Mind, Metaphor, Law

by Mark L. Johnson*

Change, as John Dewey observed, is a basic fact of human experience. We are temporal creatures, and the situations we find ourselves in, the situations that make up the fabric of our lives, are always evolving and developing. The omnipresence of change throughout all human experience thus creates a fundamental problem for law, namely, how can law preserve its integrity over time, while managing to address the newly emerging circumstances that continually arise throughout our history? If, following one extreme, we think of law as fixed, static, and univocal in its content, then law runs the risk of losing its relevance to the new conditions and problems that face us each day. However, the opposite extreme—that law is completely malleable—is equally untenable, for that would make law nothing more than a tool of those in power. Our problem, therefore, is how law can be both stable and capable of growth.

I believe that part of the answer to this foundational question is beginning to emerge from recent research in the cognitive sciences. Human law is a many-splendored creation of the human mind, that is, of human understanding and reasoning. The primary business of the cognitive sciences is to study empirically how the mind works. Therefore, cognitive science ought to give us insight into the nature of legal concepts and legal reasoning.[1]

Even though the "cognitive science of law" is a very recent development, its potential for transforming legal theory is substantial. However, most people do not believe that the cognitive sciences are theoretically rich enough, and sufficiently non-reductionist in character, to do justice to the depths of legal understanding. This prejudice is

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* Knight Professor of Liberal Arts and Sciences, Department of Philosophy, University of Oregon. University of Kansas (B.A., 1971); University of Chicago (M.A., 1972); University of Chicago (Ph.D., 1977).

1. For the most thorough treatment to date of the implications of cognitive science for law, see STEVEN L. WINTER, A CLEARING IN THE FOREST: LAW, LIFE, AND MIND (2001).

based, I suspect, on the fact that people tend only to know about what I call "first-generation" cognitive science, which grew out of work in the 1950s in computer science and artificial intelligence and assumed views of meaning and thought that came straight out of early information processing psychology, analytic philosophy of mind and language, and generative linguistics. I have to admit that this type of cognitive theory has almost nothing to tell us about the nature of law because it has turned out to tell us very little about how the mind actually works.

I. THE NEED FOR A COGNITIVE SCIENCE OF LAW

Happily, things have changed dramatically over the past two decades in light of the emergence of a second generation of cognitive science, which has called into question virtually all of the major assumptions of the first-generation paradigm.[2] Instead of seeing the mind as a disembodied computer program, the newer research reveals that our conceptualization and reasoning are grounded in our bodily experience and shaped primarily by patterns of perception and action.[3] There is a logic of our bodily experience that is imaginatively appropriated in defining our abstract concepts and reasoning with them. Imaginative processes of this sort depend on the nature of our bodies, our brains, and the patterns of our interactions with our environment. Imagination—which is the soul of human thinking—is therefore constrained and orderly, even though it can be flexible and creative in response to novel situations.[4]

This new cognitive science of the embodied mind is predicated on the assumption that there is no human conceptualization or reasoning without a functioning human brain, which operates a living human body that is continually engaging environments that are at once physical, social, cultural, economic, moral, legal, gendered, and racialized. Our embodiment shapes both what and how we experience, think, mean, imagine, reason, and communicate. This claim is a bold one, and it directly challenges our received folk wisdom that what we call "mind" and "body" are somehow two fundamentally different kinds of entities. From a philosophical point of view, one of the hardest tasks you'll ever face is coming to grips with the fact of your embodiment because this fact requires a serious rethinking of the nature of mind, thought, and

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2. *See generally* GEORGE LAKOFF & MARK JOHNSON, PHILOSOPHY IN THE FLESH: THE EMBODIED MIND AND ITS CHALLENGE TO WESTERN THOUGHT 77 (1999); FRANCISCO J. VARELA, EVAN THOMPSON & ELEANOR ROSCH, THE EMBODIED MIND: COGNITIVE SCIENCE AND HUMAN EXPERIENCE (1991).

3. LAKOFF & JOHNSON, *supra* note 2, at 78.

4. *See id.* at 77-78.

language. What makes this task so very difficult is the omnipresent idea of disembodied mind and thought that leaves its traces everywhere we turn, from claims about pure logical form, to pure concepts, to ideas of non-corporeal thought, to spectator views of knowledge, to correspondence theories of truth.

What is at stake here? Why should any of this matter? My answer is this:

1. A disembodied view of mind is often used to support a literalist and objectivist view of thought, concepts, and reason.

2. On the objectivist view, concepts are believed to have strict, fixed boundaries defined by necessary and sufficient conditions. This is what George Lakoff calls the "classical theory" of categories, according to which any concept is allegedly demarcated by a particular unique set of features that jointly identify some entity as falling under a specific concept.[5]

3. An objectivist/literalist paradigm supports a view of moral and legal reasoning as the application of literally-defined objective categories to situations in an all-or-nothing fashion, based on fixed criteria.

4. This objectivist/literalist theory is based on an empirically false view of cognition, mind, and language. It presupposes a dangerously false view of what a person is and how the mind works.

5. As a result, empirical research on the nature of cognition should have important implications for our understanding of moral and legal concepts and reasoning.

II. WHERE DOES MEANING COME FROM?

If you think, as I do, that there is no mind without a body—a body in continuous interaction with ever-changing environments—then you've got to explain how this bodily activity gives rise to all our glorious abstract thoughts and symbolic interactions. I want to give a sketch of my version of certain key parts of this massive story of embodied meaning and thought and then suggest how this new view bears on our understanding of legal reasoning.

Second generation cognitive science has been developing a bold new theory of the bodily basis of meaning, imagination, and reason.[6] Here,

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5. GEORGE LAKOFF, WOMEN, FIRE, AND DANGEROUS THINGS: WHAT CATEGORIES REVEAL ABOUT THE MIND 6 (1987).

6. For summary accounts of second-generation cognitive science research on the embodiment of mind, thought, and language, see *supra* note 2.

I can focus only on three of the most important aspects of human cognition that have potentially profound implications for law:

· Radially structured categories that manifest prototypicality effects.

· Image schemas, as a basis for embodied meaning and logical inference.

· Conceptual metaphors, by which we extend embodied meaning into our abstract conceptualization and reasoning.

III. RADIAL CATEGORIES AND PROTOTYPICALITY EFFECTS

The classical theory of categories, which is the default view held by nearly everyone in our culture, is that categories have a fixed, stable, and objective structure.[7] In this view, a concept like "dog" is believed to be defined by a set of features an object must possess to be that particular type of thing we call a dog. If some object has those features, then it is a dog, and not otherwise. Notice that assuming this view of concepts leads us to a very specific view of moral and legal reasoning. If a principle, rule, or law consists of a set of classically structured concepts, then that law would apply in a certain clear fashion solely to those situations where the defining conditions for the concepts were satisfied in our experience. If "thou shalt not murder," and if you know the necessary and sufficient conditions that define murder, then your only problem in evaluating a proposed course of action is to determine precisely whether it involves an act of murder. If a certain act manifests the requisite properties that constitute murder, then it is prohibited, period. This classical objectivist view of categories, if it were true, would make law a neat little process of strict rule application. How a legal concept might grow without completely redefining the concept, and how legal judgment might change in a rational, stable manner, could never be explained using this view. But at least a conservative view of law would be upheld.

Contrary to the classical objectivist view, there is now a massive and steadily growing body of empirical evidence supporting the proposition that large parts of human conceptualization and reasoning do not work in the way the classical theory requires.[8] What the evidence shows is that many of our most basic concepts, from those for simple objects like cups and beds, all the way to abstract concepts in morality, politics,

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7. LAKOFF, *supra* note 5.

8. For a fairly comprehensive account of the relevant research up to 1987, see LAKOFF, *supra* note 5.

science, religion, and law, have complicated internal radial structures and exhibit what are known as "prototypicality effects."[9]

To illustrate my point about this complex structure of concepts, I want to tell an extremely sad story. Something awful happened this past summer. You know what I'm referring to, right? I'm talking about the planet Pluto, which—I can hardly utter the words—is now *not* a planet. And I'm really upset with President George W. Bush for not standing up for Pluto. Our President is someone who claims to stand four-square behind the idea that our most important concepts are literal and are fixed in their essence—fixed by God, man, or both. He stood for this principle, for example, when he insisted that marriage is a blessed union between a man and a woman. He asserted that marriage has always been that way and that this is clearly a manifestation of the essential nature of marriage. But I ask you, where was our President when those planetary activists decided to ignore the obvious essence of planethood and brazenly declared Pluto kicked out of the planetary family? Well, he was not there to defend conceptual objectivism. In fairness, I suppose he did not regard it as his job to wade in on science (unless that science is evolutionary science).

You thought Pluto was quite obviously a planet, right? Your whole astronomical education was based on this. And now what are we supposed to do with all those little solar system models we made with Styrofoam balls?

What happened to Pluto? The answer goes something like this. The concept of a planet has turned out to be just like nearly all of our other concepts. That is, it is defined relative to our history, values, interests, purposes, institutions, and philosophical views. The *fact* of what constitutes a planet turns out to depend quite substantially on the *values* certain people called astronomers hold dear. And smart people differ greatly about what those foundational values are. Let me explain. There are scads of small bodies circling the sun. Why do we call some of them planets and others not? One reason is that they have a certain size. Marble-sized bits of astrodust do not count. We could decide that astrodust should count, but we appear to have good reasons (and good values) for excluding it. In other words, astronomers have to decide just what importance size should play in defining the notion of a planet. For example, Pluto is apparently smaller than our moon. When Mike Brown of California Institute of Technology discovered 2003 UB313 (dubbed "Xena"), it looked like there was at least a 10th planet.[10] Now, Xena

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9. *Id.* at 40-41.

10. *See* Jerry Adler et al., *Of Cosmic Proportions; Astronomers decide Pluto isn't a real planet anymore. Why they did it—and how our view of the universe is changing*, NEWSWEEK,

is bigger than Pluto. Oh, no! What are we to do? Should we keep adding planets of a certain size, as we find them?

The next criterion that came into play for some, but not all, astronomers was whether the planet lies within the orbital plane of the other planets. It turns out, however, that Pluto's plane is slightly different than the plane shared by the other planets. Is that enough reason to boot it? Other astronomers propose other criteria, such as appropriate shape. This is actually a question about the formation of the planet—it has to be roughly spherical, which gives evidence that it was formed by a certain sequence of geological processes. So, two-hundred mile long slivers of rock do not count as planets. Some people even attribute metaphysical import to the spherical shape of planets, claiming that the sphere is the perfect shape in the great ontological scheme.

Okay, so maybe we can just say that planets are spheres that orbit the sun and not another body. However, it appears that this does not quite work for Pluto because it has a moon that is almost half its size, and it is not really clear whether the moon circles Pluto or whether, like two squirrels running around a tree trunk, they circle each other. It gets worse. Some astronomers then decided that it would be useful to stipulate that a true planet had to dominate its own orbit in a way that it would clear out other objects in its orbit.

I trust that the point I am trying to make is clear enough by now. It is starting to look as though our old, faithful idea of planets as balls of rock orbiting the sun is not arbitrary but defined relative to the history of our astronomy, our metaphysical systems, our observational technology, and a host of other facts and values. Those values and theoretical commitments show themselves, I am suggesting, in the fact that to answer the question—"Is Pluto a planet?"— depends, at the very least, on which of two competing orientations you choose: (1) the planetary scientists who are interested mostly in the composition and geologic processes of the celestial bodies or (2) the so-called "dynamicists" who are more interested in their mass, orbit, and their clearing out of their orbital plane. There is no absolute fact about what constitutes a planet. Any facts about planets are likely to be dependent on various values and theoretical commitments held by the people who get to decide the issue.

My point is that what we have just seen about the nature of planets reveals some very important insights about the nature of human conceptualization in general. Concepts can grow and change, but there are, nonetheless, various kinds of constraints on that growth. Accordingly, this is clearly not an arbitrary process. This is why I get upset when

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Sept. 4, 2006, at 44.

people complain that our nation is under the sway of a bunch of liberal legal activists. They are misrepresented as thinking that the law means whatever judges say it means. And with what is the alleged activist-legislation-posing-as-judicial-judgments contrasted? The answer, apparently, is that activist legislation is supposedly contrasted with what the laws really mean when we understand the literal legal concepts correctly.[11]

I cannot understand either this original intent doctrine or its attendant notion of literal and objectively defined legal concepts as squaring with virtually any of the evidence I know of concerning how human conceptualization and reasoning work. It looks to me, instead, that most of our moral and legal concepts are more like the concept of a planet than they are anything like classical categories.[12] Concepts are ways we make distinctions and mark patterns. We do this for various purposes and relative to the developing situations in which we find ourselves. The proper application of concepts is an imaginative activity through and through.

But concepts are even more complexly structured than this. Consider the phenomenon known as "prototype effects" that was made famous by the work of Eleanor Rosch and her colleagues.[13] Rosch demonstrated that, from a cognitive perspective, people often build their categories around prototypical members, and they understand less-prototypical members by virtue of their relations to the prototypes.[14] Rosch found, for example, that in America prototypical birds include robins and sparrows. Robins and sparrows establish cognitive reference points for peoples' reasoning about birds. Less-prototypical birds, such as chickens, emus, ostriches, roadrunners, and penguins are cognized as lying at varying distances from the center of the category according to various principles of extension.[15] In some cases, there may even turn out to be no univocal set of classical defining features shared by all members of the category. Yet, we do manage to reason quite effectively by virtue of

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11. Typically, the "true" meaning of those legal concepts ends up being tied to the text of the words at issue or, if those words are ambiguous, its "original intent" as understood by the writers of the legislation.

12. I know this has been pointed out by others *ad nauseum*, but what does any notion of original intent tell us about how the law should view in vitro fertilization, genetic cloning, nuclear waste contamination, or any other newly emerging condition that the founders could not have possibly even imagined?

13. Eleanor Rosch, *Cognitive Reference Points*, 7 COGNITIVE PSYCHOLOGY 532-47 (1975); *see* LAKOFF, *supra* note 5, at 39-40.

14. Rosch, *supra* note 13, at 544.

15. LAKOFF, *supra* note 5, at 44-45.

our complex understanding of our radial categories and how they apply to different situations.

This prototype characterization applies also to our most important abstract concepts, and not just to those for concrete physical objects. Take, for example, the category "harm." At its conceptual center are cases of direct physical injury to an organism, such that the organism suffers some dysfunction, often accompanied by bodily pain. But via principles of metaphorical extension, there are also cases of nonprototypical harm, such as emotional harm, psychological harm, social harm, economic harm, ethical harm, legal harm, and so on. None of these is necessarily more experientially basic than any other, but from the viewpoint of how we cognize things, some are more central and prototypical than others.

I am proposing that we should think of our ethical and legal concepts as, for the most part, having complex radial structures, manifesting prototype effects. Such concepts are motivated by and grounded in our shared bodily, social, cultural, moral, economic, and legal experience. But there are body-based principles of extension that allow us to apply our concepts to novel cases and sometimes also to expand our concepts. These principles of extension include image schema structure and conceptual metaphor, which allow for cognitive flexibility in the face of changing situations, even as they provide cognitive motivation and constraint for how we think creatively. This is how embodied imaginative meaning and understanding can grow. This is how innovation is possible and how it is constrained. So, we need to look at the role of image schemas and metaphor.

IV. IMAGE SCHEMAS[16]

Let us start with the fact that our experience is permeated with hundreds of recurring sensory-motor patterns, known as "image schemas," which give shape, connection, and significance to what we experience. To illustrate this kind of meaningful structure, consider the "container" schema.[17]

Thousands of times each day we perceive, manipulate, and interact with containers, such as cups, boxes, briefcases, rooms, vehicles, and even our own bodies. Via these recurrent vital interactions, we come to

16. Selected parts of the following sections on images schemas and conceptual metaphor are taken from chapter seven of my book, MARK JOHNSON, THE MEANING OF THE BODY: AESTHETICS OF HUMAN UNDERSTANDING (forthcoming).

17. LAKOFF & JOHNSON, *supra* note 2, at 31-32.

learn the meaning and logic of containment. The container schema consists of the following minimal structure:

1. A Boundary
2. An Interior
3. An Exterior[18]

To get schemas for concepts like "in" and "out," one must add structure that profiles various parts of the container schema.[19] The concept "in" profiles (highlights or activates) the interior of the container schema, whereas the concept "out" profiles the exterior that surrounds the boundary.[20] "In" and "out" also require identification of a figure/ground (or trajector/landmark) structure relative to the container schema.[21] When we say, "The horse left the barn," the horse is the figure (trajector) relative to the barn, which is the ground (or landmark).[22]

One crucial thing to notice is that, even for image schemas as elementary and simple as the container schema, there is already a definite spatial or bodily logic that is learned from our sensory-motor experience and that constrains our inferences about containers:

1. If an object, X, is in container A, then that object is not outside that container.
2. If an object, X, is within container A, and container A is within container B, then object X is within container B.
3. If an object, X, is outside of container B, and container A is inside container B, then object X is outside of container A.[23]

To emphasize just how much internal structure and thereby how much constraint on spatial logics there can be for even our most elementary image schemas, consider the "source-path-goal schema."[24] One could specify the minimal structure of the source-path-goal schema as follows:

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18. *Id.* at 32.
19. GEORGE LAKOFF & RAFAEL E. NÚÑEZ, WHERE MATHEMATICS COMES FROM: HOW THE EMBODIED MIND BRINGS MATHEMATICS INTO BEING 31 (2001).
20. *Id.*
21. *Id.*
22. *See id.*
23. *Id.*
24. LAKOFF & JOHNSON, *supra* note 2, at 32-33.

1. A source point from which the path begins.
2. A path leading in some direction.
3. A goal, that is, an endpoint for the path.[25]

Described in this minimal way, you might think that the image schema does not have enough internal structure to support extensive inferences. However, actual source-path-goal schemas typically have considerable additional structure that can serve as the basis for a wide range of inferences, for example:

· A trajector that moves
· A source location (the starting point)
· A goal (the intended destination for the trajector)
· A route from the source to the goal
· The actual trajectory of motion
· The position of the trajector at a given time
· The direction of the trajector at that time
· The actual final location of the trajector when the motion is terminated,which may be different from the intended destination.[26]

This list leaves out other possible parameters that might play a role in various events, including speed of motion of the trajector, the trail left by the moving object, obstacles to motion, aids to motion, forces that move the trajector, multiple trajectors, and so on.[27]

An extremely important feature of image schemas is that they are topological in the sense that they can undergo a wide range of distortions or transformations while still retaining their image-schematic structure and logic.[28] For example, a path can be straight, or it can twist and turn back upon itself, or it can involve stop-and-go motion without losing its characteristic source-path-goal structure and without violating its characteristic spatial logic.[29]

Another crucial property of image schemas is their compositionality, that is, their ability to combine to produce other image schemas.[30] Via such composition, vast expanses of our experience and understanding of our mundane bodily experience are structured image-schematically. For example, as Lakoff and Núñez have shown, the concepts "into" and "out

25. *Id.* at 33.
26. *Id.*
27. *Id.*
28. *Id.*
29. *See id.*
30. *See* LAKOFF & NÚÑEZ, *supra* note 19, at 39.

of" are blendings of the container schema with the source-path-goal schema.[31] The "into" schema is a composition of the "in" schema and the "to" schema, whereas the "out of" schema combines the "out" schema and the "from" schema:[32]

Into Schema

· The "in" schema: consisting of a container schema, with the interior profiled and taken as landmark.

· The "to" schema: consisting of a source-path-goal schema, with the goal profiled and taken as landmark.

· Correspondences: (Interior; Goal) and (Exterior; Source).

Out of Schema

· The "out" schema: consisting of a container schema, with the exterior profiled and taken as landmark.

· The "from" schema: consisting of a source-path-goal schema, with the source profiled and taken as landmark.

· Correspondences: (Interior; Source) and (Exterior; Goal).[33]

A full accounting of the image-schematic structure of our experience and understanding might extend to hundreds of structures. However, most of these would be complex combinations of a smaller number of more basic image schemas. In summary, there are four major points to keep in mind concerning the nature and activation of image schemas:

1. Image schemas characterize the recurring structure of much of our sensory-motor experience.

2. They are learned automatically through our bodily interactions with aspects of our environment, given the nature of our brains and bodies in relation to the possibilities for experience that are afforded us within different environments. Image schemas are meaningful to us even when, as is typical, they operate beneath the level of conscious awareness. (They are a basic part of embodied meaning).

3. They have highly determinate "spatial" or "bodily" logics that support and constrain inferences.

4. They are compositional in that they combine and blend, yielding even more complex embodied meaning and inference patterns.

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31. *Id.*
32. *Id.*
33. *Id.*

When I say that meaning is grounded in the body, I mean that the meaning of our experience emerges pre-reflectively from sensory experience and patterns of our bodily orientation, perceptual interaction, and movement. Image schemas constitute much of the inferential structure of this embodied understanding. All of this is tied intimately to the nature of our bodies and to the nature of the environments we inhabit. The range of image schemas is thus wide, but it is highly constrained and motivated by how our bodies are shaped. A full account of image schematic structures would include not just containment and source-path-goal, but a large array of schemas: attraction, repulsion, compulsion, blockage, verticality, right-left symmetry, balance, scalar intensity, straight versus curved, and so on.

V. EMBODIMENT OF ABSTRACT THOUGHT

Anyone who is convinced by the evidence for the embodiment of mind must then face the vexing problem of how abstract thought is tied to the body. How do we get from our perceptual and motor understanding to our most wonderful achievements of abstract conceptualization, reasoning, and creativity? The general form of the answer appears to be something like this: Neural structures central to sensory and motor processing must be recruited to carry out the inferences that make up our abstract patterns of thinking. Structures of "perceiving and doing" must serve as structures of "thinking and knowing." Much recent work in this area has come from the relatively new field of cognitive neuroscience in studies of the neural structures and processes that make it possible for us to appropriate bodily meaning for abstract conceptualization and reasoning.[34] I will not address this highly technical literature. Instead, I will try to describe these processes from the perspective of cognitive psychology and linguistics. What we have found so far is that one of the central devices for human abstraction is what we call "conceptual metaphor," which involves a conceptual mapping from a highly structured source domain, typically some sensory-motor domain, to a less highly structured target domain, typically some abstract notion, such as justice, freedom, or mind.[35] Let me illustrate this with some basic examples.

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34. *See* George Lakoff, *The Neural Theory of Metaphor*, *in* THE CAMBRIDGE HANDBOOK OF METAPHOR AND THOUGHT (forthcoming).

35. LAKOFF & JOHNSON, *supra* note 2, at 45.

VI. CONCEPTUAL METAPHORS

It is not surprising that all our perceptual, spatial relations, and bodily movement concepts are intimately tied to our embodiment. Still, even though this may seem obvious to many people, it is nonetheless a difficult task to explain just how this meaning arises and achieves symbolic expression. Image schemas are but one key part of how this happens. The most difficult problem facing any proponent of the embodied mind hypothesis is to explain how abstract conceptualization and reasoning are possible. How can we move from embodied meanings tied to our sensory-motor experience all the way to abstract concepts like love, justice, mind, knowledge, and freedom? How can we move from embodied spatial logic and inferences all the way to abstract logical relations and inferences?

There is no simple answer to these questions, but I believe that the general answer is that various imaginative structures and processes allow us to extend embodied meaning and thought to the highest level of abstraction possible for us, all the way up to science, philosophy, mathematics, logic, and law. Let us begin with a simple but suggestive example of how this works. Recall my earlier description of the structure and logic of the container schema. There is a commonplace metaphor—"categories are containers"—that is pervasive in our conceptual system and has its grounding in embodied container logic.[36] The conceptual metaphor "categories are containers" consists of a systematic mapping of entities and relations from the domain of spatial containment onto our understanding of conceptual categorization, as follows:

The Categories Are Containers Metaphor

Source Domain		*Target Domain*
Containers		Categories
Bounded regions in space	>>>>>	Categories
Objects inside bounded regions	>>>>>	Category members
One bounded region inside another	>>>>>	Subcategory[37]

36. LAKOFF & NÚÑEZ, *supra* note 19, at 43.
37. *Id.*

Via this conceptual mapping, we can understand categorization as metaphorical placement within a container. For example, a certain animal can fall *within* one species but *outside of* another. We can identify an object as being *in* the category of living things. A subcategory is *part of* or is *contained in* a larger category. There can be several subcategories *within* one more general category. Developing scientific research can move one organism *from* the plant category *into* the animal category.

Based on the source-to-target mapping, the spatial logic of containment that we mentioned above can carry directly over into the logic of abstract categories.[38] This gives rise to a series of correspondences of the following sort:

· "Every object is either within a container or outside of it" (Source Domain inference) yields "Every entity is either within a category C or outside of it" (Target Domain inference) = the *Law of the Excluded Middle*.

· "Given two containers A and B and an object X, if container A is in B and X is in A, then X is in B" (Source Domain inference) yields "Given two categories A and B and an entity X, if A is in B, and X is in A, then X is in B" (Target Domain inference) = *Modus Ponens*.

· "Given three containers (A, B, C), if A is in B and B is in C, then A is in C" (Source Domain inference) yields "Given three categories (A, B, C), if A is in B and B is in C, then category A is in C" (Target Domain inference) = the *Hypothetical Syllogism*.

· "Given two containers A and B and an object Y, if A is in B and Y is outside B, then Y is outside A" (Source Domain inference) yields "Given two categories A and B and an entity Y, if A is in B and Y is outside of B, then Y is outside of A" (Target Domain inference) = *Modus Tollens*.[39]

Notice that it is precisely this metaphorical container logic that is appropriated by the objectivist view of legal reasoning that I mentioned earlier.

What this metaphorical logic of containment illustrates is the general principle that there are metaphorical and other imaginative structures that make it possible for us to understand abstract concepts and to reason about them using the spatial logics of various body-based source domains. For example, when we hear someone say, "Penguins fall

38. *Id.* at 44.
39. *Id.*

outside the category of birds," in the context of talking about birds, "outside" activates the source-to-target mapping of the conceptual metaphor "categories are containers," and we thereby enlist the logic of containers as we process the next utterances of the speaker.

One of the most pressing questions raised by the existence of conceptual metaphors is why we have the ones we do and how we acquire them. In *Metaphors We Live By*,[40] where Lakoff and I first described conceptual metaphors of this sort, we did not have satisfactory answers to such questions about grounding.[41] However, over the past two decades, a substantial and growing body of empirical research has shed increasing light on the experiential grounding issue.

Recently, Joe Grady has proposed a theory of "primary metaphors" that offers a way of explaining how more complex systems of conceptual metaphors arise from and are built out of more primitive body-based metaphors.[42] Grady's work drew on Chris Johnson's study of metaphor acquisition in young children.[43] Johnson hypothesized that young children go through a "conflation stage" in which certain subjective experiences and judgments are conflated with, and therefore are not differentiated from, certain sensory-motor experiences.[44] For instance, an infant that is being held in its mother's arms will simultaneously experience affection and warmth.[45] During this conflation period, the young child will automatically acquire a large number of associations between these two different domains of affection and warmth, since they are co-active domains.[46] Later, the child enters a "differentiation stage" in which she can conceptually distinguish the different domains, even though they remain co-activated and associated.[47] These cross-domain associations are the basis of mappings that define a large number of primary metaphors, such as AFFECTION IS WARMTH.[48] The AFFECTION IS WARMTH metaphor underlies such expressions as "She received a 'cool'

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40. GEORGE LAKOFF & MARK JOHNSON, METAPHORS WE LIVE BY (1980).

41. *Id.* at 3-6.

42. Joseph Grady, *Metaphor and Blending*, *in* METAPHOR IN COGNITIVE LINGUISTICS 101-24 (Gerard J. Steen & Raymond W. Gibbs, eds., 1999); *see generally* LAKOFF & JOHNSON, *supra* note 2, at 49 (summarizing Grady's theory of primary metaphors).

43. Christopher Johnson, *Metaphor vs. Conflation in the Acquisition of Polysemy: The Case of See*, *in* 152 CULTURAL, PSYCHOLOGICAL AND TYPOLOGICAL ISSUES IN COGNITIVE LINGUISTICS: CURRENT ISSUES IN LINGUISTIC THEORY 155, 155-69 (M.K. Hiraga, C. Sinha, and S. Wilcox, eds., 1997).

44. *Id.* at 155.

45. *See id.* at 159-60.

46. *Id.*

47. LAKOFF & JOHNSON, *supra* note 2, at 48-49.

48. *Id.* at 49.

reception from the committee," "He shot her an 'icy' glare," "She's 'warming' to me slowly," and "Relations have 'thawed' as we spend more time together."

Grady has analyzed a large number of primary metaphors that result from basic cross-domain correlations in our shared bodily experience.[49] What follows are a few representative examples of primary metaphors, along with their grounding and examples of linguistic manifestations of the underlying mapping:

Affection Is Warmth

Subjective Judgment: Affection

Sensory-motor Domain: Temperature

Experiential Basis: Feeling warmth while being held affectionately.

Examples: "I received a *warm* reception in Norway." "Our relationship has *cooled off* recently."

Intimacy Is Closeness

Subjective Judgment: Intimacy

Sensory-motor Domain: Physical closeness

Experiential Basis: Being physically close to people with whom you are intimate.

Examples: "We've been *close* for years." "Now we seem to be *drifting apart*."

Bad Is Stinky

Subjective Judgment: Evaluation

Sensory-motor Domain: Smell

Experiential Basis: Being repelled by foul-smelling objects and pleased by good-smelling things.

Example: "This whole affair *stinks*!" "Something *smells fishy* with this contract."

More Is Up

Subjective Judgment: Quantity increase or decrease

Sensory-motor Domain: Vertical orientation

Experiential Basis: Observing rise and fall of levels of piles and fluids as more is added or taken away.

Examples: "Prices are *sky-rocketing*!" "The number of crimes *rose* precipitously this year."

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49. *Id.* at 49-54.

Organization Is Physical Structure

Subjective Judgment: Abstract form or relationships

Sensory-motor Domain: Perceiving and manipulating physical objects

Experiential Basis: Interacting with physical objects and recognizing their functional structure (correlation between observing part-whole structures of physical objects and forming cognitive representations of functional and logical relationships).

Examples: "The pieces of his theory don't *fit together*." "I can't see how the premises are *connected to* the conclusion in your argument."

Purposes Are Destinations

Subjective Judgment: Achieving a purpose

Sensory-motor Domain: Reaching a destination

Experiential Basis: Correlation of reaching a destination and thereby achieving a purpose.

Examples: "You've finally *arrived*, baby." "She's got a *long way to go* to the completion of her graduate degree."

Knowing Is Seeing

Subjective Judgment: Knowledge

Sensory-motor Domain: Vision

Experiential Basis: Gaining knowledge through visual perception.

Examples: "I finally *see* the answer to our problem." "That's an *obscure* part of your theory."[50]

The Johnson-Grady hypotheses together give us an account of how mostly unconscious correlations in our experience could be the basis for primary conceptual metaphors, which are then combined into complex metaphors. Their views are consistent with neural models of the sort developed by Srini Narayanan that can "learn" certain types of metaphors.[51]

Over the past decade Raymond Gibbs has carried out a number of major experiments to test for the existence of conceptual metaphors in our thinking and to probe the alleged bodily grounding of such metaphors.[52] Gibbs's early work is powerfully summarized in his book, *The*

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50. *Id.*

51. *See* Srini Narayanan, *Talking the Talk is Like Walking the Walk: A Computational Model of Verbal Aspect*, *in* PROCEEDINGS OF THE NINETEENTH ANNUAL CONFERENCE OF THE COGNITIVE SCIENCE SOCIETY 548, 548-53 (Pat Langley & Michael G. Shafto, eds., 1997); LAKOFF & JOHNSON, *supra* note 2, at 41-42, 49, 54-56.

52. *See* RAYMOND W. GIBBS, JR., THE POETICS OF MIND: FIGURATIVE THOUGHT, LANGUAGE, AND UNDERSTANDING (1994).

Poetics of Mind,[53] and he has continued to explore various experimental techniques to test various hypotheses concerning conceptual metaphor. His most recent study focused on the bodily and experiential basis of conceptual metaphors for desire that underlie expressions in English and in Brazilian Portuguese.[54] Consider the question of whether there exists a conceptual metaphor DESIRE IS HUNGER. How could we show this using psychological testing methods? In the following passage an American college student describes her romantic attraction to a boy she knew in high school:

> Back in high school, I had this HUGE crush on this guy, James, who was a total hunk. He would flirt with me when we'd talk, but I didn't get a chance to know him very well, nevermind ever be alone with him. I was dying to get closer to him, and felt starved for his attention. I walked around for over five months feeling silly and empty because I wanted him so bad. I wanted to eat him alive! He was yummy![55]

Is this embodied way of talking about her desire as hunger merely a way of talking, or is it a conceptual metaphor grounded in her bodily experience of hunger? In other words, is DESIRE IS HUNGER a primary metaphor, or perhaps a metonymy, or is it just a propositional name for a set of superficial linguistic expressions? An initial inspection of the language of desire in English and Brazilian Portuguese revealed that the concepts of hunger and thirst are used extensively in both languages to talk about a broad range of abstract desires. For instance, we can hunger or thirst for attention, promotion, righteousness, justice, power, revenge, or equality. But what evidence could there be that this is more than just talk—that it is conceptual and guides our reasoning?

What Gibbs and his colleagues did was first to determine how their American and Brazilian subjects understood hunger, or in other words, what their cognitive model of hunger was. For example, both cultures associate hunger with *local symptoms* like a grumbling stomach, having one's mouth water (salivating), and stomach ache, with *general symptoms*, such as feeling discomfort, feeling weak, becoming dizzy, and with *behavior symptoms* like feeling anxious and feeling out of balance. Now, if such symptoms are strongly associated with hunger, and if they thus form a shared cultural model of hunger that is intimately tied to our shared bodily experiences, then this conceptualization should show

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53. *Id.*

54. Raymond W. Gibbs, Jr., *Embodiment and Linguistic Meaning*, 84 BRAIN AND LANGUAGE 1 (2003).

55. *Id.* at 9.

up in manifestations of the DESIRE IS HUNGER metaphor, assuming, of course, that there really is such a conceptual mapping for us.

One way in which this hypothesis was tested was to formulate a number of linguistic expressions in the two languages concerning lust, love, and other desires. Some of these were constructed using the knowledge of the idealized cognitive model of hunger that was elicited in the earlier study. The other expressions were made up of a range of symptoms judged in the first study to be only weakly associated with hunger or not associated at all. Expressions of the following sort were used: "My whole body aches for you," "I have a strong headache for knowledge," "My hands are itching for you," and "My knees ache for information about my ancestry." Participants read such statements, either in English or Portuguese, and were asked to rate how acceptable each of these ways of talking would be in their culture. As one would expect, if there actually exists a DESIRE IS HUNGER metaphor, then subjects would rate the sentences with expressions tied to the local, general, and behavior symptoms of hunger much higher (more appropriate) than those that conceptualized desire only with very weak or nonassociated bodily experiences. Indeed, that is precisely what they found. Gibbs concluded:

> [T]he data demonstrate how knowing something about people's embodied experiences of hunger allows one to empirically predict which aspects of desire will, and will not, be thought of, and talked about, in terms of our complex embodied understandings of hunger. This evidence is generally consistent across two different languages and cultural communities. People use their embodied knowledge as the primary source of metaphorical meaning and understanding. In this way, the answer to the question "where does metaphor come from?" is given by understanding how embodiment provides the foundation for more abstract concepts.[56]

The "prediction" of which Gibbs speaks here is an experimental prediction about what expressions will be properly motivated by our shared embodied knowledge of hunger. He is not claiming that we can predict which primary metaphors will exist. Rather, we can explain how various conceptual metaphors are grounded in bodily experience and motivated by it, and we can explain why we have the specific inferential structure in our conception of desire that we do.

What makes the theory of primary metaphor so potentially important is that it suggests answers to two crucial questions: (1) Why do we have the conceptual metaphors we do? and (2) How can the meaning of

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56. *Id.* at 10.

abstract concepts be grounded in our bodies and our sensory-motor experience? The answer to the first question is that we have certain primary metaphors because of the way our brains, bodies, and environments are structured. Because of the specific kinds of cross-domain neural connections that we acquire through our mundane, mostly nonconscious experience, we will naturally acquire a shared set of primary metaphors. The nature of our bodies and environments determines precisely what those metaphors will be. This explanation does not predict which metaphors will be activated for a particular person and thus show up in their symbolic interaction and expression; rather, it shows how the conceptual metaphors that we actually have in a given culture at a given time are motivated by, and make sense relative to, the kinds of cross-domain associations that are possible for creatures embodied like us.

The second crucial question that the theory of primary metaphor allows us to answer is how it might be possible for creatures embodied in the way we are to use their embodied meaning to develop abstract concepts and to reason with them. The key to all of this imaginative activity is the co-activation of sensory-motor areas along with areas thought to be responsible for so-called "higher" cognitive functions. Primary metaphors are thus cross-domain mappings based on correlations between sensory-motor maps and structures in domains involved in judgment and reasoning about abstract domains. In other words, there is a directionality to the mapping—from the source domain to the target domain—and this is instantiated in the flow of activation from a sensory-motor area to a neural assembly responsible for what we regard as "higher" cognitive activity. Grady calls this second area a domain of "subjective judgment,"[57] but we really do not yet have a good account of how to describe these neural regions. The key point is that the inferences are actually performed in the sensory-motor areas and that these inferences are then carried over to the target domain via the cross-domain correlations that define the primary metaphors.

VII. METAPHORS STRUCTURING ABSTRACT CONCEPTUAL SYSTEMS

Once we have primary metaphors, we are off and running, so to speak. Through various types of blending and composition, we develop vast coherent systems of metaphorically defined concepts. Detailed analyses have been performed of such complex metaphorical concepts as events, states, causes, purposes, desire, thought, mind, reason, knowledge, values, morality, law, and politics. All of our most impressive intellectu-

57. *See generally* Grady, *supra* note 42.

al achievements—in physics, chemistry, biology, anthropology, sociology, mathematics, logic, philosophy, religion, and art—involve irreducible and indispensable conceptual metaphors. In other words, all of the key concepts in all of these disciplines are defined by multiple, often inconsistent, metaphors, and we reason using the internal logic of those metaphors.

I cannot survey here the evidence for the pervasiveness of conceptual metaphor. However, there is a virtual cottage industry built around studying the role of conceptual metaphor in every area of human thought. Over the past twenty years, research has come up with at least nine types of empirical evidence for the existence of conceptual metaphor in all aspects of our symbolic expression: evidence such as polysemy generalizations, inferential generalizations, extensions to novel cases, sign language, gesture studies, psychological priming experiments, and discourse analysis.[58]

The implications of the constitutive nature of conceptual metaphors are quite far-reaching. We come to see that even our most abstract theories are webs of body-based metaphors. This discovery does not denigrate theory. On the contrary, it humanizes theory and shows us why it is even possible for us to understand a theory and use it to organize our inquiries into experience. Such analyses give us new cognitive tools for exploring the internal logic of our conceptual systems and theories, seeing how they are experientially grounded and tracing out their insights and limitations. And most importantly, this view gives us a way of understanding how embodied creatures like us can come to think what and how we do.

This statement is obviously too abstract, so I want to offer an example of the type of category structure I am talking about here—one drawn from property law. I have no legal training, and I do not work in the philosophy of law; however, I had the good fortune to work with my colleague in the Law School, Carl Bjerre, as he was preparing a law review article on intellectual property law.[59] Here is a very small part of what we found in our analysis of the radial category of property.

At the center of the category are prototypical instances of property, such as a house, hand-tool, or land.[60] These cognitive prototypes are what are activated first for us when we read, hear, or think about the

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58. For a brief survey of the types of evidence available, see LAKOFF & JOHNSON, *supra* note 2, at 81-86. *See also* GIBBS, *supra* note 52.

59. Carl S. Bjerre, *Secured Transactions Inside Out: Negative Pledge Covenants, Property and Perfection*, 84 CORNELL L. REV. 305 (1999).

60. *Id.* at 357.

term "property."[61] These prototypical instances satisfy a common idealized cognitive model in which property is:

· a discrete physical object or spatial expanse;
· that persists through time;
· is subject to exclusion from use by others;
· is alienable;
· and is useful.[62]

Extending out from the central prototypes are many noncentral members that do not possess all of the features specified by the central idealized cognitive model. Thus water is, in American culture, though not in certain Native American cultures, conceived of as potential property even though it is not a discrete object. The human body is often regarded as property, but we typically do not think of it as alienable or transferable. Garbage is apparently regarded by the law as property, although it seems somewhat at odds with our notion of prototypical property because it is not typically a discrete physical object and the notion of usefulness is suspect.[63] Extending even further out from the center are other types of property that are not physical entities. The primary principle of extension for most of these cases is conceptual metaphor. For example, we speak of intellectual property, such as ideas we have that can be copyrighted, patented, and excluded from use by others. Intellectual property is only metaphorically an entity, and it is only metaphorically transferable to another for their use. Pensions, stocks, and bonds are metaphorical property. We have an alleged right to utilize such abstract, metaphorically-defined entities for our own purposes under certain specifiable conditions. One's privacy is metaphorical property just like one's own name, and they both can become the subject of litigation.[64]

In addition to metaphorical principles of extension within the category, there are often metonymic principles coupled with the metaphors. For example, a share of stock stands metonymically for a share of the company, which is itself a metaphorical entity, and the company in turn stands metonymically for the company's assets. One's name is metaphorical property, but it is also metonymic for the person named.

One could go on an on with such an analysis, but I hope that the key points are obvious. The concept "property" is not a classical category

61. *Id.* at 357-58.
62. *Id.* at 358.
63. *See id.*
64. *See id.* at 359.

defined by a set of necessary and sufficient conditions. Instead, the concept is a vast, radially-structured category with a small number of central members or prototypical cases surrounded at various distances by noncentral members, according to principles of extension such as conceptual metaphor and metonymy.[65] Legal judgments in property law operate relative to this complex and potentially growing conceptual structure. Property is at least partially a metaphorically-defined concept.[66] You cannot practice property law without metaphor!

Despite what I have argued about the central role of metaphor in human abstract conceptualization, you may still be thinking that it is just a figure of speech or simply an alternative way of talking, not very important, and certainly not constitutive of our moral and legal thinking. In response to this, I want to remind you of the critical importance of metaphorical framing for our lives. As humans we understand things by framing them via what George Lakoff calls "idealized cognitive models."[67] Much of ethical and legal reasoning is a matter of framing situations and problems relative to various cognitive models, and image schemas, radial categories, and metaphors play a central role in defining our models. Let me cite just two examples of this important phenomenon that exemplify the entire framing process.

I once received an email from Richard Koenigsberg, Director of the Library of Social Science, in which he identified an overarching metaphor that the Nazis used to frame their Final Solution, that of the Jew as "disease within the body of the people."[68] Hitler apparently claimed that he was not one of those politicians who "doctored around on the circumference of the distress," and he insisted on the necessity of discovering and removing the "cause of the inflammation."[69] Koenigsberg writes:

> On February 22, 1942, when the Final Solution was in full swing, Hitler expounded his conviction that the discovery of the Jewish virus was one of the "greatest revolutions that has taken place in the world." The battle in which he was engaged, he said, was of the same sort as the "battle waged by Pasteur and Koch." Himmler stated that

65. *See id.* at 357-60.

66. *Id.*

67. LAKOFF, *supra* note 5, at 68.

68. E-mail from Richard Koenigsberg, Director, Library of Social Science, to Mark Johnson, Knight Professor of Liberal Arts and Sciences, Department of Philosophy, University of Oregon (Sept. 15, 2002, 20:06:03 EDT) (on file with author).

69. *Id.*

> Germany had the "moral right to destroy this people that wanted to destroy us. We do not want to be infected by a bacillus and to die."[70]

Genocide could be justified by the need for drastic hygienic action. Hitler argued, "One must act radically. When one pulls out a tooth one does it with a single tug and the pain quickly goes away. The Jew must clear out of Europe."[71]

Metaphorical framing is not a game. It can be a life and death matter. Immediately after the September 11, 2001 attacks, many people thought of the events as constituting a "crime." That metaphorical framing carries with it its own specific logic. If there is a crime, then we send the police. There are laws. There are courts to pass judgment. And justice must be done. On the international level, this would involve international courts and law enforcement that is subject to the provisions of international laws and agreements. Very quickly, however, the metaphor of "the war on terrorism" took hold and led to an entirely different set of entailments than those defined by the "crime" framework. If we are then engaged in war, an entirely different set of expectations, justifications, and actions are sanctioned that are not permitted under the "crime" metaphor. This characterization let us justify the attacks in Afghanistan and was the basis for the Administration's decision to invade Iraq. Based on actions taken on such metaphors, thousands of people, including U.S. and foreign soldiers, insurgents, and many thousands of completely innocent Iraqi citizens have died. Many more people have been injured or maimed and now suffer horribly. The economic, social, and political harm is incalculable. Our image in the world has been dramatically altered. Our conception of appropriate moral and legal action has been torn asunder.

So, we must not think of metaphor, in the old way, as a mere figure of speech. It is a figure of life. It is a figure of thought. It is a figure of value. We live, love, fight, and die by metaphors.

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70. *Id.*
71. *Id.*