. identities, are spatial in nature, and conceptual metaphors are a useful means of spatializing abstract concepts. The target domain of the metaphor is the educational subject matter that the student is to learn, and the source domain is

---

37 The lack of specificity in the scenario for this question is only a reflection of the lack of depth to my knowledge about the mitotic process. Also, this narrative would only feasibly be composed by a premed student or someone still further along in their education, but this should illustrate how the narrative approach is adaptable to any educational background.
the concrete concept that the student will use to spatially structure and thereby more easily comprehend the educational material--this constitutes what was referred to earlier as educational metaphors. But simply constructing a metaphor is not enough. To reuse the mitosis example from earlier, if I were to study mitosis and came up with the metaphor MITOSIS IS DIVORCE, this alone would not be helpful enough; I would have to explain *in what ways* mitosis is (like) divorce. Such an explanation is afforded by going through the entailments of the metaphor. Indeed, a metaphor is not a conceptual metaphor until you cognitively make the connection between the two conceptual domains by way of understanding the entailments. This is where narrative comes in. Narrative is the perfect medium to draw out the entailments of a metaphor I wish to conceptualize. It is one thing to say, “Mitosis is divorce,” but so much more to write a narrative about *how* mitosis is (like) divorce, whereby I can, like in the example I gave in the Autobiographical narrative section, detail a story in concrete details about how the centrosomes are like the parents, and the interphase is the naive stage when the children were unaware of their parents’ plight, etc. In this way, then, I make a distinction between a conceptual metaphor as it serves as the *theme* of a narrative, and the *entailments* of that theme as the details of the narrative that highlight aspects of the target domain and conceptually structure them.

**Learning**

We saw in the Concept and Metaphor section how the partial structuring of conceptual metaphors may make a single source domain, i.e. a single metaphor, inadequate to get a more complete understanding of the target abstract concept. The goal of learning exercises, and therefore of education, should be to achieve as complete and complex an understanding of the target concept in question as possible. As such, I will define *learning* as the appropriation of
more refined, more complex concepts, perhaps in place of overgeneralized, simplified categories. This is to say that a student may in a very superficial way “understand” an abstract concept, and yet this is not the kind of understanding educators should hope students to achieve through the course of their studies; instead, the students’ concepts should become more refined and complex (i.e., more detailed), even interconnected, as they advance through their educational career.

Of course, a student does not need to achieve greater and greater complexity in her/his concepts alone, in fact should not have to do so alone. Johnson-Bailey (2010) claims that “good teaching is about the exchange of ideas and information and the valuing of what the ‘other’ can indeed teach you” (p. 84). More specifically, teachers and students should support each other and collaborate in the learning process by sharing each others’ metaphorical narratives. On one hand, this will utilize the empathic aspect that is built into the narratives by using characters and relatable scenarios, but on the other hand, it will allow students to compare multiple metaphors to find commonalities and differences in how to conceptualize the academic material, and through this comparison of multiple metaphors, the student may either use another’s metaphor to supplement his/her own to get a more complete understanding of the target concept, or it may sway the student to refine his/her own conceptual metaphor so that it better structures the target concept. Stotz (1998) herself proposes that, “if students were encouraged to revisit their preliminary creative narratives and to revise them after they had been exposed to more details about [the target abstract concept, e.g.,] photosynthesis, they might develop a better understanding for the process” (p. 5). In either case, such a comparison would be further assurance against biased or ineffectively partial understandings of the concept the student is supposed to learn, and could be accomplished easily through a workshop.
Putting Metaphorical Narrative to the Test: An Experimental Design

The above inferences about the benefit of metaphorical narrative to learning is supported by linguistic, philosophical, and some psychological evidence as has been cited throughout this work, yet we lack research evidence to suggest that this particular use of metaphorical narrative would be helpful to student learning in the educational environment. For this reason, I propose that future research be conducted to test the validity of metaphorical narratives in education. Though I lack the resources to conduct my own experiment at this time, I can outline the experimental design in the hopes that it will be used for future research.

The basic design should involve a comparison between two experimental conditions, one in which a classroom or a educational series planned independently of an educational institution utilizes metaphorical narratives in its lessons, the other as a control. These two conditions should not differ in terms of content covered, sequence of material presented, or teaching style (or teacher, for that matter)--only the use of metaphorical narrative exercises should differ between the two conditions. With metaphorical narrative as the predictor variable, though I think there may be better measures for understanding of educational material, a standard examination to test for comprehension should work fine as the outcome variable to measure the effectiveness of metaphorical narratives relative to the control condition. More specifically, we are interested in seeing if the *improvement* in understanding and recall in the metaphorical narrative condition is greater than the improvement in understanding and recall for the educational information in the control condition. This means the study will use a between-subjects, two-sample paired t-test to compare the mean score *difference* between the two variables of the predictor variable. This could initially start as a comparison between a pre-test, taken before the class or educational
series begins, and a post-test, taken just after the conclusion of the lessons, but in order to
determine the long-term effects of this learning approach on recall, I think it would be useful to
also have the participants take a follow-up post-test, say six months after the conclusion of the
study. Though this later test may not account for what the participants do during those six
months between completing the study and taking the follow-up post-test, with a large enough
random sample, we should be able to curtail the effects of confounding variables from individual
participant differences.

We still need to address what the topic of the educational material should be. Really any
would do; in fact, studying multiple topics might be useful to determine if using metaphorical
narratives is more effective for certain subjects, but to start, I would suggest a topic in biology.
As mentioned in the introduction, biology would seem to be a less likely subject to benefit from
metaphorical narratives, and has proven a difficult subject for students due at least in part to the
abstract nature of many of the concepts studied. Studies have been conducted to determine what
particular topics have proven most difficult. The studies I will reference were used to rank
difficult biology concepts for Turkish high school students, and between these two studies, the
most difficult topic appears to be hormones (Tekkaya, Özkan, & Sungur, 2001; Çimer, 2012). I
think using hormones as the topic of study for the experiment would be most practical since we
would want metaphorical narratives, or any educational tool that we use, to be effective
especially for learning what are otherwise considered very difficult topics to learn. Given this
choice, and the fact that it was based on surveys of high school students, participation in the
study should be restricted to high school aged students, though later studies that compare
students at other grade levels would be worthwhile--indeed, more complex statistical analyses
could be used on such studies to show if the metaphorical narrative approach is more beneficial for certain age-groups.

This leaves the development of a syllabus and the particular sequence of materials to be followed for the experiment, which may perhaps be adapted from other educators’ own course syllabi, as well as creating the test to measure the participants’ learning progress, which may similarly be adapted from other teachers’ own exams used to test their students. There is also the matter of instructing the students how to approach the metaphorical narrative exercises. For this, I have prepared a script (see appendix 1) that the teacher/experimenter can use to quickly instruct the participants how to complete the metaphorical narrative exercise. The metaphorical narratives should be completed outside of the classroom/lectures. Based on the earlier discussion on empathy learning from your peers’ metaphorical narratives, I would also suggest that the metaphorical narrative condition have a workshop where the students can share and discuss each others’ narratives, though the inclusion of a workshop would not be necessary to test the hypothesis that metaphorical narratives help improve learning of abstract concepts. With a workshop in the metaphorical narrative condition, we would also need its non-metaphorical, non-narrative equivalent in the control condition; this might be something like a workshop on students’ research papers.

With this work, I hope I have provided an adequate starting point for what could grow into its own discipline. I hope that future studies will be conducted not only to test the base hypothesis that metaphorical narratives improve the learning of abstract concepts, but that research be conducted into the pros and cons of the types of metaphorical narratives I formulated, namely autobiographical, fictional, and hypothetical/applied narratives. I have
argued that metaphorical narratives apply to both spatial and temporal dimensions of understanding and use concrete concepts/scenarios to structure the understanding of abstract concepts, and these metaphorical narratives can continue to be tweaked to achieve a more complex understanding of the abstract concepts. I hope that I have also adequately emphasized the importance of creativity, i.e. imagination, and the freedom of the learner to explore scenarios and personal stories as an essential part of effective student learning. From here, only empirical research and a more specialized study of these topics can progress the theory of metaphorical narrative in learning.
References


Appendix 1

Metaphorical Narrative Exercise

Task: Write a narrative that relates the biological concept “hormones” to a story of your own creation. To do this, you will first need to develop a theme for your narrative, which will be a metaphor.

- Metaphor = when one term is applied to something else to suggest a resemblance between them, in the form: “A is/are B”
  - A = Abstract concept (“hormones”)
  - B = Concrete concept
    - For the concrete concept, use something--either an object or experience--that you enjoy or are familiar with. For example, an object like your favorite car, an alien, or a medicine you have taken before; an experience like your first time driving a car, a fictional space adventure, or a medical emergency you or a family member went through.

So your theme should be in the form of “HORMONES ARE ___ (B) ___.” Once you have decided on a theme, write a story that explains your metaphor. Use the lessons on hormones that we have covered in class to make a story with characters and a plot.

Here is an example: My theme is “HORMONES ARE CARS IN TRAFFIC.” The beginning of my story: “The glands of the endocrine system are houses, and adrenaline lives in his house, the adrenal gland. Epinephrine is his real name, but all his friends refer to him as Adrenaline. Adrenaline is a very energetic hormone. One day, Adrenaline drives very fast through the bloodstream and visits the heart and lungs to tell them something very urgent...” etc.

Be as creative with your own story as you like!

Pick what kind of story you would like to write:

- Autobiographical: Relate course materials on hormones to a story from your past.

- Fictional: Relate course material on hormones to a story from your favorite book, movie, TV show, or that you made up.

- Hypothetical: Relate course material on hormones to a story about a hypothetical situation, a “what if...” scenario that you are curious about.