VOLUME 6 ISSUE 2, 2021

Journal of Social Sciences

Published by
Faculty of the Social Sciences
Enugu State Unviersity of Science & Technology
www.esutjss.com

From image schemata to rational inference structures and patterns: How meaning and reason may be non-propositional.

Jude Godwins
Department of Philosophy
Seat of Wisdom Seminary,
Imo State University, Owerri.
judegodwins8@gmail.com

Abstract

When all is said and done, our power of abstract reason, under the framework proposed by proponents of imaginative reason, and reinforced by a host of thinkers sympathetic to their views, could well be identified with the human conceptualizing capacity. This has been found to involve three factors. The first factor is the power to create symbolic constructs corresponding to preconceptual structures in our commonplace experience. The second factor is the power of metaphorical mapping, framing structures in the physical sphere onto constructs in the abstract realms – all within the framework of the existing structural correspondences between the abstract and the physical horizons. The third factor is the power to employ image schemata as structuring schemes in the creation of general categories and complex concepts. If we should go by these schematic conceptualizations, meaning, understanding, and rationality would apparently be dependent on metaphorical extensions of non-propositional image-schematic structures.

Introduction

Our experiences are structured conceptually by our image schemata, and we construct image-schematic concepts analogous to our image schemata, e.g., the concepts of pulling and pushing. Also conceptual metaphors map our image schemata into abstract realms, keeping intact their underlying internal structure and gestalt understanding. Rather than being arbitrary, the conceptual metaphors are motivated by constructs ingrained in our day-to-day experiences.

Lakoff and Johnson have written extensively to argue the existence of meaning structures arising from bodily experience and enormously influencing our rational inference patterns. These essential structures of meaning have been known to be non propositional. Linguistic meaning has been identified as their chief instance. Language is said to reveal the unmistakable existence of image-schematic structures of meaning that are non-propositional in the traditional sense. Our perceptual interactions and bodily movements within our milieu give rise to these schemata. These (schemata) in turn possibilize our mode of experiencing, understanding, and reasoning about our world. We shall inquire into these image schemata to ascertain what potentials they do have for defining human reason.

1.1 Image-schematic structures

Lakoff and Johnson conceive image-schematic structures somewhat after the manner of Immanuel Kant, who understands schemata as non propositional imaginative structures linking concepts to precepts. Johnson recalls how Kant describes them as procedures through which we construct images. In this way we involve patterns of perception in our corporeal experience (Johnson, 1987, 21).

Kant admits that the structures of the preconceptual structuring processes of image schemata do have the capacity to fit general concepts and give rise to particular images, in a manner that lends meaningful order and organization to our experiences.

Lakoff and Johnson, however, take Kant a step further in their treatment of the subject. They see image schemata as continuous, active, dynamic and recurring structures that organize our experience and comprehension. Lakoff considers them as somewhat abstract schemas engaged in the organization of our perception and of the formation of mental visual images. They themselves elude any direct visualization in the way we do rich images (Lakoff, 1987, 453). Image schemata structure and organize our perceptions as well as our rich images. Johnson says, they are structures organizing our mental representations at such levels of abstraction and generality that go far beyond that at which rich images and mental pictures are formed. He calls them a **"**continuous structure of an organizing activity**"** (Johnson, 1987, 29).

Thus, the specificity and particularity of rich images and mental pictures easily distinguish them from the generality of image schemata. An illustration could be appropriate here. Julia and Joseph have eyes that in various instances look different. Joseph has ostensibly big eyeballs, wide eyelids, and brown eyes. Julia, on the other hand, has small eyeballs, narrow eyelids, and blue eyes. These are specificities that constitute the rich images and mental pictures of the differing eyes of Joseph and Julia. But then, for all their apparent particularities, their eyes –as well as the eyes of every human being – have general recurring structures**:** eyebrows, two eyeballs, and two eyelids. These make up recurring forms that are modified in each instance, in Julia and Joseph. Again, whoever writes with a ballpoint pen, moves his hand in a certain form that one finds recurrent in all human writing exercises.

Perhaps, a better example of the image-schematic structure is the recurring pattern we find in the experience of balance. Johnson cites the example of a toddler trying to walk for the first time. One observes her initial unsteady efforts at distributing 'mass and forces' proportionately around an imaginary vertical axis. She stretches out her arms to set up a steadying and stabilizing horizontal axis proportional to the vertical axis. This imaginary central axis around which the forces get distributed is neither a physical perceptible object, nor a propositional structure conceptualized by the baby, nor an image which she has. It is rather a recurring pattern in the human encounter with and experience of balance (Johnson, 1987, 76).

These schemata constitute for us a pattern, a structure according to which we organize our experience and understanding as we move and perceive with our bodies. Thus, Lakoff hypothesizes that in perception and in image formation humans impose image-schematic structures that enable them incategorizing their perception (Lakoff, 1987, 455). Image schemata are consequent upon our bodies, influencing our environmental interactions with their attendant anticipations and expectations. As bodily beings, we daily experience spatial-boundedness and are conditioned by it, as we move in and out of bounded spaces. As Haeffner argues, the organization of space and the orientation of my bodily existence make up the two sides of a single phenomenon (Haeffner, 1988, 144). Such a view of spatiality is also affirmed

when Johnson remarks that, our experience of being contained in and bounded by something is a foremost pervasive feature of our corporeal experience (Johnson, 1987, 21)**.**

The point that is registered in all these indications of some sort of specialization of form, to borrow the expression of Lakoff, is that our interaction with various forms of bounded spaces reveals a repeatable or recurring temporal and spatial structuring, indicating some schemata for these phenomena. These schemata are repeatable hidden patterns and structures in our experiences, the recurring structures of, or in, our perceptual interactions, bodily experiences, and cognitive operations, according to which we experience our world as a conjoined and integrated locus that we can make sense of. These hidden structures, as it were, which, as seen shortly, are active in ones perceptible grasp or lack of grasp of balance, are forces that are psychological or perceptual rather than gravitational or physical.

The role of image-schematic structures in our world is simply enormous. What would happen in a world without pattern, structure, connectedness, and some order would be anybody's guess. For meaning to emerge at all from our perceptions and conceptions, there must be some pattern and connectedness. It is exactly in this sense that, as structures of our experiences, image schemata are meaning structures.

Be that as it may, these schemata make sense to us only because we have the kind of bodies we do have. We understand them relative to the parts of the body and our capacity to manipulate these body parts in movement, for instance. Thus we can comprehend our pulling, supporting, and climbing schemata, which are referred to as motor skills. Also we normally take off from a certain point and end our motion at another point. So the movement of our bodies makes meaning to us when we think of a starting-point and end-point schema.

It is the opinion of Lakoff and Johnson that we actually employ the internal meaning structure of the image schemata in our abstract reason. Haeffner shares with these two authors the intellectual premise that the image schemata indicate an internal ecological structure of meaning which could be associated with human reason. So the rich use of spatial metaphors that our language knows is not really something that came about late and as if from the outside of an original and purely literal use. Rather, the 'high' is not only higher from the outset, but also better than the 'low'. We can feel lost or cramped not only in physical spaces, but also in social spaces (cf. no. 129). Mere physical presence is compatible with physical absence; the traveler who has already physically arrived often needs time to 'let his mind follow' (Haeffner, 1989, 147).

The image-schematic structures have yet one more essential dimension. It is about their gestalt characteristics. When our experiences are structured in terms of gestalts, they become appreciably coherent (Lakoff 1981, 201). Johnson refers to the gestalt structures of our schemata as their meaningful, coherent, and unified wholes in both our experience and our cognition. He points to our daily interaction with the phenomenon of force as an example of the internal gestalt structure of our schemata. The force-gestalt reveals human movement, object-directedness of human action, intensity levels, and causality structure (Johnson, 1987, 41-42)**.** These force-gestalts find their way into our meaning structure as we daily interact with the surrounding world, exerting force or feeling and experiencing force ourselves. Often our normal pattern of force-experience gets unnoticed except, for instance, at moments of excessive winds or unusual force of gravity. It is no surprise, then, that regular modes, patterns, and forms

of our force-experience naturally work their way up our meaning structure as well as our language organization.

We come face to face with our force-interaction daily as we bump into static objects. We feel the directionality of force as we give a little push to objects and watch them move in certain definite directions. We see the football that has been kicked, take off from Rinaldo and get to Bierhof. We also experience the varying degrees of force as objects move faster or slower away from or towards us. A one-year old already knows that he could cause the glass to fall from the table by giving it a little push. Thus, our perceptual gestalts for force reveals some experience of force-interactions, single path of motion, origins or sources of force, degrees of power of force, and sequence of causality (Johnson, 1987, 43-44).

In the light of the foregoing remarks, it is consistent to hold that our conceptual system has not only arisen out of our bodily experience, but that these revelations further strengthen the claim that the gestalt characteristics of image-schematic structures could well give rise to inference patterns. It is argued, for example, that the following seven-fold experimental force-structure could further be elaborated progressively into far-reaching domains of meaning. They include compulsion, blockage, counterforce, diversion, removal of restraint, enablement, and attraction. Johnson calls them the schemata for the most common of force-structures in our experience. But how do these force-structuces come to play a role in our experience, one might ask?

One experiences the force-structure of compulsion as one is moved by external forces. When ones force is resisted by some hindrance, one experiences blockage. In head-on collisions one has a direct experience of the schema of counterforce. Similarity, one experiences the diversion structure as one observes objects on which some force has been exerted suddenly change their directions, yielding to some possible counteracting forces. And when obstacles give way to one's exertion of force, one experiences the schema of removal of restraint. Enablement is the structure of the experience that one goes through as one feels a certain sense of energy to undertake some activity. Finally, the schema of attraction is experienced every time one encounters people and finds them attractive or repulsive.

Image schemata, Lakoff and Johnson argue, structure our experience of space in various forms. The link schema, the container schema, the part-whole schema, the center-periphery schema, the front-back schema, the up-down schema, all go into our organization and conceptualization of space. Such is the case that the image schemata which structure space are eventually framed onto corresponding abstract configurations which structure concepts. Our entire category structure, for instance, is conceived in terms of the container schema. The physical space is extended to the conceptual space. The outgrowth, as we shall see shortly, is a conceptual system replete with metaphorical framing from physical space onto metaphorical space.

Our brief analysis of the meaning of balance, understood both as an experience and as a concept, can already begin to give us a little idea as to how metaphorical elaboration of image schemata give rise to form and structure in our experience and understanding of our world and ourselves. Recall the example of the toddler attempting to walk for the first time. In that example, we showed how the hidden but organizing and recurring internal structure of balance, already present in the baby, attends the toddler's effort to keep a balanced perspective as he goes through the experience of walking for the first time. We shall now proceed a step further

in our inquiry. We intend to provide samples of concepts emerging from the meaning structure of image schemata.

Concept formation

Image schemata, which emanate from our bodily nature and our spatial boundedness as bodies, give rise to body-related concepts such as our motor movement concepts, spatial-relations concepts et cetera. Spatial-relations concepts, for instance, make sense of space to us. The from-to schema generates our concepts of nearness and farness, according to which something is near to or far away from us. It is common knowledge that nearness and farness as such do not exist. They are merely imposed on space, following from the from-to schema, which in turn grows out of our bodily spatial orientational structure. The same is true of the concepts of back and front, which come from the back-front schema. Nothing has a back or front in itself. Being body-based concepts, fronts and backs make meaning only to beings, such as us, with fronts and backs.
Haeffnermakes a strong case for our experience of space. When we begin to think about space, we become so attached to the clear visual space that we first have to become aware of what it means to measure, experience, and fill a space through our own exercises. There are spaces that confine us, to the point of oppression, and there are spaces in which we feel exposed, to the point of claustrophobia; in between lie the homely, sheltering 'caves' and the expansive halls (Haeffner, 1989, 145)**.**

The point has been made already that we not only employ spatial-relations and body-based concepts automatically, but that we also frame them unto the world around us through our perceptual and conceptual systems. Lakoff and Johnson contend that these body-based and spatial-relations concepts have their **"**built-in spatial logics**"** by virtue of the image-schematic structures that occasion them (Lakoff, 1999, 31). Thus, the dog, for instance, is infront of the dog house or at the back of the court yard consequent upon the human aptitude/competency in projecting backs and fronts onto dog houses and courtyards and imposing relations on visible settings (and visibility) consequent upon such projections (Lakoff, 1999, 35).

Nothing, indeed, is like the name we have given it. The way our bodily nature is reflected so frequently in our concepts shows, as earlier indicated, that these bodily projections, which carry our image schemata over to our concepts, reveal the manner our bodies –conjoined with our image-schematic structures – shape our concepts and our conceptual structure. For instance, from our image schemata for our in-out orientation, which itself is an outgrowth of our bodily spatial boundedness, come the concepts of (a) availability, (b) security or freedom, and (c) confinement.

(a) Availability could be associated with being in a certain bounded space which makes a spatial being available for some observation. This shows that our concept of availability is understandably natural.
(b) The concept of security or freedom could be traced to the experience of being in a certain enclosure which can evoke some sense of security and some feeling of the absence of exposure to danger, as in being in the security of our rooms. The concept of security, then, is natural to our in-out schema.

(c) The experience of confinement is akin to the experience we have when we find ourselves in undesirable enclosures. The concept of confinement is, thus, native to us, since it belongs to our everyday experience.

These as well as other spatial-relations and bodily movement concepts are the follow-ups of our image schemata, which are themselves dependent on our bodily spatial boundedness. This discloses how our concepts are shaped by the corresponding image-schematic structures. Our capacities for sight and for negotiating space are employed in forming spatial-relations concepts (spatial orientation schemata) of in, out, on top, beneath, above. Our motor schemata (as in moving a ballpoint pen in writing, or moving an electric iron in stretching out our clothes) organize our motor movement concepts (running, climbing, ironing).

One curious phenomenon in all this is the apparent absence of any serious perceptible dichotomy between perceptions and their corresponding concepts. Our perceived events and actions (aspectual concepts**:** starting, continuing) receive their structure from our overall motor movement. The meaning of motor motion is simply made available to us by our motor schemata. And our spatial-relations concepts are organized by the brain's visual structures. The human conceptual framework utilizes essential aspects of our sensorimotor apparatus that establish pivotal conceptual structure (Lakoff, 1999, 39**).** This phenomenon seems to be pervasive in our basic-level concepts. And of course, it is quite understandable, given the nature of the basic-level experiences associated with these basic-level concepts.

All experience levels, classifications, and category placements are hardly the same. In the light of our differing body types, our brain functions and orientations, the direction of our goals, and our social interactions, certain levels of experience become more important to our functioning than other levels. Concepts related to these basic levels of experience will be given priority in the organization and structuring of our conceptual system (Johnson 1993, 10-11)**.** Basic level concepts could easily be traced to our gestalt perception, motor motion, and mental imagery.

One more instance of concepts emerging from image-schematic structures is found in the area of color concepts. Our color concepts, like some other body-based concepts, have links with the in-out schema. Described as a bounded sphere in space, the container schema has a structure that identifies an outside, a boundary, and an inside – giving rise to what we have referred to as gestalt structure. The in-out schema is basically conceptual, although it has also its physical realizations in concrete objects or bounded fields in space. It then becomes possible for us to frame the in-out schematic structures on visual and auditory objects. Given this basically conceptual character of the in-out schema, we are enabled to conceptualize color; that is to say, color is a general concept. Colour lets itself be physically realized, as in the blue room.

The colour concept, again, goes back to our body structures, according to which our interactions with our world as well as with our bodies themselves are schematized. Thus, though colour concepts do not simply exist in the world out there, yet they are not mere figments of our minds. The concept we have of colour is, instead, interactional, arising from the interaction between our body (the brain) and our world (electromagnetic radiation and the reflective properties associated with objects). Later in our inquiry, this would constitute evidence of not only our phenomenological but also our neural embodiment.

Our concepts are not only structured after the manner of the image-schematic structures, but the very concept of structure itself is also structured by these schemata. The concept of

categories (the category structure) makes sense to us within the context of the container schemata. The front-back schemata open up to us the background-foreground structure and concepts. The part-whole schemata as well as the up-down schematic structures give us an understanding of the concept of hierarchy (hierarchical structures). The link schemata reveal to us the concept of relationship (relational structure).

The matter of body-related concepts, their structure, and the conceptual system that grows out of them is treated in detail by Lakoff and Johnson. Having found our conceptual system basically metaphorical, they hold that it consists of metaphorical and non-metaphorical concepts. Non-metaphorical concepts are not only the direct outgrowths of the human experience but they are also delineated on their terms (Norman, 1981, 193)**.** They include spatial orientation concepts, ontological concepts, and the concepts associated with structured experiences and activities.

Metaphorical concepts are those which are understood and structured in terms of other concepts, rather than in their own terms (Norman, 1981, 193). These are orientational, ontological and structural metaphors. The metaphorical concepts are the parallels to or, as it were, the derivatives of the non-metaphorical concepts. Orientational metaphors orient and structure concepts in terms of non-metaphorical spatial orientations. For a example, an employee may say**:** 'My remuneration went up by 70%'**.** Here the increase in earnings is expressed by an upward movement of a sort. Ontological metaphors frame the status of substance or entity onto things that are inherently bereft of such status. For instance, the mind is likened to a machine when we say that one's mind failed to function.

Emerging from our structural concepts, structural metaphors structure a kind of activity or experience with respect to another kind. For instance, it is common to hear a person say, 'I see what you mean,' where being able to see means being able to understand (understanding is seeing). What is most remarkable here is that the basic understandings of the non-metaphorical concepts are often entailed in their metaphorical parallels.

Given that metaphorical concepts are delineated relative to non-metaphorical notions, they reveal inferential relationships coextensive with the entailment relations of the corresponding non-figurative ideas. For instance, money is scare or restricted asset, and scarce assets/restricted assets are highly prized goods. Parallel to this is the figurative notion of time as money, implying that time is a scare/restricted asset, and so time is an invaluable good (Norman, 1981, 193).

Our investigation of concepts was motivated by a desire to link concepts to their image schemata. We have tried to connect some basic concepts (e.g., balance) to their motor movement schemata. Our spatial-relations concepts (front, back) were traced to their spatial-orientation schemata. Our color concepts also were linked to the in-out schema. In all this, it becomes evident how our image-schematic structures, generated by our bodies, shape our conceptualizing activities. It remains to show how these schemata are extended and elaborated in our metonymic and metaphorical mappings.

The metaphorical elaboration of image schemata.

The major contention of proponents of imaginative reason is that conceptual metaphor has a primal place in our meaning construction and our rational inference structures. It is seen as an underpinning principle of connection, linking our vast network of interconnected literal meanings. These authors postulate that, thanks primarily to conceptual metaphor and, in part, to other parts of imaginative reason, such as the metonymic, humans figuratively extend image-schematic structures, in what is known as metaphoric and image-schematic reasoning. The imaginative mechanisms, in their opinion, are vested with cognitive contents. Our imaginative powers avail us of the structures of image schemata and the invaluable patterns of metaphor and metonymy that enable the extention and elaboration of those schemata (Johnson, 1987, 169 193).

Fauconnier has also written a couple of highly relevant texts to argue the existence of mappings and frames across domains of experience in the human thought process. He argues that mappings across realms are established in our processes of thinking and talking (Fauconnier, 1997, 8)**.** We have mapping when two stets or domains of experience correspond, assigning to every component in the one, an equivalent/parallel in the other (Fauconnier, 1997, 1). It is as if thought and language depend on the manipulation of mapping networks across mental spaces (Fauconnier, 1997, 149)**.** Mental spaces are defined as **"**partial structures" that multiply in our thinking and talking processes, enabling precise delineation of our structures of discourse and knowledge (Fauconnier, 1997, 11)**.** Mappings function to set up and connect mental spaces (Fauconnier, 1997, 11)**.**

Mental spaces are also defined as avenues, means, and places where (and through which) thoughts happen and where entities of our mental concepts are located (Lakoff, 1987, 542). Mediums of thought and conceptualization, mental spaces stand for conceptualized states of affairs (e.g., abstract realms such as mathematical spheres, and conceptual realms such as philosophy, political science, business and public administration). Sweetser and Fauconnier are agreed over the mental space framework. They opine that in mental space constructions and space linking mental spaces are established, take on their forms and structures, and are connected to one another, as we are tightly boxed into situations, given grammatical, contextual, and cultural, settings as we think and talk (Fauconnier, 1996, 11).

Defining meaning construction as the cardinal and complex mental activities that pertain within and across realms in our thinking, acting, or communicating (Fauconnier, 1997, 1), Fauconnier identified it with frames, spaces, and mappings (Fauconnier, 1997, 190). He devotes the bulk of his book, Mappings in Thought and Language, to arguing the existence and varieties of the ways structures are projected across and within mental spaces (Fauconnier, 1997, 37)**.** He explains that mental spaces are specified models of understanding discourse. We continually modify them. They are not, in principle, logically consistent. But they are cognitive. Though we may not refer to them, we use them in referring to real and probably imaginary worlds. Most essentially, they have elements whose reference in the world need not be direct.

Mental space configurations are neither representations of reality nor of possible worlds. A belief space, such as Dan believes, rather than being a belief or state of belief, would be at best a manner of talking about beliefs. Space configurations stand for our manner of thinking and talking, instead of providing us with the objects and contents of the very thinking and talking activities themselves. This is the case in conceptual metaphors. Fauconnier notes possible tendencies in metaphysics and epistemology to let language say to us more than it naturally

can. He points out that talking in a particular way regarding our beliefs or over counterfactual situations, neither, of necessity, reveals the nature of our beliefs nor of possible worlds (Fauconnier, 1997, 152-153)**.**

On the contrary, mental space configurations, as constructions connected to a discourse, while forming part of the cognition description, do not imply analogous metaphysical objects. With mental spaces, there need not be any straight connection between the structures of our language and their referents (Fauconnier, 1997, 158)**.**

Fauconnier admits that there are lots of conceptual connections across spaces in our cognitive mental space configurations, such as pragmatic metonymic functions, analogical, and metaphorical projections. It is his view that whenever we are involved in any form of thought – especially as mediated by language in its various shades of expression – domains are erected, structured, and linked up to one another, in our mental space configurations. **C**onceptual connections across spaces in our cognitive mental space configurations is what they call a local process. A myriad of such realms of mental spaces are established for any thought expanse. One of the most important avenues to specify and retrieve major dimensions of this cognitive architecture is language.

References, inferences, and the projection of structures at various levels function by utilizing available links to connect the established mental spaces. Such connections are, by definition, cross-domain operations that do counter parts/parallels specifications and structure projections from one mental space to the other (Fauconnier, 1997, xxxvii)**.**

So, it is that mental spaces are linked by mappings, structured by frames, and in discourse, there is always a shift from one mental space to another. Our cognitive mappings reveal that an array of meaning constructions involving analogical forms, metaphorical forms, and hedges establish multiple space on figurations whose sources, targets, non-specific, and blended spaces project one another in multiple directions (Fauconnier, 1997, xiii)**.** These mental spaces that are constructed, framed, and linked up as we reason and communicate, are themselves constrained by already existing structures, our linguistic form, historicity, and surrounding world.

The constraint the linguistic form puts on the dynamic creation of the mental spaces does not hinder the construction itself from being exceedingly reliant on preceding constructions that at the moment of discourse were already effected by the local features of the social framing in which the construction happens and, of course, by the real properties of the adjoining environments. These constraining features include, obtainable cross-domain mappings, accessible frames, and models of cognition.

Fauconnier, like Lakoff and Johnson, recognizes a certain understanding of the unity of the entire human experience. He holds that the cognitive functions at the center of the creation of day-to-day meaning are the same activities at workin the functioning of reason, thought, and understanding (Fauconnier, 1997, 189)**.**

An ever increasing number of research works in the field of cognitive science continue to reveal cognitive connections and cognitive constructions as playing central roles in our thought organization. Cognitive connections embrace cognitive schemata, metaphoric projections, analogical reasoning, mental spacelinks, blended spaces, counter-factuality, frame

organization, metonymic pragmatic functions, cultural models, and polysemy. Let us take a cursory look at some of these cognitive operations.

Frame Organization. Frames are structured comprehension/knowledge of how facets of the world work (Sweetser and Fauconnier, 1996, 5)**.** Frames normally involves roles for participants such as doctors, nurses, and patients in a hospital. We create roles in physical or social framing of experience.

Analogy and Metaphor. Analogy, together with metaphor, refers to the human capacity to connect domains on the grounds of experiential links of various sorts. Coming from the Greek word*analogia,* analogyis a way of reasoning, enabling us to understand one thing by comparing it to another.

Blended Spaces. Blended spaces constitute a form of cognitive connection. A blended space could be interpreted as the construction of a metaphorical framing, in which A in the target space is the counterpart of B in the source space, and C in the target space is the counterpart of D in the source space. This configuration is, then, used in framing relevant inferences onto the target space. Take the example, big bellies are expectant mothers. Here, we have a blended mental space in which big bellies simultaneously represent big bellies (A), expectancy (B),and mothers (C). The notion of womanhood (D) is a natural implication here, although it is not explicitly in the blend. The linguistic form leads this process of mental space configuration through space composition, space blending, and generic spaces projections.

Counter-factuality. Counter factuality is yet another variety of our mental space configurations in which true statements are combined with false premises to do reasoning. The following may serve to illustrate a counterfactual construction**:** If men had wings, they would fly. Here there is a cognitive mapping, a core mapping, and its extension. The extension follows from the core mapping, even as the mapping lacks any objective trust condition.

Pragmatic functions. A type of cross-domain links and mental space constructions, pragmatic functions connect spheres to one another. For instance, writers and their works are connected by a function that links authors to their books. Thus, the academic world identifies books by their authors (for example**:** Heidegger**,** 1962).

Given such a world of evidence of cognitive connections of the various shades of the human experience, Fauconnier and Sweetser see thepossibility of domain connection beinguniversal and ubiquitous in human thought and language (Sweetser and Fauconnier, 1997, 8)**.** Haeffner seems to share with Fauconnier and Sweetser, Lakoff and Johnson, this sensibility for the unity and interconnectedness of the various nuances of the human experience, which conceptual metaphor is supposed to advance.

The phenomenon of our bodylines and its implications as it relates to the use of body metaphors in language is well documented in the literature on philosophy of body. This is based on the fact that the physical-psychic and the psychic-spiritual 'functional circuits' are intertwined, so that neither can close without going through the other one, at least in part. The immanent laws of the physiological, psychological, and spiritual orders are of fundamentally different types.

However, since there is not only a structural analogy between them, but also that a reciprocal translatability of modes of existence of one order into those of the other is linguistically attested, so that on the one hand the metaphorical word usage and act of living cannot do

without the literal; and on the other hand the full content of this is unfolded such that a unity must be inherent in these differences (Haeffner, 1989, 129).

Johnson cites experiments conducted by researchers to show how metaphorical extension of structures across spheres constrain our reasoning. Dedre and Donald Gentner preformed the experiments to argue the existence of analogical processes of reasoning that organize our system of concept formation and usage (Johnson, 1987, 109)**.** Their experiments disclose the critical role of metaphorical projections in analogical thought. Here features of the source-domains are mapped onto the target-domains as we project metaphors (Johnson, 1987, 9)**.**

Using electricity as a test-case, Dedre and Gentner cite the analogical use of water-flow that applies a metaphorical understanding of electric current as water that flows via a pipe (Johnson, 1987, 10)**.** One observes here a metaphorical extension from the source-sphere of hydraulic system to the target-realm of electric circuit. In this metaphorical framing, pump is framed onto voltage**;** and flow-rate is metaphorically extended to current. Thus, image-schematic operations and models are actually employed in comprehending spheres of experience as well as in problem solving. When we comprehend the activity of electric circuits through projection of structural relations from the sphere of hydraulic systems, we move to specific inferences regarding the target-sphere (Johnson, 1987, 12)**.**

A second experiment could also be cited. Here, participants were given two different models, the **'**fluid-flow**'** and the **'moving-crowd, '**on the basis of which they were to make some findings and draw relevant inferences. Informed by the metaphorical conception and structures associated with moving crowds, the second work-group preformed better than the first. The fluid-flow work-group, not acquainted with the relatively strange fluid dynamics, could not make the relevant metaphorical extensions needed to draw the appropriate experiences. They needed to be at home with how fluid heights in reservoirs influenced flow and pressure in order to draw the appropriate conclusions.

The point that is being made here, is that we make definite inferences consequent upon the metaphorical conceptions underlying the spheres in question. Metaphorical structures of understanding provide significant constraints on our thought processes, during our conscious reflections as well as in our less reflective operations (Johnson, 1987, 12)**.**

In this and numerous other ways our image-schematic structures are metaphorically extended. This accounts for the various types of metaphors, there are, namely, ontological, structural, and orientational. It is interesting to note how the wisdom of their elaboration enhance logical thought. The orientational metaphor, Happy is up, which is extended to I am feeling on top, simply elevates our erect posture (the up-down schema) . Ontological metaphors are similarly elaborated, generating statements such as 'Her words carry lots of weight', which is an extension of the ideas are objects metaphor. An extension of the conduit metaphor, the example – 'Her words carry lots of weight' – entails that words have their meanings independently of contents and speakers.

As part of our culture these metaphorical extensions influence our thinking and action, even as we remain unaware of their impact. They are simply necessary in our rationalizing about our experiences. When inflation begins to lower our standards of living, we should recall immediately that it follows from the inflation is an entity metaphor. And when we look at inflation as an entity, it puts us in a certain frame of mind in which we can now make reference

to it, relate to it as a quantity, recognize its aspects, look at it as a cause, and attempt to comprehend it (Lakoff, 1987, 27). Hence, we find ourselves responding to, dealing with, and combating inflation. Similarly, when we conceive argumentation in confrontational terms (the Argument is war metaphor),it goes without some rational entailments. This not only structures the way we reason about it but also the manner we respond behaviorally to it.

But most importantly, it is our interactions with substances and physical objects which lead us into conceptualizing and extending our experiences in relation to substances and entities. We could then elaborate these in container terms, following the in-out schema. Thus, we could go in and out of arguments, and be in and out of periods of inflation – with all their attendant extensions. In the visual fields too, things come into and go out of sight. With events, states, and activities, we find ourselves saying we are in a race, or in a hopeless situation. For instance**:** Mary is always in the 100-meter Olympic race. The event of 1966, (the civil war) put Nigeria in hopeless situation.

Ontological metaphors are further extended in personifications, as statements such as, 'That lecture taught me a lot' reveal. Personifications helps us make sense of things in human terms, which could be understood easily, given their correlations in experience. Thus, as spatial orientation occasions the orientational metaphors and their subsequent extensions, so also does our experience of substances and physical objects give us ontological metaphors and their myriad of elaborations. Which concepts, though, are weightier than the others, and which are oriented which way, are issues that vary from one setting to the other. Most importantly, the central in-out, up-down, center-periphery schemata belong to people the world over. And our extensions of them afford us an understanding that could only accompany an explanation that is one with our natural environments.

Polysemy. One more variety of metaphorical elaboration could be found in image-schematic transformations. One form of it is polysemous terms. In polysemy, core senses of words are said to yield extended meanings. Polysemy is a case in which a word has intimately related senses. This phenomenon is said to be motivated by the natural relations among image schemata. Natural image-schematic transformations generate situations in which a word has senses so closely linked to one another. The close links make the senses seem quite inseparable. In such a case, a historical, prototypical, central or core sense is said to exist. It is this that is extended into what we call an extended sense in any meaning network. Consider the sentences that follow**:** (a) The wall is low**;** (b) My spirit is low. The low in the second sentence, could be a metaphorical extension of the low in the first. Low as applied to the wall,it is held, is the spatial and core sense. Low as applied to my spirit is the temporal and extended sense.

Traugott gives evidence that the core sense in a network of polysemy is the sense from which the extended sense historically developed. He demonstrates the possibility of acquiring gainful clues about the mechanism of meaning change by investigating synchronic linguistic conceptual structures (Traugott, 1986, 539-550).

Fillmore has also done a study in favor of this hypothesis. He has, in fact, published lots of articles and books arguing the meaning extension position (Fillmore, 1981 & 1982). Frame Semantics describes elements in a language that bear meaning in such away that words only come into existence for a reason; and this reason is predicated in our experiences and institutions. Thus the meaning-bearing elements find their way in the spoken or written languages as to enable an understanding of the said experiences and institutions and to reveal

the reason these experiences and institutions became the motives for the creation of the categories the words express. The duty of these manticistis to decipher precisely how the categories relate to their backgrounds (Fillmore, 1981 & 1982, 135-136).

A frame-semantic approach to the meaning of the word carpenter, for instance, would say that the men-folk include individual males who, by their trade, carve artifacts out of wood, employing certain sorts of tools and implements; and these persons are named sculptures (Fillmore, 1981 & 1982, 134)**.**

'Frame semantics' refers to a programme of research in empirical semantics and a framework of description that presents the results of this research programme. It represents a certain way of investigating the meaning of words and also a certain manner of delineating/depicting principles or of formingnovel words and phrases, for embellishing, enhancing, and modernizing the meaning of words. It is a research programme that assembles the connotations of elements in a given writing into the overall meaning of the writing.

'Frame' refers to any conceptual system linked up in a manner that understanding any of the constituents requires understanding the entire structure where it belongs. Introducing any constituent element of this structure in a writing or discourse automatically introduces all the other elements. The idea of frame, as used here, indicates terms in the theory of language, such as, "'schema', 'script', 'scenario', 'ideational scaffolding', 'cognitive model', 'folk theory'" (Fillmore, 1981 & 1982, 111)**.**

Lawrence Horn too thinks along these lines. He argues in favour of a link between meaning shifts and synchronically valid inferences (Horn 1984). Scholars also agree on, and Sweetser argues convincingly to show, the existence of substantial motivation underlying some diachronic meaning extensions, which could be ascertained when we study the connections of senses exhibited as people speak. She points out that available data, historical as well as synchronic, show how analysis of semantic domains is highly cognitive specific (Sweetser, 1990, 23)**.**

Furthermore, Sweetser points to the evidence that, thanks to metaphorical framing, there are meaning shifts across domains, allowing a carry-over from basic senses to projected senses. There is an apparent pervasiveness and coherence in the structures of our metaphorical systems that is at the basis of our propensity to employ vocabulary borrowed from the external (social and physical) sphere when we discuss the internal (emotional and psychological) realm of our experience. At the historical level, this system of metaphors has again and again lead the way in changes in semantics; at the synchronic level, we see this metaphorical system in our pervasive application of polysemy and the abstract extensions our vocabularies on the physical world (Sweetser, 1990, 49).

Combining these prototypical applications of terms with other relevant data on natural categorization (to be treated in a subsequent chapter) enables us to see lexical items as forming natural categories of senses. Thus, some senses of a word may be more representative than other senses. In metaphorical framing, from one domain to another, the senses of the word in the source-domains are taken to be more basic than those in the target-realms. These metaphorical mappings relate the senses to one another, resulting in extensions of mappings.

The exploration of image schema shows that abstract reason is a matter of two things, namely (a) reason grounded on bodily experience, and (b)metaphorical projection from concrete to abstract realms. To this effect the following conclusions are drawn**:**
(a) Our experiences are structured preconceptually by our image schemata.
(b) We construct image-schematic concepts analogous to our image schemata e.g., the concepts of pulling, and pushing.
(c) Conceptual metaphors map our image schemata into abstract realms, keeping intact their underlying internal structure and gestalt understanding. For instance, from the up-down schema we construct the metaphorical mapping, more is up**;** less is down.
(d) The conceptual metaphors, rather than being arbitrary, are themselves motivated by constructs ingrained in our day-to-day experiences. An instance of this is the fact that our up-down schema organizes virtually all our activities in terms of gravity. Daily we observe liquid levels in our cups rise as we pour in some water. They then drop as we take away some quantity. The import is a natural environment where quantity becomes accessible and easily understandable in terms of our commonplace experience of verticality**:** a verticality-quantity correlation. This daily experience motivates the structural correlation where more correlates with up, and less correlates with down. This in turn informs the metaphorical mapping**:** more is up**;** less is down. Thus, conceptual metaphors such as more is up, and purposes are destinations are prompted by preconceptual structural correlations in our mundane experience. Schemata that structure our commonplace experience preconceptually have an internal ecological structure. Preconceptual structural correlations in experience precipitate conceptual metaphors that map this gestalt understanding onto abstract spheres. The result is that what has been called abstract reason is but a certain dimension of our temporal and physical functioning, a somewhat delineating-in-the-imagination. It is a process of meaning and rationality that could be described as **"**imaginative rationality**"** (Lakoff 1980, 193).

It follows from this that our conceptual system could boil down to a combination of our image schemata and metaphorical mappings. The very imageschemata which structure our experience of space also structure our concepts. They do this by being mapped into analogous abstract configurations which structure concepts. That enables a metaphorical mapping from a physical space into a metaphorical space, were spatial structures are framed onto conceptual constructs.

We have therefore, a conceptual structure that is somewhat a spatialization of form, what some call the hypothesis of form spatialization. Image schemata (which belong to the structures in our preconceptual experience) are seen here functioning in a dual capacity**:** (a) as concepts that have structures we understand directly, and (b) as concepts weengage in metaphorical senses for structuringsome corresponding complex concepts (Lakoff, 1987, 283).

So it is that in the conceptual system, the propositional and image-schematic models stand for structures. The metaphoric and metonymic models constitute mappings that employ the structural models in metaphoric and metonymic projections into distinctive specialties which we call abstract reason. In this way, conceptual metaphor and metonymy transform general schemata characterized by our natural experiences into forms of reason weighty enough to belong to our definition of reason.

Reason and inference patterns

We have been probing inference patterns and the conceptual system that derives from them. Most importantly, we have been investigating the metaphorical extensions of our body-based conceptions of our surrounding world, noting how such metaphorical extensions of image schemata attain a degree of abstraction approaching the level of rational constructs. Proponents of imaginative reason show that these schemata have their **"**basiclogics**"** (internal structures), capable of defining human reason. It remains to show in this project in what sense and to what degree the internal, ecological, gestalt structures and 'meaning postulates' of these schemata could be identified with the quality and character of human reason. A few indications could well highlight this capacity and power of the internal structure of the image schemata to reflect reason**:** the in-out schema, the part-whole schema, the link schema, negation, the law of extended middle, modals, modal logic.

The in-out schema. Tinkering around the in-out schema, Lakoff and Johnson observe that its correlational experience is basically the embodied experience of the human body as both a container and as something in an enclosure. It is structured after an outside, a boundary, and an inside. Its **"**basic logic**"**(internal structure) is, things are either within a container or outside a container. It is either x or not x. Our class logic has its grounding in this idea (Lakoff, 1987, 272)**.** Sample metaphors are seen in the visual field which is conceived in terms of the in-out schema, with things coming into and going out of sight. Personal relationships belong here too. We go in and out of relationships. We enter into marriages where we may be trapped. This indicates that image schemata have their internal meaning structures and gestalt configurations. They reveal cognitive, ecological, inherent and sensible organizations.

We find the core logic of image schematicthinking in its gestalt configurations. Rather than an assemblage of loose parts,they are structured wholes. Theirconfigurations give rise to their basic logic (Lakoff, 1987, 272). Such is the case that the meaning they make to us flows naturally from our corporeal experience. And their internal and cognitive structures follow from their meaning configurations.

The part-whole schema. The part-whole schema is yet another indicator of the reason import of image schemata. Its bodily experience is the experience one has of one's body as a whole with parts. One normally experiences oneself as a whole being with parts that yield to manipulation. The structure of the part-whole schema is a whole, its constitutive parts, and its configuration. The internal and gestalt meaning structure is, If a person (x) is part of the family (y) ,then a family (y) is not a part of a person (x) (Johnson, 1987, 273)**.** It is an asymmetric schema. The notion of a family, conceived as a whole with parts, is one of its sample metaphors. The family which is put in place in a marriage set-up as a whole**;** the husband, wife, and children are its parts.

The link schema. One other instance of the rational important of the image schemata is the link schema. Again, its bodily experience is the initial human experience of the umbilical cord. It is, in truth, a connecting experience that is sustained all through infancy and childhood, as we grapple with the need to keep ties with our parents and the surrounding world. We also have the experience of using twines to tie and link up things to one another. The structure is that of two separate entities and a connecting link. Its eternal meaning structure is, if q is connected to p, then p is connected to q. A couple of metaphors illustrate this. Interpersonal and social relations are conceived as links, as connections are made and social ties are broken.

In the light of the foregoing a few conclusions can be drawn. First, there is a preconceptual structuring of our experiences by our image schemas. Second, we have image schematic concepts that correspond to our experiences. Third, metaphorical extensions map image schemas into abstract domains, retaining their core logic. Fourth, far from being arbitrary, the metaphors have their leitmotif in the structures that inhere in our day-to-day corporeal experience (Lakoff, 1987, 275).

Anderson's claim that the mental active processes in image-schematic structures are abstract analogs of physical functions, makes sense here. Johnson observes that Anderson proposes the use of the length of a line as an analog for a person's weight, to illustrate the notion of 'abstract analog'. Here, though the length of a line would vary with the weight, there is ostensibly no detailed correlation between a line and weight (Johnson, 1987, 25). Men have been known to have the faculty to perform such abstract operations. In this way, image-schemata, as meaning structures, give rise to human reason and inference patterns.

Johnson presents argumentative evidence of rational entailments of our schematic structures, to show how rational inferences and human reasoning are constructed on these meaning structures. He postulates that the in-out schema entails the notions of separating, differentiating, and enclosing things which in turn implies the ideas of restricting and limitating objects (Johnson, 1987, 22)**.** The rational entailments involved here are human limitation, protection from, or resistance to some outside force, accessibility or inaccessibility.

Human limitation. The spatial boundedness of a room, for instance, imposes on one the awkward reality of the limitations of one's being. One feels a sense of confinement and a certain absence of liberty to stretch out, at will, beyond those four walls. The rational talk about human limitation, thanks to the meaning structures of the in-out schema, begins to take on for one's being some experientially meaningful dimension.

Protection from, or resistance to some external force. The safety of the bounded space of a room, on the other hand, could give one some sense of protection from possible harmful external forces. For one moment, one is protected from the hustle and bustle, the insecurities and uncertainties of the external world, along with the pains and frustrations that may go with these. In the serenity of this small protecting enclosure, one is safe and free at last! At once, the philosophical topic of human freedom begins to become conceptually real for one.

Accessibility or inaccessibility. Again, being in this spatial boundedness simultaneously reveals and hides one. It makes one accessible for observation of some sorts to those within this space, those who share ones world. It also makes one inaccessible to those walled off from ones world by ones bounded space.

Negation. Another indication of the rational inference emerging from the in-out schema is in our understanding of negations in our reasoning process. When we reason, we take off from a starting point (propositions or premises), moving through this to an end-point (conclusion). The metaphorical understanding we seem to have here is one that conceives reasoning in the context of movement along some 'path'. Propositions are its bounded spots from where we take off, move through, and finish up at.

The language of the human reason, Johnson contends, reveals that holding a proposition is conceptualized in relation to holding oneself in a certain spot. We find ourselves saying**:** Take

a position**;** From where you are now, you cannot proceed to that conclusion**;** You are on the wrong track of the discussion; You are straying away from the track.

Such is the case that as we proceed in reasoning, we have the experience of moving from one bounded spot to yet another. Holding a proposition, then, means for us to be placed in a somewhat bounded mental spot, to be in a place. This becomes an experiential ground for the understanding of the theme of negation. For, to take a position contrary to the proposition, which implies negation, is to place oneself outside the bounded field. To hold a proposition is to be in some in-out field. To negate this proposition is to be outside of this in-out space. The in-out schematic structure, in this sense, constrains our reason.

The law of the excluded middle. The logical law of the excluded middle, according to which everything is **"**Either P or P**,"** Johnson proposes, is yet another good example. In this principle of logic, categories understood as containers, rule out any chance of a third possibility. One is either in the container or out of the in-out structure. One either belongs to a category or one finds oneself outside of it. As a major principle of our logical system (the classical logic), it could be exciting to see how it is an extension of the logic of the in-out schema.

Modals. Similarly the experiential gestalts for force, which we discussed in the preceding pages, do not merely constitute the background against which meaning springs up, but they are themselves structures of meaning. There empirical studies on the semantics of modal verbs to further argue the rational implications of image-schematic structures. Our concept of modality and the modal verbs associated with this indicate our corpoeal experience of the actual and the necessary.

Thus our concepts of actuality and necessity are the consequences of our corporeal experience of, for instance, what we must do, can do, may do, might do could do (Johnson, 1987, 48). Though relating to our everyday practical experience, the notion of modality as discussed in philosophical disciplines – under the themes of possibility, necessity, and actuality – is a very abstract logical analysis. As an integral part of our normal world and our embodied experience, we relate to the fact of modality as we come in touch with events, things, and relations within the context of what is necessary, possible, or actual. Their schemata constitute structures of embodied understanding for us.

We might as well take a glance at the manner in which the philosophical concepts of possibility, necessity, and actuality, though involving abstract logical analysis, form an integral part of our everyday practical experience. We live out the reality of the phenomenon of possibility daily as we experience the reality of having to take a certain step in a world peopled by a sea of options. The modality of necessity is also an integral part of our day-to-day experience as we see that to stay alive, we must have food and shelter, for instance. We observe too that we need to be airlifted if we have to travel from Europe to Africa. Again, we catch ourselves day-dreaming about things that are, for all intents and purposes, known to be unrealizable. And at other moments, we observe ourselves doing things that are here and now actual and functional.

Thus, we see the concept of actuality actually having a place in our 'everydayness'. The distinction between what is actual and what is not becomes for us at once experiential. The meaning structure of the schemata of the various shades of modality becomes, therefore, part of our everydayness as we find ourselves able to choose (can), as we feel ourselves allowed to

make or not to make options (may), and as we are constrained by certain force vectors into certain situations (must).

The experiment on the extensive cognitive structure of modality has been carried out by Eve Sweetser as part of her study on the connectedness existing between three interrelated spheres of experience, found to be linked up to one another by a coherent metaphorical structure. These are the socio physical dimension, the epistemic realm (theorizing, rational argumentation, reasoning of various forms), and the structure of speech acts. Following from this connecting metaphorical structure, the mental, the epistemic, and the rational are comprehended in the light of the physical.

Within this meaning schemata the various senses of modality are connected, thanks to metaphorical structures, with the physical turning into a metaphor for the non-physical (the social, the mental, and the rational). The root sense and the epistemic sense constitute the two senses of the modal verbs there are. The root modal verbs point to capability (can), warrant (may), and liability, (must). The epistemic sense indicates possibility, probability, and necessity in reasoning. The upshot, then, is that the root senses are rationally elaborated and extended to the epistemic realm. Thus the root senses in the physical and social domains are not different from their meaning in the sphere of rational augmentations and reasoning.

Sweetser demonstrates how we use metaphorical extentions and projections of images of force to reason with modalities (Lakoff, 1987, 458)**.** He describes as exciting this possibility of characterizing modes of meaning using image schemata. He contends that when we use such image schematic structures to reason, we can refer to such thought as image schematic (Lakoff, 1987, 458).

If, as Sweetser observes, the force of the premises of an argument compels us into some conclusion, then the epistemic senses of the modal verbs belongs properly to reasoning. Perhaps we should analyze the implications once more. Let us consider shortly how the meaning extensions are reflected in the epistemic senses of the following three modal verbs**:** may, must, and can.

May. The argument is that as in the root meaning of may there is no external hindrance, so also in the epistemic sense, there is no obstacle hindering one's process of reasoning – given the relevant premises –from getting to the suiting conclusion (force schema**:** removal of restraint).

Must. The modality, must, indicates a force vector driving one irresistibly to a certain conclusion. (The force schema here is one of compulsion**;** but now it becomes rational instead of physical). However, contends Sweetser, in must, there is a certain asymmetry in the two senses (i.e., root sense and epistemic sense). In the root sense, (sociophysical), there is a certain sense of reluctance**;** in the epistemic, none. The reason behind this asymmetry is that in our reasoning we need our conclusion to be compelled and restricted. We deem it preferable when our conclusions are the irresistible consequences of the logical force or pressure of our premises.

Can. As for the modal verb can, its force gestalt is one of empowering; an empowering that is simultaneously a discretion. This is metaphorically elaborated to entail rational force in the epistemic sphere, a rational force that one needs to give in to. For, if one can make a certain inference, given the force of logic, then one should make that conclusion.

Modal logic. A few remarks on how modal logic itself could be based on the force schemata could be appropriate here. Necessity, as everyone knows, is always conceptualized in the sense of some constraining force or pressure, whether in the moral, epistemic or logical domains. Possibility is also seen as a free and uninterrupted flow through a certain pathway. Such concepts of necessity and possibility that underpin our understanding are reflected too in modal logic.

(a) Logical necessity. Due to overwhelming force of logic (logical necessity), propositions are implicitly identified with locations. The logical pressure carries one from one propositional location yet to another. Thus x is true if it has a logical necessity. If the logical force functions to gravitate you to a certain position/location, then, you end up in that location/position (Johnson 1987, 64).
(b) Logical possibility. Logical possibility is intuitively conceived as the absence of any blockage to one's track to some location. The upshot of this is that, we at once intuitively relate necessity to possibility, following from our in-out schema.

If the falsity of X is not a logical necessity, then the truth of X is alogical possibility. This follows from the way we understand necessity asa force that overwhelms us and negation as a place that lies outside of a certain bounded space (Johnson 1987, 64**).**

The study of image-schematic structures does disclose that their use in reasoning could stand the test of what we define as human reason. The Boolean logic of classes, for instance, could be understood, in Johnson's view, as a metaphorical projection of some form of the image schemata. Within this context, it becomes possible to formulate complex schemata akin to the Boolean logic of classes, employing the part-whole schema, the in-out schema, and a metaphorical framing. Classes would, then, take up a metaphorical definition, involving a mapping from the in-out schema to the class structure. Reasoning done with such schematic structures would then become image-schematic reasoning. Metonymic framing, in which a typical member of a category, stands for the entire category, could also form part of our definition of reason. This could be called metonymic reasoning.

Sweetser's (1984, 1990) metaphorical projections of force images, which reveals our reasoning with modalities, could also constitute a weighty part of our definition of human reason. There is, again, much merit in the contention that Fauconnier's (1985, 1994, 1997) revelation of mental spaces configurations and cross-domain mappings in our thought construction, could without harm be allowed to be integrated into our reason definition. Some of these, indicate instances of reasoning other than the propositional. Yet, their force of argument and evidence deserve some attention.

Conclusion

When all is said and done, our power of abstract reason, under the framework proposed by proponents of imaginative reason, and reinforced by a host of thinkers sympathetic to their views, could well be identified with the human conceptualizing capacity. This has been found to involve three factors.

The first factor is the power to create symbolic constructs corresponding to preconceptual structures in our commonplace experience. These preconceptual structure are, as already noted, the basic-level (walking, running) and image-schematic concepts (spatial space).

The second factor is the power of metaphorical mapping, framing structures in the physical sphere onto constructs in the abstract realms – all within the framework of the existing structural correspondences between the abstract and the physical horizons. This constraint belongs to the system. Our image schematic and metaphorical structures prohibit some movements (inferences), making them simply impossible (Johnson, 1987, 137). Herein lies our capacity for abstraction.

Finally, the third factor is the power to employ image schemata as structuring schemes in the creation of general categories and complex concepts. Thus, we can form structures of complex events and taxonomies that have subordinate (e.g., types of walking and running) and super-ordinate (e.g., movement) categories (Lakoff, 1987, 281). If we should go by these schematic conceptualizations, meaning, understanding, and rationality would apparently be dependent on metaphorical extensions of non-propositional image-schematic structures.

Sweetser shows how metaphorical mappings, and other forms of framing are inseparable from logic and reasoning. She sees as normal conditional applications our meta-metaphorical and other meta-mapping applications of concepts, arguing that that these are also interpreted through the same forms of thought processes that we engage in interpreting literal conditionals of our real-world. Evidently our thought process interacts strongly with our mapping processes. The metaphorical is apparently inseparable from the logical and the rational (Sweetser, 1996, 231)**.**

References

Fauconnier, Gilles, Mappings in Thought and Language. (Cambridge: Cambridge University Press, 1997)

Fauconnier, Gilles, Mental Spaces: Aspects of Meaning Construction in Natural Language, (Cambridge: Cambridge University Press, 1994)

Haeffner, Gerd, Philosophische Anthropologie. Stuttgart: Kohlhammer, 1988

Haeffner, Gerd, The Human Situation. A Philosophical Anthropology. (Indiana: University of Notre Dame Press, 1989)

Johnson, Mark, The Body In the Mind: The Bodily Basis of Meaning, Imagination, and Reason. (Chicago: The University of Chicago Press, 1987)

Lakoff, George, Women, Fire, and Dangerous Things. What Categories Reveal about the Mind. Chicago: (University of Chicago Press, 1987)

Lakoff, George and Mark Johnson, Metaphors We Live By. (Chicago: University of Chicago Press, 1980)

Lakoff, George and Mark Johnson, Philosophy in the Flesh. The Embodied Mind and its Challenge to Western Thought. New York: Basic Book, 1999

Mark Johnson, Moral Imagination Implications of Cognitive Science for Ethics (Chicago: University of Chicago Press, 1993)

Norman, 193

Fillmore

Sweetser, Eve, From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structure. (Cambridge: Cambridge University Press, 1990)

Sweetser, Eve "Reasoning, Mappings, and Meta-metaphorical Conditionals" in Grammatical Constructions. (Oxford: Clarendon Press Oxford, 1996)

Sweetser, Eve, and Gilles Fauconnier, "Cognitive Links and Domains: Basic Aspects of Mental Space Theory" in Spaces, Worlds, and Grammar. Gilles Fauconnier and Eve Sweetser eds. (Chicago: The University of Chicago Press, 1996)