Narrative Works

Possibilities for Action
Narrative Understanding

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Volume 5, Number 1, 2015

URI: https://id.erudit.org/iderudit/nw5_1nkrs03

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Publisher(s)

The University of New Brunswick

ISSN

1925-0622 (digital)

Explore this journal

Cite this document

Polkinghorne, D. (2015). Possibilities for Action: Narrative Understanding. *Narrative Works*, *5*(1), 153–173.

Article abstract

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NARRATIVE WORKS
Issues, Investigations, & Interventions

SPECIAL SECTION
NARRATIVE MATTERS 2014: NARRATIVE KNOWING/RÉCIT ET SAVOIR

Possibilities for Action: Narrative Understanding

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The articles in this section draw on the texts of plenary lectures presented at the seventh *Narrative Matters Conference*, *Narrative Knowing/Récit et Savoir*, organized at the Université Paris Diderot, in partnership with the American University of Paris, from June 23-27, 2014. Donald E. Polkinghorne, from whom the conference borrowed its sub-title (see Polkinghorne, 1988), draws on research in cognitive science in order to try to answer the question of how and why "there does not exist, and never has existed, a people without narratives" (Barthes, 1966). In this article, he calls on embodiment theory, a development in cognitive science, as the source for the universality of narrative thought among humans. Having presented narrative (more precisely narrating) as a type of thinking, Polkinghorne begins by offering a description of thinking as noting relationships among items (e.g., similarity, causality, sequentiality) and as making use of cognitive schemas, of which he provides a detailed typology. Polkinghorne then explores the issue of the embodiment of the subject's experience of narrating. He accounts for the development of the source-path-goal (SPG) schema on the basis of its kinesthetic origin and shows that the SPG schema is incorporated into narrative thinking as its primary structure. Polkinghorne situates himself in a current paradigm which paves the way for the refounding of the problematic of narrative at the interface of the subject's embodied cognition on the one side and intersubjectively distributed social cognition on the other. (Patron & Schiff, 2015)

In my early research on narrative I came across a stenciled paper of a 1966 talk Barthes had given at the University of Birmingham. He had written: "The narrative is present at all times, in all places, in all societies; the history of narrative begins with the history of mankind; there does not exist, and never has existed, a people without narratives" Barthes (1966/1975, p. 237). This seemed right in spite of my social constructionist leanings at the time. Stories translated from different languages and composed in different historical periods and cultures seem

understandable to people outside of those times and cultures. And very young children are able to tell and understand stories.

This paper is a probe of the issue of how and why "there never has existed a people without narratives." Is there an explanation for the appearance of narratives across different historical periods and cultures? Some have proposed that narrative structuring is innate and it is something humans are born with and resembles the innate structures for grammar suggested by Chomsky (1957). Others understand narrative structure as a Platonic-type immaterial archetype which becomes manifest when people tell stories. Others (e.g., Hutto, 2008) have argued narrative understanding is the result of culturally passed-on folk psychologies.

In this paper, I propose an alternative explanation for the appearance of narratively structured discourse across all cultures. I will be calling on embodiment theory, a development in cognitive science, as the source for the universality of narrative thought among all humans.

In 1986, Jerome Bruner, in *Actual Minds, Possible Worlds,* distinguished two modes of thought—paradigmatic and narrative. He described paradigmatic thought as the "logical-scientific" mode and narrative thought "as deal[ing] in human or human-like intention and action" (p. 13). Bruner's books, *Actual Minds, Possible Worlds* and *Acts of Meaning* (1990), have been foundational texts for narrative study.[1] His *Actual Minds, Possible Worlds* was personally influential in my writing of *Narrative Knowing* (1988). I fondly remember an afternoon discussion with Dr. Bruner, on one of his visits to the West Coast, about what the acceptance of narrative understanding might have on the field of psychology. He will be 100 years old this October.

Bruner was one of the leaders in introducing the study of cognition into psychology. Psychology had limited its investigations to only that which could be publically observed: that is, a stimulus and its behavioral response. The mind and thought were held to not be publically observable and, thus, unavailable to scientific investigations. Cognition was understood to take place within an impenetrable black box. But in the 1960s and 1970s, Bruner worked with others to open the box and examine what was happening in there. He was one the pioneers in the transformation of psychology from behaviorism into the study of mental processes.

At the beginnings of the look into the box, the new cognitive psychologists proposed that the box functioned as a processing machine. It received information from the bodily senses (including language),

[1] See Mattingly, Lutkehaus, and Throop's (2008) review of Bruner's academic career.

processed this information, and sent the results of its processing back out to the brain's movement or action centers. The brain's or mind's processing consisting of linking the sensual input according to its built-in atemporal logic and syntactic rules. These rules were programmed onto a system of on-off switches. Although in humans these switches were organic (the brain), the same logic and syntactic rules could be programmed onto the materials of other constructions, such as a computer. Thus, thinking was not considered unique to human beings. Mental-like processing could be performed on various platforms, such as computers, as well as in the brain.

Although this model of thinking had become generally accepted at this time by the philosophy of mind as an accurate description of what is going on whenever thought occurred, Bruner proposed, in 1986, that thinking is not limited to the use of logical syntactical rules for processing information. Instead there was an additional mode for processing information, that is, a narrative mode. This mode "is built upon concern for the human condition: stories [narratives] reach sad or comic or absurd denouements, while theoretical arguments [logical syntactic processing] are simply conclusive or inconclusive" (p.14).

In the over 25 years since Bruner expanded the understanding of thinking to include a second mode of thought (narrative), much has happened in the understanding of thinking. The new cross-disciplinary field of cognitive science has developed. The organization and structure of the brain is being studied by neuroscience. Chemists and biologists have uncovered the molecular makeup of neurons. Biological neurology has studied the process of synaptic communication and the growth of neuronal ensembles. Instrumentation, such as fMRI, has allowed views of close to real time brain operations. And the field of cognitive linguistics has studied the relation between language use and neural functioning. What I hope to do in this paper is to apply some of these developments to expand our understanding of the second mode of thinking announced by Bruner, narrative.

The tradition of approaching thinking as a programmed, logical syntactical process has remained strong since Bruner's 1986 book. The position has undergone adjustments so as to incorporate some of the findings of the cognitive sciences. However, it retains the view that humans are not unique in being able to think and that machines have been or will be made which are able to think on a par with, or better than, human beings. However, a second approach to thinking has developed during the last three decades. This position emphasizes that human

thinking is unique to persons. Thinking is an activity of the human body and it is based on the specific kind of bodies humans have. This second approach is called *embodiment theory* and is the position I will use in this paper. One consequence for narrative in embodiment theory is that the narrative thought is linked to the manner in which our bodies interact with our environments—with others, the natural and constructed physical world, and our own selves (Shapiro, 2011).

Before moving on to the exploration of thinking narratively from an embodied point of view, there are a few assumptions I will be making. First, thinking, including narrative thinking, will be approached as a human cognitive activity. Second, narrative is activity and, as such, its verb form, *narrating*, instead of the noun form, *narrative*, would better capture my topic. However, in its normal use, the term *narrating* is concerned with speech. It is about speaking—the telling or reading aloud a story; or a spoken commentary added to movie or performance. Thus, I will continue to use the term *narrative*, but am using the term to refer to the cognitive process that draws together a series of happenings into a coherent whole. Narratives are the products of narrating or narrative thinking. Underneath the various kinds of narrative products is the common organizational pattern produced by narrative thinking. Narrative thinking can produce expressions in various forms; for example, third-person fiction or non-fiction accounts, first- or second-person self-accounts, or a simulated recall or plan for actions. My focus will be on a mode of thinking, rather than on its products.

Because I am approaching narrating as a type of thinking, I want to offer a description of thinking. Thinking is noting relationships among items. Instead of experience consisting of simply the appearance of one thing after another, thinking enhances what appears by presenting items as related. Thinking has a repertoire of kinds of relationships that connect items: for example, similarity, causal, and sequential. The relationships it presents are either reflections of or projections on the relations that hold among the items of experience. Thinking is an activity of the brain that occurs mainly outside of awareness. Thinking is involved in keeping the body in homeostatic equilibrium, in directing body movements, as well as doing mathematical calculations and understanding the space-time continuum.

Schemas

Thinking makes use of cognitive schemas to organize and give meaning to experience. I will be approaching narrative thinking as a complex of interrelated schemas for mapping human activity. The narrative schema provides persona a blueprint of the way they interact with their interpersonal, personal, and physical environments. Unlike schemas derived from specific social and cultural settings, the source of a person's narrative schema is his or her own embodied actions. Because humans have a common type of body, people from different cultures and historical periods share a common narrative schema. And one's narrative schema can provide a structure for understanding stories from various times and places.

Schemas, in general, are cognitive structures or general patterns of knowledge that hold for typical situations, events, things, and processes. An example of a schema is a mental map of an automobile. When driving a new car, people use the schema they have developed in driving previous cars to anticipate where the brake, gas pedal, windshield wipers, etc., are located. In developing a schema, people abstract a mental map of the common elements from comparable situations to produce a schema of those situations. Then, when encountering that type of situation, they anticipate that its basic organization will conform to its schema. The specific details of the schema will vary across its local manifestations, but the outline will be consistent. Schemas operate in the background and serve as a knowledge base for making sense of everyday experiences. Schemas provide maps for efficient understanding of new situations. However, they can lead to misinterpretations when a situation diverges from the outline projected by the schema. Thorndyke (1984) gave this definition of a schema:

> [A schema] is a cluster of knowledge representing a particular generic procedure, object, percept, event, sequence of events, or social situation. This cluster provides a skeleton structure for a concept that can be "instantiated," or filled out, with the detailed properties of the particular instance being represented. (p.168)

There are two sources of schemas: one is the experience of the social and cultural world, and the other is the common bodily-environmental interaction. This paper will focus on schemas from the second source, the body. I will argue that the body schemas provide the basic structures used

in narrative thinking. Schemas from the first source are used in ordering the content of narratives. Before moving on to embodied schemas, I will give a brief outline of the social and cultural schemas.

Social and Cultural Schemas

Schemas derived from repetitions of social and cultural experiences are often divided into three types: schemas of location, scripts, and frames.

Schemas of location are regularly referred to as simply *schemas.* They are cognitive tools that give an abstract image of the typical physical arrangement of an assembly. For example, a schema of a kitchen might include knowledge about what objects are usually included in a kitchen, how kitchens look compared to other rooms, and what performances usually occur in a kitchen. When visiting in someone's home for the first time, the kitchen schema can serve to inform you where to expect the sink to be.

Scripts are another type of knowledge base drawn from social experiences. Scripts conceptualize sequences of events. An example is the often-cited restaurant script, in which the expected sequence of events provides a guide to when certain actions are likely to occur after entering a restaurant. First, your groups is led to a table, second, a waiter comes to your table, then the waiter takes your order for drinks, then the waiter brings the drinks, next, he comes back to your table to take the food order, etc.

Frames are a third type of social schema that provides a layout about what is appropriate and expected within a particular kind of context. For example, wearing shoes is expected and appropriate when attending dinner at the President's house, but not when on the beach.

Before exploring the embodied schema that operates in the production of narrative structuring, I want to provide some background about the development of embodiment theory.

Embodiment Theory

From the embodiment perspective, narrative, as a kind of thinking, is understood to be an organic, bodily activity. Like all thought, narrative is carried out by our brains and their connections to the rest of our central nervous systems. In the last three decades, an extensive literature on an embodiment based theory of cognition has developed. Included in this

literature are authors representing dynamic systems theory (Deacon, 2012; Juarrero, 1999; Thompson, 2007), cognitive linguistics (Croft & Cruse, 2004; Evans & Green, 2006), metaphor (Lakoff, 1987; Lakoff & Johnson, 1980, 1999), and embodiment (Chemero, 2009; Gibbs, 2005).

One of the foundations of embodiment theory is derived from an understanding of how the brain develops. Although in the womb neurons are carried to determined locations in the brain to create its various primary structures (such as visual and sound perception, and controls of bodily movement), the brain is unfinished at birth. Many more neurons are available than will be used. As the baby engages the world through movements and perceptions, neural pathways and nodes are accumulated and strengthened by repeated use. Unused neurons die off. There is a kind of "use it or lose it" effect working. The brain begins a self-organizing process by laying a foundation of connections that will be built upon as the person continuously interacts with others, the physical world, and themselves. The brain doesn't start over, but extends its self on the basis of continuing new experiences.

The founding of early neural connections and nodes is derived from our early interactions with our environment: for example, a baby reaching up to touch a red ball attached to her crib, or later crawling across the floor to touch a bright yellow object. The crawling motor movements are linked to the perceptions of the object, and these perceptions guide and adjust the bodily movements in the direction of the object. The perception and movement are integrated into a united sensory-motor event and establishes a neurological connection.

Both sides of sensory-motor events are shaped by the particular bodies we are. On the perceptual side, for example, our eyes are responsive to only a portion of electromagnetic wavelengths and our hearing is limited to certain sound frequencies. One the motor side, we are beings with two arms and two legs, equipped with different levels of sensitivity to touch in areas of the skin. We stand upright, have two eyes on the front of our heads and two ears on the side of our heads. Our experience is a consequence of the bodies we have and the specific interactions they allow with the environment. If our eyes were like the compound eyes of a fly or if our arms were like the flippers of a dolphin the perceived environments in which we function would appear as very different.

Gibson (1966) has pointed out that our perceptual experiences are not simply passive responses to the environment, but instead are directed searches based on our needs. And Varela, Thompson, and Roach (1991)

warn that the word *interaction* can imply that humans are static receivers of information from outside their bodies. Instead, they hold that information is developed as the result of bodily movements, such as muscle adjustments in scanning and focusing the eyes and changes in body position or location to get a better view. Perceptual information is not simply out there; it becomes available as the body moves itself into position to allow it to be received.

The literature posits several thought experiments to illustrate the effect of our bodies on the kind of experiences we have. One asks us to think about the difference between a bat's experiences with an environment with its echolocation capacity and a human's experience with a similar environment (Nagel, 1970); another thought experiment asks us to consider what difference it would make if we humans had our eyes located at our knees (Lakoff & Johnson, 1999). Would we be less likely to begin crawling or would we develop a facial recognition ensemble in our brains?

That our engagement with the world is an embodied one is the initial plank of the embodiment theory of thinking, including narrative thinking. Without our sensory openness and bodily interaction with the world, we would not survive. We need nourishment, protection, and care. To fulfill these needs we have to attend to what is going on around us and to know how our movements affect our milieu.

As we engage with the environment, a primitive level of thinking develops in which similar sensory-motor enactments are related. This capacity seems to be an innate ability possessed by organisms with brains. Repetitive interactions are gathered together and synthesized to serve as the bases from which patterns of activity are differentiated. These patterns, in turn, are used to guide activity in analogous situations. For example, in A-not-B experiments with children between six and twelve months, if a toy is placed under cup A several times, the child will reach to cup A and find the toy. The child develops a schema blueprint that reaching for cup A will produce the toy. However, even if the child sees the toy is placed under cup B, she will continue to look under cup A (Thelen, Schöner, Scheier, & Smith, 2001). The schematic pattern is maintained through neural connections and functions as non-conscious understandings. Such schematic patterns serve as a ground for later, more complex and abstract thought.

As people continue to develop through their lifetimes, new experiences make use of the primary, first-established structures of meaning to interpret and structure new experiences. Rather than creating

new structures for later experiences, typically the first structures are adapted and extended to fit the new ones. The next section will describe three of the thought patterns first developed in our early encounters with the environment. These three are: image schemas, spatial dimensions, and categorization. Later I will suggest how one of the images schemas, the START-PATH-GOAL image schema, becomes the basis for thinking narratively.

Embodied Image Schemas

Johnson (1987) used the term *image schema* to denote the primitive patterns of sensory-motor interactions with the environment. However, the term has been problematic, because the patterns are not visual images as the term suggests. And they are not the social and culturally varied schemas described earlier in this paper. However, they are abstracted patterns of embodied interactions with the environment. Johnson described an image schema as:

> A dynamic pattern that functions somewhat like the abstract structure of an image, and thereby connects up a vast range of different experiences that manifest the same recurring structure. … A schema proper is not a concrete rich image or mental picture; rather, it is a more abstract pattern that can be manifested in rich images, perceptions, and events. (p. 2)

For example, there are body schemas such as the sucking sensory-motor actions to secure nourishment; the movement of the arms to grasp, push, or throw objects; and the movement of the legs in crawling to get closer to a desired object or person. Image schemas are a collection of the kinds of patterns and structures that are manifest in our various early sensory-motor interactions. Image schemas have a gestalt property. Individual parts gain their meaning from the role they play in the whole pattern. Each element in an activity takes on understanding when it is related to the entire action. For example, in crawling to reach a colored object, each movement of the leg gains sensibility when it is connected to the whole task of reaching the desired object.

Image schemas are encoded in the developing brain and provide a basic set of cognitive mental tools that can be used to interpret the structure of relations that are discernible in the various encounters with the physical world, others, and their selves. Hampe (2005), the editor of

Image Schemas in Cognitive Linguistics, listed three characteristics shared by image schemas:

> 1. Image schemas are directly meaningful ("experiential"/ "embodied"), pre-conceptual structures, which arise from, or are grounded in, human recurrent bodily movements through space, perceptual interactions, and ways of manipulating objects.
> 2. Image schemas are highly schematic gestalts which capture the structural contours of sensory-motor experience, integrating information from multiple modalities.
> 3. Image schemas exist as continuous and analogue patterns beneath conscious awareness, prior to and independently of other concepts. (p.1)

Lakoff has suggested there may be close to one hundred image schemas. And Johnson has recently said, "No one has come up with a list of all the image schemata, and I don't think we really need such a list" (cited in Pérez Brufau, 2011, p. 334). Lakoff (1987) has provided labels for some of the image schemas: for example, CONTAINER, SOURCE-PATH-GOAL, LINK, PART-WHOLE, CENTER-PERIPHERY, and BALANCE. The image schemas SOURCE-PATH-GOAL and BALANCE will be important in the analysis of narrative structure.

I want to repeat a point I made earlier about the difference between image schemas and the socially and culturally derived schemas—schemas of location, scripts, and frames. Although both types of schema function to structure and organize experience, image schemas are refined through social training, but are individually developed. They are essentially the same in persons from different historical periods and cultures because all people have basically the same kind of body. Underlying the socially created differences among people, the embodied image schemas provide a common basic mental structuring of experience. Thus, embodiment theory argues against a radical social constructionist account of human experience.

Other Embodied Structuring

The brain's ability to relate environmental encounters to one another develops other patterns in addition to image schemas. Two of the sources of these patterns are 1) the encounter with our spatial environment and 2) the encounter with similarities among objects and

actions. The recurrence of such encounters leads to the development of mental recognition patterns in addition to image schemas.

Spatial Relations

Because our bodies grow into an upright stance, able to move about in a three-dimensional space, we come to distinguish movement directions. Being lifted over daddy's head is an instance of UP; being placed in a crib on one's back is DOWN. Our bodies are asymmetrical, with the fronts being different from our backs. Our eyes are on the upper part of the body's front face (unlike a horse whose eyes face sideways), and our legs function most efficiently moving forward and our arms when lifting. This bodily architecture leads to the development of our notions of FRONT AND BACK and FORWARD and BACKWARD. These and other directly experienced spatial dimensions are often used metaphorically to give form to more abstract and higher-order conventional concepts. For example, "Prices are up," "I'm feeling down," and "Let's move the project forward."

Categories

In addition, because of the early-developed capacity to draw out relationships among things and actions, we are able to connect together similar types of things. Lakoff (1987) has investigated this type of relationship, which is called *categorization*. Categorizations create abstract mental entities that make it possible to treat members of a category as if they shared the same properties. Mandler (1984), in *Stories, Scripts, and Scenes: Aspects of Schema Theory*, writes that the difference between the creation of image schemas and the creation of categories is that "categorical structure, in contrast to a schematic one, is that the relational 'glue' that holds items together is similarity rather than contiguity" (p. 5).

Categorization and the types of abstract entities it produces has been an extremely active area of investigation in recent decades. The focus has been on how instances of a particular category's membership are determined. The traditional or classical position was that a category was established when the necessary and sufficient properties were specified. Academic disciplines that require mathematics in their investigations require classical or definitional categories in order to establish what items are to be counted as instances of a category. For

example, in establishing the number of birds at a zoo, should ostriches be included in the count?

A more recently developed position about categories is termed *prototype theory*. It holds that membership in a category or concept is underspecified (Rosch, 1978); that is, the properties do not need to be spelled out clearly. Category membership coheres around central or ideal instances (Lakoff, 1987). Lakoff & Johnson (1999) list several types of prototype structures: "typical cases, ideal cases, social stereotypes, salient exemplars, cognitive reference points, end points of graded scales, nightmare cases, and so on" (p. 77)

Our early developed mental ability for deriving embodied meaning patterns from repetitive interactions with our environment provides us with a set of primary body-based tools for understanding. As we move through our lives encountering more complex objects, we create abstract notions. The embodied tools are extended and amended to enable us to make sense of these advanced encounters. They allow us to think abstractly. We recruit these patterns to give form and structure to cognitive models for these higher-level ideas. These advanced cognitive models are often built up on a combination of the primary patterns. The models are used to think and reason about our abstract concepts.

The embodied patterns serve the higher ideas as frameworks of meaning structure. These frameworks are built on and filled in with accumulated background knowledge. Lakoff (1987) describes the relation between the higher idea model and the embodied pattern as having a metaphorical property. That is, one idea is used to understand a second idea. Here the embodied patterns serve as sources for understanding a targeted abstract concept. For example, the embodied spatial experience of verticality (UP-DOWN) operates as a metaphoric source for understanding the targeted abstract concept "happiness." When a person is feeling UP, she is happier; when feeling DOWN, less happy.

Among the "things" that we encounter are persons. Personhood or self is an abstract concept and narrative is one of the abstract ideas we use to understand human existence. As a complex and abstract concept, we recruit grounded patterns developed in early childhood to aid us in understanding the meaning of personhood. The next section of the paper provides a description of how primary patterns—image schemas, spatial relations, and categories—are used to build up the narrative model of our conception of personhood.

Narrative[2]

Narrative is a complex conceptual model built on top of an image schema called the SOURCE-PATH-GOAL schema. The SOURCE-PATH-GOAL schema is devised early in life and manages actions aimed at accomplishing one's own goals (such as a baby wanting to touch a ball hanging over her crib). Narrative incorporates several extensions of the SOURCE-PATH-GOAL image schema. 1) Narrative extends the use of the schema from personal bodily actions to include mental or thinking actions; 2) it enlarges the goals aimed at to include comprehensive and long-term goals; 3) it projects the schema on the actions of other persons as a means for understanding the purposes of their actions; 4) it metaphorically extends its descriptions to include the actions of groups and organizations as well as animals; and 5) it allows flexibility in the characters whose actions are described. It informs the understanding of others' and one's own actions, whether the acting characters are fictional or non-fictional or placed in the past, present, or future. Yet underlying these various extensions is the action based SOURCE-PATH-GOAL image schema.

Because of its importance in providing the basic structure of narrative thought, the next paragraphs will focus on the SOURCE-PATH-GOAL (SPG) image schema.

The SOURCE-PATH-GOAL (SPG) image schema is a mental construct abstracted from the repeated embodied experiences of moving one's self from one location (the SOURCE) through a space (the PATH) to a desired location (the GOAL). For example, a child is attracted by a red ball across the room and crawls across the room to grasp the ball. As do other image schemas, the SPG functions as a gestalt and gathers the beginning source, the middle movement along the path, and the end goal into a single, unified event. Each part of an SPG action derives its meaning from its contribution to the whole event. Thus, when viewed through the lens of the SPG experiential pattern, activity does not show up as disconnected, unrelated movements, but as a purposively directed, continuous set of movements.

The SPG schema distinguishes between movements that are merely flailing about and those carried out to achieve a goal. The pattern is abstracted from the multiple singular occasions in which movements were directed toward an end point. The SPG schema allows variations in the speed in which the movements are carried out, the type of path

[2] This embodied analysis is based on Johnson (1993) and Winter (1989a, 1989b).

traveled, and goals aimed for. And, as mentioned before, it can be metaphorically extended to include non-physical movements (such as cramming for an exam) and goals that are not physical locations (such as getting an A in a course).

The SPG image schema functions to draw individual actions into integrated wholes. Absent the connections drawn by the SPG schema, the movements of a person would occur as fragmented and unrelated to one another. Johnson (1993) describes the SPG as providing an "overarching ordering that transforms mere sequences of atomic events into significant human actions and projects that have meaning" (p. 165). Without the mental work of the SPG image schema, people's actions would consist only in reflex movements in response to environmental stimuli; that is, one action after another without a purposely directed achievement of a goal. Even through its extensions, narrative retains the synthesizing function of the SPG.

The SPG schema is a pattern of sensorimotor interactions with the environment that are taken to reach a destination. In 1997, Narayanan uncovered a common, recurrent brain based control sequence that guided the carrying-out actions undertaken to accomplish a task. The same general neural sequence was present whether the activity consisted of grasping a fork, picking up paper off the floor, or planning a trip. When undertaking an action, people move through the same six steps (which Narayanan termed the *Execution schema* or *X-schema)*. Johnson (2007, pp. 171-72) gave the following outline of the six steps: 1) *readiness*: before beginning an action, your body needs to prepare itself and place itself in the proper position. If the purpose of a bodily action were to move a chair, you would have to stop a prior action and reorient your posture; 2) *starting phase transition*: the action has to be begun in a manner that will lead to its completion. You would need to grasp the chair with your hands in a position that allows exerting an upward and directional force; 3) *main process*: the carrying out the movements that makes up the action. You would be engaged in actually lifting and moving the chair; 4) *post-central state*: making a judgment about whether or not the main process action has accomplished the goal. If the chair was too heavy and the lifting movement didn't lift it, the main process may have to be done again with a stronger lifting effort; 5) *ending phase transition*: the phase of the action when the goal is being accomplished. The chair has been moved to a different place; and 6) *final state*: the goal is accomplished and the effects of the change brought about by the action are noted.

Taking a journey is a typical higher-level narrative construction that is constituted through the event sequence structure. Travelers prepare for the journey by gathering the necessary equipment, information, and readying the mode of transport. They then travel along the path that leads to their destination. On the way, they may find their movement along the path interrupted because the path is blocked or their transportation may have broken down. They have to make adjustments to get around the blockage or make repairs to their transportation before continuing along the path and reaching the end point. Narrative conceptualization often uses or adapts the journey sequence as a story structure.

An action sequence performance need not be isolated from other sequences. Often sequences are linked together as parts aimed at accomplishing more inclusive and comprehensive goals. Action sequences can be linked together in various ways: a) by being connected together as repetitions of the same action; b) by sequencing different actions in a series; c) by embedding actions as parts of a more inclusive action; or d) as a condition for another action (an if-then connection). For example, the goal of eating dinner might enclose the sub-sequences of purchasing food, cooking the food, and setting it on a table. Further extensions of the sequences can be directed to accomplishment of comprehensive long-term goals, such as graduating from college, or writing a book, or even to living a good life.

Narayanan's sequential model of embodied action was created originally for understanding the neural processes only for a person's own sensory-motor actions. The discovery of mirror and canonical neural networks disclosed that the neurons activated when a person performs an action show essentially the same activity when observing an action as when they carry it out themselves. When carrying out one's own action, the action sequence is neutrally bound to the motor or behavioral areas that carry out the action. When observing another acting, the action sequence occurs without activating the behavioral area. This disconnection between experiencing activity and subsequent bodily action occurs regularly in dream sleep. The recognition a bodily-experienced reiteration of another's observed behavior has been noticed to occur also in hearing or reading about actions by others (Feldman, 2008). This disconnection between experiential brain activity and bodily movement also occurs when a person imagines an action. Thus, imaginative planning of possible actions can be carried out using unenacted SPG-based narrative thinking.

This mental simulation of activity does not only consist of images of activity, but also includes feelings attached to the activity. Damasio (1999) has proposed a connection between sensory-motor image schemas and the brain's emotional centers. Thus, imagined actions contain emotional aspects, which attach values to the simulations and lead to decisions about which imagined act to undertake. Also, because hearing or reading about activity ignites simulations matching the actions portrayed in the telling or reading, one experiences actions and emotions parallel to the one's about which has heard of read (Green & Donahue 2009).

The SPG image schema is incorporated into narrative thinking as its primary or grounded structure. The narrative conceptual model draws on the SPG structure as the skeletal outline for its understanding of human action. The protagonist in the narrative conceptualization is linked to the SPG image of a person moving from point A to point B. The goal or destination in narrative thought—such as a physical location, personal wisdom, or resolution of a conflict—builds on the schema's idea of a point to which action is aimed. Aristotle's three step narrative sequence (beginning, middle, and end) fits as a condensation of Narayanan's six steps sequence.

In the narrative adaptation of the SPG image schema, emphasis is given to the presence of obstacles along the path standing in the way of reaching the destination, and in the overcoming of these obstacles to finally to reach the goal. In the prototypical narrative configuration, the physical or psychological movement along the path is disrupted and the heightened drama of the story is focused on removing the obstacles that stand in the way of achieving the goal. The disruption of the movement to the goal can be physical objects, persons, "social or legal constraints (Johnson, 1993, p. 168), or the protagonist's character.

The prototypical narrative also incorporates a second image schema in its structure, the BALANCE image schema. Balancing is an embodied skill. It is a pre-conceptually learned skill. A baby struggles through various attempts to achieve the balance to stand and achieve equilibrium. The BALANCE schema often serves as a metaphoric source for abstract concepts (for example, a person needs to balance life and work); the presentation should be balanced, and (in reference to a psychological state) he's imbalanced. Prototype narratives balance the start and end of a story. What begins in a harmonious state falls out of balance only to be brought back into balance at the end. The disruptors of balance, whether the protagonist's personal traits, social changes, or an

antagonist, disturb the initial balance and struggle involves a return to the original or stronger balance.

Embodiment Theory and Narrative

Embodiment theory poses that the understanding of experiences that have been narratively conceptualized is based on thought patterns drawn out from early sensory-motor encounters or couplings between persons and their environments. When narratives deviate from some of these patterns, they offer variations on the idealized model of prototypical narratives. For example, narratives can fail to come to an end because the protagonists are not able to get by the obstacles or they may not direct their actions to a goal, but simply wander about going nowhere in particular.

Narrative thought is a conceptualization of the relations that hold among human actions. Actions do not occur simultaneously, but sequentially across time. Narrative accepts culturally developed notions of time when laying out the temporal dimension in which the action occurs. Lakoff and Johnson (1999) propose that time is not a directly embodied experience, but that people use the embodied sense of movement as a metaphor for conceptualizing time. Experiencing time is like watching something as it moves past in front of us. When it is directly in front of us, it is the present moment. When it is coming toward us, it is the future, and when it has passed us by, it is the past. We also use an additional and opposite conceptualization in which we are moving through time. Time is a line and we are moving along it. For example, we are moving close to July 4th.

Embodiment theory holds that the primary structural patterns used in narrative comprehension are formed pre-conceptually in a person's earliest brain development. These patterns continue to organize experiences throughout a person's life. As the child learns and language and is socialized into the frames, scripts, scenarios, and plots present in her culture, the early patterns of understanding are refined and used to conceptualize more complex and abstract ideas. The primary structures underlying narrative depend of the characteristics of human bodies and are developed prior to learning a particular language. Thus, particular discourses can be recognized as narratives even though they were produced in different historical periods and in different cultures. Despite differences in time and space, our common embodiment produces shared image schemas.

Narrative structure can support a large variety of instantiations. A wide range of socially derived content can be placed on its basic SOURCE-PATH GOAL structure. A variety of settings, protagonists, goals, obstacles, and methods of overcoming them can provide the content for stories. The personhood of the protagonist, the antagonist, and other characters can be metaphorically extended by conceiving of groups (such as nations) as persons as well as conceiving animals as persons (as in fairy tales and cartoons). Narrative structure has been applied to loosely related events whose goal is the general of advancement of knowledge (such as the story of chemistry) or the present state of an area in process (the story of English). And the use of narrative has recently been expanded to cover devised stories of public figures intended to impress others. For example, a newspaper account reported that the discovery of a politician's affair with his secretary has destroyed "the family man" narrative he was crafting.

Narrative conceptualization can be applied to one's own actions, to second-person acquaintances, and to third parties. It can be used to form fictional accounts of real people's activities or of fictional persons. And narrative conceptualizations of events are able to be communicated through diverse formats—including speech, text, motion pictures, television, blogs, and computer games (Ryan, 2006).

The narrative conceptualization is not the only scheme that can be used to order and give meaning to human actions. The same set of actions can be conceptualized as a chronicle in which actions and events simply follow one another without an intended purpose. When understood within this schema, actions occur singly and lack the unity into which narrative configures them (White, 1973). When conceptualized as a chronicle, life events are experienced as disjointed and lacking coherence. Sets of actions can also be understood as the result of natural causes governed by the laws of physics. Or personal actions can be conceptualized as mere responses to social conventions and/or powerful institutions (Foucault 1969/1973). However, the narrative pattern is a better fit with our ordinary experience that we act for reasons related to achieving desired outcomes, and that we decide what do and, consequently, we are responsible for what we do.

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