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WHY DO GOOD PEOPLE STEAL  
INTELLECTUAL PROPERTY?

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# WHY DO GOOD PEOPLE STEAL INTELLECTUAL PROPERTY?

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## **Abstract**

Why do good people steal intellectual property? You know who we mean. The person (perhaps even yourself) who feels deep remorse if she mistakenly walks off with your pencil, who takes a wallet she found on the street, full of money but with no identification, to the police, and who without a qualm or any thought of payment, downloads copyrighted music off the internet or from a friend to put onto her iPod. What is going on here? Some suggest ignorance of the law, but that is generally not the case. She knows about copyright. Some suggest a lack of enforcement, but that doesn't stop her from turning in the wallet. No, something else is going on – some failure of a normally law-abiding, “good” person to feel any compulsion to obey this set of laws....

**KEYWORDS:** intellectual property, behavior

# WHY DO GOOD PEOPLE STEAL INTELLECTUAL PROPERTY?

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Why do good people steal intellectual property? You know who we mean. The person (perhaps even yourself) who feels deep remorse if she mistakenly walks off with your pencil, who takes a wallet she found on the street, full of money but with no identification, to the police, and who without a qualm or any thought of payment, downloads copyrighted music off the internet or from a friend to put onto her iPod. What is going on here? Some suggest ignorance of the law, but that is generally not the case. She knows about copyright. Some suggest a lack of enforcement, but that doesn't stop her from turning in the wallet. No, something else is going on – some failure of a normally law-abiding, “good” person to feel any compulsion to obey this set of laws.

The emerging discipline of cognitive science can help us understand this challenge to our intellectual property system. This paper will pursue this line of inquiry, both for its own sake, and as an example of how we can look into the brain for answers to some of the law's persistent conundrums. In the process, it will provide an introduction to an approach we might call Cognitive Jurisprudence<sup>1</sup>, exploring its potential and its methodology. In this context, the role of emotion in our thought and action will be of particular importance. The paper will conclude with a return to our problem of intellectual property, offering a hypothesis that gives us answers to our core question and sketching possible paths toward both concrete research and law reform.

## **Looking for Answers in the Brain: The Cognitive Revolution**

The past 20 years have marked a startling change in our understanding of human thought and behavior: the cognitive revolution. Not so long ago, it was received wisdom that the human brain was an unknowable “black box” (Goodenough 2006). We might gain some insights through philosophical introspection and analysis, or through the study of our behavioral linkages and social patterns, but the underlying mechanisms of thought were impenetrably opaque, what Skinner called “private events.” (Skinner 1953).

In keeping with the ethos and limits of the times, legal studies focused on doctrinal study, on procedural matters, and, in the hands of the legal realists and their successors, on the effects of law in society. There was an emphasis on achieving policy

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<sup>1</sup> The name of the combined fields of law and cognitive neuroscience is still “up for grabs.” Some are linking it to the term “neuroethics.” See, e.g., <http://www.neuroethicssociety.org/>.

goals, often with the help of the social sciences, such as sociology and economics (Elsworth 2005, Goodenough & Prehn 2004, Goodenough 2001a).

The merging of neurological advances with more traditional psychology has produced a new synthesis – cognitive science and its branches cognitive neuroscience and cognitive psychology (e.g. Goodenough & Prehn 2004, Gazzaniga et al. 2002). Some cite the seminal vision of David Marr at MIT in his 1982 book *Vision* as a key catalyst for this merger (Marr 1982, Gazzaniga et al. 2002); others cite to a taxi ride conversation in the late 1970s where the term “cognitive neuroscience” was first coined (Gazzaniga et al. 2002); the Cognitive Neuroscience Society was formed as recently 1994.<sup>2</sup> The advances of cognitive science have been driven by complementary sets of developments in theory and technology, providing both a greatly improved model of thought and action and exciting new tools to construct and test the model.

### *Advances in theory*

The emerging model of thought rests on a few key points. First of all, thought is a computational process, made possible by the physical structures and workings of the human brain (e.g. Marr 1982, Gazzaniga et al. 2002). There is, therefore, a fundamental link between the physiology of our nervous systems and how we think and translate thought into action (e.g. Kosslyn & Anderson 1995, Gazzaniga et al. 2002, Goodenough & Prehn 2004). Second, our cognitive processes involve a mix of localized centers, often with particular functions or capacities, and interactions across many parts of the brain. While there is still considerable debate around the details of specialization and generalized functionality, there is broad agreement that our thinking is the product of a synthesis of the two (e.g. Barrett & Kurzban 2006, Goodenough & Prehn 2004, Mundale 2002). A third key is the importance of formal approaches such as game theory for understanding the strategic basis of cognition in a social context involving human interaction (e.g. Goodenough & Prehn 2004, Fehr & Fishbacher 2004). A fourth element is recognizing the multiple inputs that shape our decision making, ranging from the genetic basis of our brain organization and function, though the influence of our physical, social, and cultural environment, both shaping the development of the brain and informing its memories and habits, and onto such capacities as conscious thought, logic, and the ability to create and shape external institutions such as the law (e.g. Goodenough & Prehn 2004, Goodenough 2006). Each of these principles will be examined in more detail below.

### *Advances in technology*

The technology has centered on increasingly powerful, non-invasive methods for identifying and studying the anatomical aspects of brain function and for linking anatomy to specific cognitive tasks. Brain scanning holds a particular, but by no means exclusive, importance in these advances. The techniques have a daunting set of names and acronyms, including Positron Emission Tomography (PET), functional Magnetic Resonance Imaging (fMRI) and near infrared spectroscopy. Their common feature is that

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<sup>2</sup> See [www.cogneurosociety.org](http://www.cogneurosociety.org).

they provide a measure of blood flow to specific regions of the brain. Localized increases in blood flow have been correlated with increased activation of that portion of the brain, and such activation, in turn, can generally be linked to some involvement in the mental task posed to the subject at the time of the increase. By using sophisticated analytical tools, it is possible to make increasingly targeted associations between particular kinds of thought processes and specific centers and networks in the anatomy of the brain. Increases in the resolution of imaging techniques are permitting ever more finely grained associations of function and structure. Studies of individuals with brain injuries had already given some means of linking anatomy and activity, and these unfortunate natural experiments continue to be important “cross checks” on data from imaging.

In addition to imaging based on metabolism and blood flow, measurements of electrical activity, both generalized and localized, give important information about the timing and structure of brain processes. These techniques include the electroencephalogram (EEG) and magneto encephalogram (MEG). Here too, exciting technical advances hold out promise of using non-invasive methods to identify electrical excitation down to the level of individual neurons, something now only possible with intrusive methods confined largely to animal subjects (Glimcher 2003).

Another area of advance involves the monitoring of the neurochemistry of thought and action. At this writing, measurement is still only possible at a fairly generalized level, such as blood serum levels. Even this relatively crude approach is providing useful information on questions such as trust (e.g. Kosfeld et al. 2005, Zak et al. 2005), aggression (e.g. Simpson 2001), and love (e.g. Lucentini 2005).

For the purposes of this paper a deeper understanding of the *technologies* is unnecessary. Those with an interest in additional detail can consult a number of other sources, ranging from relatively concise summaries in popular journals such as *Scientific American Mind* to a graduate-level review (e.g. Frackowiack et al. 2004). What is important here is an understanding that existing tools, despite some limitations and the potential for improvement, are both supporting the advances in our model of thought and permitting the unraveling of the physical basis of specific kinds of mental work.

### **Relating the Cognitive Revolution to the Law**

The advances of the cognitive revolution are reshaping many fields of study; it has a particular potential to foster a better understanding of questions of concern to law. Indeed, traditional legal scholarship can be viewed as a capable, if somewhat naive, science of thought and behavior. This idea draws on an insight of the noted neurologist of vision Semir Zeki about the nature of art. In his book *Inner Vision*, Zeki (1999) argues that art is only effective if it interacts with our visual processing capacities in ways that we can perceive and ascribe meaning to. An artist, therefore, is a kind of untutored cognitive scientist, seeking effective avenues of interacting with human physiology to produce her effect.

In a similar way, the study of law is, at its heart, a cognitive inquiry (Goodenough 2001, Winter 2001). The law is keenly focused on analyzing and categorizing our deeds and mental processes in particular contexts of social interaction, and in matching that categorization to consequences of punishment and enforcement. Over the years, jurisprudence has borrowed the best available tools for undertaking this job, whether from religion, philosophy, social science, or psychiatry. The jurisprudence of the 21<sup>st</sup> Century will incorporate the cognitive revolution in its turn. Just as in Moliere's "*Le Bourgeois Gentilhomme*" Monsieur Jourdain is astonished to discover that he's been speaking prose all his life, so too will legal scholars, as they become more and more familiar with the new findings about the brain, discover that they have been brain scientists all along. An understanding of neuroscience will just make them much better at it.

The normal processes of feedback in the law have been effective in shaping much of its doctrine to the contours of the human cognitive landscape. Whether through common-law evolution, or legislative or regulatory revision, the process of trial and error, application and adaptation, provide a persistent, if not infallible, tug toward an institution that fits with human psychology. Some in Law and Economics have claimed a similar trend toward efficiency in legal solutions (e.g. Posner 1998, Cooter & Ulen 1988, Kaplow & Shavell 2002), but that is at best a more removed goal; working with the human brain is a first order requirement. Therefore, it is to be expected that some areas of law will provide a pretty good fit, even if the rationales and labels are sometimes poorly articulated (Goodenough 1997, Greene & Cohen 2004). Other areas of doctrine, even those with good logical cohesion, may not work as well with our fundamental mental architecture. We would expect this kind of problem to be more salient in relatively recent legal enactments. Intellectual property, we believe, is just such a field. Applying the understandings of the brain and the methodology provided by cognitive science can help us in designing more psychologically effective legal institutions.

Before turning in more detail to applications of cognitive approaches to the law, we will review the approaches of neuroscience in further detail.

### **The Strategic Role of Thought**

Understanding the formal strategic situation is an important step in studying a social judgment such as whether taking the creative product of another is blameworthy. Most law-relevant thought will be about behavior with a social dimension. If an action doesn't effect other people in some way, either by its impact or through some evaluative judgment, it is probably of little interest to the law. Therefore, the underlying rationale for a cognitive process drawing the attention of the law is probably rooted in the dynamics of social interplay. The strategic dimension of a decision will be reflected in its functional instantiation in the brain, and vice versa.

Although many kinds of social science provide insight into the dynamics of motivation, game theory strips away a lot of the clutter and noise and provides a particularly helpful means of analysis, both formal and descriptive, for evaluating strategic decision-making (Binmore 1998, Gintis 2000). Game theory suggests that our social judgments are often rooted in dilemmas around cooperative opportunities or the allocation of scarce resources among potentially competitive actors. These opportunities and challenges present themselves in many different forms. In some cases plus-sum cooperative solutions will fall naturally from the pursuit of each actor's self interest. In such a case the positive solution is said to be "dominant." In others, such as the broadly recognized "prisoner's dilemma," self interest will lead to less optimal results, and the positive solution is "dominated" by the negative (Dixit & Skeath 2004). While people are not perfect Nash calculators (thank goodness), the strategic options available to actors in multi-player social interactions shape much of our thought (Gintis 2000, Goodenough 2007).

Although it is not always recognized in the game theory literature, humans are not necessarily prisoners of the prisoner's dilemma itself. Maynard Smith and Szathmáry (1995) have charted how each of the major transitions in evolutionary biology have coincided with some restructuring of the physical nature of life that has given access to dominant cooperative solutions within and between living actors. They argued that human societies are extensions of this same principle.

By further extension, we can recognize the human capacity to avoid prisoner dilemma-style games, with their likelihood of poor outcomes. In a process sometimes called "mechanism design" people both choose and change the strategic properties of their social interaction (Goodenough 2007). Some of this is done at the level of our evolved psychology, with ready access to the reinforcement of emotion and compulsion; choices can also be created anew and embedded in our cultural inheritance. Law can be seen as a further step in this chain, creating institutionalized game structures with which attractive, plus-sum outcomes become dominant. In this way humans can be seen as "outwitting" Nash (Goodenough 2007).

## **Multiple Inputs**

Until recently, reasonably intelligent scholars and authors were arguing over whether our behavioral motivations and responses are a product of nature or of nurture. A much better picture of our composite human nature arises from the understanding that the answer is both, and even more (e.g. Ridley 2003). Information to action pathways get established in many ways. Some of our perceptions, capacities and responses can be thought of as relatively hardwired, or at least predisposed, traits, present in our genetic heritage and shaped over evolutionary time. Of course, few if any of these are independent of environmental influence; almost all are shaped to a greater or lesser degree during development by interaction with the non-genetic world. Others are the product of our non-genetic, social inheritance, received through cultural learning. Rules of behavior ranging from customs and social mores through to tradition-based law can be

transmitted this way. Conscious and unconscious conclusions drawn from our individual history and experience add to the mixture, as do the workings of our special human capacity for rationality and hypothetical thinking. Finally, we create physical and social institutions such as codes, protocols and even architecture that use externalized information and structures to help guide us (Goodenough 2007, Goodenough & Prehn 2004).

One motivation for the nature/nurture argument has been the assumption by some in the competing camps that there was an innate priority or superiority that went with a particular location in the motivational composite. Cognitive science by and large rejects any such conclusion. Culture and rationality constrain our genetic heritage and vice versa. The human project is a collective partnership and a continuous negotiation, and no one source holds the leash. From this standpoint, “biological determinism” and “social determinism” are inflammatory insults in a turf fight broken loose from reality (e.g. Skull 2007), rather than useful categories of thought.

That does not mean, however, that the actual mechanisms and their location in the composite are unimportant – far from it. Nor does it mean that the different components will always work in concert. Embodying these insights, Owen Jones (2001) has propounded what he calls the “law of law’s leverage.” This approach recognizes that law, as an institutionalized, cultural force, will seek to move behavior that may be rooted in relatively unreflective, internalized motivational pathways. Understanding the strengths, strategic contours, and mental attributes of both the law and its target will help us to create effective legal intervention.

### **Decision Making: Multiple Steps and Paths from Sensory Input to Behavior**

Most of us have a folk image of decision making in the mind that looks a bit like a the captain of a ship, standing on the bridge, weighing the reports from the various members of the crew, choosing a course of action, and then barking out orders which the somewhat befuddled and emotional crew, in turn, sometimes follows and sometimes doesn’t hear or disregards. Put graphically (Figure 1), there appears to be a simple line from sensory input to decision processing to action. While this notion may have some subjective appeal, it is a poor model for what is in fact happening in our brains.

If the informational sources of human decision making and action are not unitary, neither is the brain which does the processing. First of all, there are a number of steps along the road. Figure 2 lays out a better, if still simplified, schematic. Sensory input is first subject to primary processing, which sorts out basic elements like shape, color, motion, etc., then secondary processing applies meaning, identifying the input in some way. With recognition can come a step like desire formation, where a generalized wish is created. Then may come an inhibition moment. The brain works as much by inhibition as by affirmative processes; if the desire is judged inappropriate it can be stopped in its tracks. If the decision process goes forward, then, in this model, a more specific strategy would be created, and an action plan to put it in place. Once again, however, there can be

a chance for inhibition – the plan could work, but it would create trouble in some other way.

Consider, for instance, the decision on whether or not to eat some hors d'oeuvres. If they were in front of you on a plate, you would need to identify them as having certain look and smell, and then ascribe meaning to that combination. Food, you would conclude. That conclusion could lead to a desire to eat, a desire that might be blocked, either unconsciously if you were intent on some absorbing task, or consciously if you were on a diet. If no inhibition came at that point, you might think about moving over and taking it off the plate to put in your mouth. Then, another consideration could intrude: someone is holding the plate in a proprietary fashion. It is tasty and desirable, but it belongs to someone else – inhibition intrudes once again.

Even here the model is too simple, however. Often, several tracks are running simultaneously, influencing each other, and being influenced, in turn, by the neurochemical state of the brain, attention grabbing alternatives, stress, and a host of other factors. The model set out in Figure 3 is still at best an approximation of the actual chain of processes, but it serves to suggest the complexity and multiplicity of the real thing.

### **Specialization in Function and Anatomy**

This complexity is reflected in the emerging anatomical picture of the functioning brain, which looks to be a mix of specialized and multi-purpose structures, tied together in systems that follow typical patterns in many humans, but allow some variation as well. As with the nature/nurture argument, there is ongoing debate around the specialized/general issue as well (e.g. Barrett & Kurzban 2006) The vision of extreme functional generality and plasticity that accompanied “black box” behaviorism gave way early in the cognitive revolution, at least in some scholarship, to a kind of hyper-modularity and specialization that in turn has proven over-stated. Current scholarship recognizes a balance, nicely summed up as early as 1992 by Stephen Kosslyn:

Any complex ability, then is not accomplished by a single part of the brain. So, in this sense, the globalists were right. The kinds of functions posited by the phrenologists are not localized in a single brain region. However, simple processes that are recruited to exercise such abilities are localized. So in this sense, the localizationists were right. (Quoted in Gazzaniga et al. 2002 at 14)

By way of example, the primary processing of visual information from the eye is done by some very specialized areas in the visual cortex, with selective sensitivity to properties such as line, color, and motion (Frackowiak et al. 2004, Zeki 1999). The assembly of this data into that meaningful amalgam we call sight pulls these different processing strands together, first through interactive “concurrent processing,” (Gazzaniga et al. 2002) and then through the recruitment of an even wider anatomical network including the equipment involved with memory, emotion, etc.

Even at this more general level, however, there remains specialization. For instance, humans are heavily primed, even over-primed, to see faces. If you have ever stared at a knotty board and watched as face after face pops out from the random patters, you will know what I mean. The efficacy of the ☺ symbol in generating the “it’s a face” response is unquestionable (see generally, Svoboda 2007). This face recognition capacity has been traced, at least in part, to a brain formation called the fusiform gyrus. There has been some continuing debate over its degree of specialization. For instance, the fusiform gyrus is also involved in reading – an example of recruitment of an existing system for a new culturally constructed practice (McCandliss et al. 2003) There is also continuing research into how much experiential learning is necessary to prime this region’s function functions (Johnson 2004, Halit et al. 2003, Pascalis & Slater 2003). Nonetheless, the localization of critical aspects of facial processing in this area is well established (e.g. Gazzaniga et al. 2002). Some researchers call a functionally specialized structure such as the fusiform gyrus a “primitive” (Goodenough & Prehn 2004). Returning to the Kosslyn quote above, these primitives embody the pieces of the process that are indeed physically localized and functionally specialized.

Functional specialization can also occur in a distributed process employing a network of capacities. Language use, for instance, is a complex behavior that is partly localized in “language centers,” such as Broca’s and Wernicke’s areas in the left brain of most individuals. It is also distributed over other areas, including the motor control areas used in speech production. Moral judgment, of more direct interest to law, appears to have no unique locus in the brain, but a number of studies have identified a reasonably well defined anatomical network that is implicated in this kind of thought: the ventromedial prefrontal cortex, orbitofrontal cortex, posterior cingulate cortex and posterior superior temporal sulcus (Goodenough & Prehn 2004, Greene & Haidt 2002). From a functional standpoint, this network suggests the assembly of a number of tasks, including control of behavior, processing of socially relevant cues, memory and processing of emotional stimuli to produce the overarching work of judging right and wrong (Green & Haidt 2002).

Some have suggested that consciousness is a kind of workspace within which we can recruit relatively localized and/or specialized mental capacities into more complex, task linked networks (Barrs 1988). This idea can be taken a step further – we can also use culture and externalized knowledge to help prompt choices among the capacities and networks we deploy on a task. For instance, preliminary work suggests that the application of a deductive legal rule to resolve a question of liability may shift our processing on the problem from the classical moral judgment network to brain physiology linked with other kinds of deductive tasks (Schultz et al. 2001, Goodenough & Prehn 2004). In this sense law may provide a kind of hyper-consciousness, with powers of recruitment and direction that span our informational and processing repertoires (Goodenough & Prehn 2004). One critical capacity which the law must both recruit and control is emotion.

## **Importance of Emotion for Thought, Judgment, and Action**

Cognitive science is recasting how we think about emotion. The classic emotion/reason divide appears to be crumbling; rather, emotion, paired with other mental capacities, appears an important component in many domains of thought. Furthermore, the more we study emotion, the more we recognize different aspects of the cluster of phenomena which have been grouped under that label. Writing in the context of moral judgment, Goodenough and Prehn (2004) have suggested:

[P]rogress will be made by separating “emotion,” the sensation of arousal that we monitor in ourselves and others, from “emotion,” the functional component in mental processes. Its meaning as a sensation state strikes us as being less important to normative judgment than are the functions which the-thing-we-call-emotion-when-we-experience-it is contributing to the processing of normative tasks.

They continue:

These disparate results suggest that emotion acts as a great emphasize and highlighter in the brain, an indicator of importance and urgency. Damasio, for instance, has suggested that emotion plays a key role in creating a “somatic marker” which helps guide and prioritize decision making processes (Damasio 1994). In the realm of memory, events that are associated with emotional states are much more likely to be transferred from working memory to long term recollection (Morris & Dolan 2004). In the current brain, emotion drives attention towards its associated objects (Anderson & Phelps 2001). Emotion gets us up and doing. As even Hume recognized, emotion is a great translator of thought to action (Hume 1739; Rolls 1999; Schwartz 2000).

The emotional components of thought also have some degree of physical localization, including major portions of the limbic system. This brain system includes a number of sub-parts often associated with quick, emotion-linked responses and with unconscious processes such as memory formation, hunger, and sexual attraction. A key element in emotion is the amygdala, a portion of the limbic brain that sits physically below the outer cortex, but which communicates extensively with cortical areas, particularly those in the adjacent pre-frontal region, behind the forehead. Patients with amygdala injury often show emotional deficits (Anderson & Phelps 2001 & 2002, Phelps 2002 & 2006), and imaging studies show amygdala activation in emotion-linked thought (e.g. Morris & Dolan 2004).

The limbic involvement and the cognitive intensification we recognize in ourselves as emotion (Dolan 2002) can push a desire or action plan to which it is linked past several inhibition points; we all have done something when we were mad that we would not have done in a moment of cool reflection (Goodenough 2004).

## **Emotion and Law**

Given its importance in thought and action generally, emotion is a key component to be recruited in an effective regime of law (Goodenough & Prehn 2004; see generally Maroney 2006, Bandes 2000). The dry, orderly, normative worlds of a Kant, a Rawls, or a Posner, may be intellectually attractive, but they seldom lead to human action. It takes someone like Martin Luther King, harnessing emotion and reason together in a united appeal, to move us through our brains to act against injustice.

Like any strong ingredient, however, emotion must be contained by law as well as put to use. Rapid, emotionally charged responses are not always the wisest courses of action. The law's delay, when not excessive, gives time for passions to cool, at least a bit. But excessive control is a problem as well. The law faces a Goldilocks dilemma – it needs cognition that is not too hot, and not too cold, but just right for the task at hand.

Furthermore, it is not just in judging others that emotion is important. It is also a key element in our own moral choices, often empowering our inhibitory functions. Inhibitory checks perform a key role in the chain of processing from sensory impression to resulting action. A hot upwelling of distaste, reluctance or guilt as we contemplate our own actions is a strong element in successfully choosing a rule-abiding path, as is the pleasant feeling accompanying a choice for good. The hypothetical “good person” postulated at the beginning of this essay will be no stranger to these sensations and to the choices of restraint associated with them. Anatomically, inhibition is to some degree localized in the frontal cortex, and damage to this area leads to impulsivity and a lack of control that, when coupled with environmental factors, can lead to increased likelihood of criminal behavior (Sapolsky 2004).

Law can help redirect our emotion linked desires and to strengthen our inhibitions. Alexander Hamilton emphasized this need for our institutions to control emotion: “Governments are instituted because the passions of men will not conform to the dictates of reason without restraint.” (Clark 1926, at 316). But emotion is also a critical part of control as well, and a personal emotional response is put to use in most legal systems. Because there can never be a police officer on every corner, systems of law must engage the natural self-policing of basically good people. This is particularly true for matters where the breach of the rule is easy to effectuate and not so easy to detect. In such cases, rules must be designed so that people obey out of a strongly felt duty, and not out of fear. It is emotion that drives such duty. The Latin poet Horace put it: “Leges sine moribus vanae,” or, as I loosely translate it, “Laws without a moral basis are pointless.” Neuroscience suggests we could equally well substitute “emotional” for “moral.”

## **Methodology of Cognitive Jurisprudence**

Informed by these principles of neurological study of thought and behavior, we suggest a five part methodology for applying a cognitive jurisprudence approach to the study of law and of matters of interest to the law:

- (i) Identify questions of interest to the law relating to thought and behavior that are amenable to cognitive study;
- (ii) Examine the strategic context within which the thought and behavior takes place;
- (iii) Consider the possible cognitive structures and processes that could be involved in the targeted thought and behavior and form testable hypotheses concerning these processes;
- (iv) Undertake empirical research to test the hypotheses; and
- (v) Bring the results back to inform the formulation of legal doctrine and the factual investigations of courts and other bodies.

The selection of questions is an important first step. Some of the questions of interest to the law will be amenable to cognitive study; others will not. Additionally, some have already been solved adequately as a matter of the naive psychology of law itself or of traditional academic psychology based in behavioral research. Of course, there is always value in a better understanding of our successes. Nonetheless, we suggest that cognitive jurisprudence should particularly aim at problems where there are failures in accepted doctrine to achieve results and where existing legal science is unable to provide good answers for these failures.

We believe that we have such a question in the failures of intellectual property law, particularly copyright, to engage the voluntary compliance of much of humanity, including those in societies that generally respect legal institutions. The remaining portions of the methodology will be explored in the context of how cognitive jurisprudence might help us approach this problem.

### **A Cognitive Hypothesis about Property**

Property is a very productive human institution. It is not simply an assertion as against the world that the possessor of a resource, tool, or other item of interest can keep it against potential rivals. Rather, it is at the least a mutually respected understanding to allocate *uncontested* possession to the person who is now the owner. Even stronger, the convention requires others to come to the aid of an owner whose possession is threatened by a third party.

Such a convention reshapes the strategic landscape in extremely important ways. First of all, property avoids rivalrous use disputes (e.g. Stake 2004). The time and energy

consumed by fights over resources can be redirected into much more productive paths. John Maynard Smith (1982) famously demonstrated the evolutionary stability of a property style convention for this reason alone, calling it the “bourgeois strategy.”

Property is the source of several other benefits. It often (although not always) provides incentives for conservation and against the over-exploitation problems popularly known as the tragedy of the commons (Hardin 1968, Ostrom 1990). It rewards investments in the creation, preservation, and improvement of resources. If an asset can be expropriated at will by the meanest and strongest, or by the cleverest and stealthiest, no one else will bother much about investing time or money in it. It enables bargained exchange, making possible the gains of trade (Demsetz 1964), and encourages the internalization of externalities (Demsetz 1967). Finally, as the work of Hernando de Soto (2000) recognizes, an accumulation of property can create the cushion we call capital which allows us to undertake new creative ventures.

This cascade of multiple strategic gains does have some offsetting costs. The power of property to create further wealth, one of its chief benefits, can shift the opportunity for economic betterment to existing property owners, creating the two-tiered society of haves and have-nots apparent in many parts of the world. A society of serfs and aristocrats is one possible outcome of an unfettered, property-based system. On the whole, however, the productive potential of ownership as a device for redesigning the strategic landscape to permit investment and trade is too powerful to ignore. Property needs to be harnessed and buffered, not rejected.

But property also does not come for free in our cognitive make-up. There are countervailing desires to take and make use of resources. Property in the brain – at least when applied to choices about taking the possessions of others – could be rooted in an inhibitory response, stopping us from appropriating otherwise inviting and useful things. The rules of property need to be powerfully rooted in our emotional reactions if they are to hold us back at the key moment of perceived availability.

Here we move into the realm of informed speculation, or a hypothesis, in the language of science. We believe that our ability to recognize and respect property, at least as it applies to tangible objects such as food, tools, clothing, etc., is connected to one or more cognitive primitives in most human brains. As the fusiform gyrus provides an enhanced, localized capacity for the recognition of faces, so too could the brain have structures that help us to assign the characteristics of property to those things that we recognize as possessions. It should be noted that this theory stands in contrast to a classic explanation, put forward forcibly by proponents such as Thomas Hobbes (1660) and Jeremy Bentham (1843) that property is only a creation of the state, and has no place in a “natural” order of things (see also Stake 2004). As Bentham puts it (1843 at Part 1, Chapter 8):

“Property and law are born and must die together. Before laws, there was no property; take away the laws, all property ceases.”

There are a number of pieces of evidence, none as yet conclusive, supporting our hypothesis. To begin with, the Maynard Smith work on the bourgeois strategy, cited above, suggests that a property institution is evolvable as a biological trait. Cross-species comparison shows something looking like a respect for property in a reasonable number of species (Stake 2004). Chimpanzees and bonobos, our nearest cousins, show some respect for possession within their social group, particularly for food (e.g. Stevens 2004, Boesch & Boesch-Achermann 2000, deWaal 1989), and to some degree for tools (e.g. Boesch & Boesch-Achermann 2000). Primates provide a kind of natural laboratory for exploring whether behaviors like property can arise without the support of sophisticated cultural transmission.

Anthropological surveys suggest that some form of the property convention appears in just about every human society (e.g. Brown 1991, Fikentscher 2006) although often interwoven with everyday life in ways different from Western cultural expectations. Property is a major category in the vast ethnographic archive of the Human Relations Area Files<sup>3</sup>, and even most Communist governments recognized private property in personal possessions. This near-ubiquity in culture is not in itself persuasive; a system as potent for benefit as property could be socially created in multiple places, and might well spread rapidly by imitation and adoption once devised (Goodenough 2001b). Nonetheless, this wide distribution is suggestive that recognizing property may well be a capacity, like language, which is supported by particularly suited elements of brain physiology.

Evidence on the failure of property in humans also suggests a brain link. There are a few, still quite limited, studies of patients with injury-induced kleptomania. In one instance the injury was linked to areas that help to provide inhibitory impulse control (Nyffeler & Regard 2001). Other studies suggest a linkage of kleptomania to frontal lobe defects (Grant et al. 2006a), which may also implicate control deficits. Attempts to link more general mental performance to kleptomania are equivocal (Grant et al 2006b), although severity of illness did correlate with executive function deficits. Although very preliminary, these results suggest that the property conclusion may be effectuated through an inhibitory process, like the moment hypothesized in the discussion of decision making above, when the hungry subject realizes that the food is on someone else's plate, and not on a common serving platter.

Finally, there appears to be a deep emotional component to our property rules as they apply to our physical possessions. The owner of property, fairly naturally, feels a deep violation when such property is taken, and will often defend property vociferously. Even more telling, both third-party enforcement and second-party respect appear to have strongly felt emotional components that, when present, give strength to the convention where it really matters – in the brains of the potential takers and punishers. Traditional property's access to effective, emotion linked processing is an important element in its relative success as a human institution.

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<sup>3</sup> Available at [http://www.yale.edu/hrf/Ocm\\_xml/newOcm.xml#420](http://www.yale.edu/hrf/Ocm_xml/newOcm.xml#420).

## Challenge of Intellectual Property

Intellectual property law, by contrast, faces more serious challenges in promoting voluntary compliance. The problem is not doctrinal. The fields of copyright, patent and trademark have well developed bodies of law, with clearly established rules, both at the national level and in such international conventions as the Agreement on Trade Related Intellectual Property (TRIPS) and the Berne Union for the Protection of Literary and Artistic Property (Berne Convention). Nonetheless, the rules of intellectual property, and of copyright in particular, are widely disregarded whenever technologically feasible. Moreover, the rules are disregarded by “good” people, and even by people with a deep stake in the effective workings of an IP system. Two anecdotes, not attributable, but shared with us in good faith, help illustrate this point.

The United States military maintains three principal academies for training future officers: the U.S. Military Academy at West Point, the Naval Academy at Annapolis, and the Air Force Academy at Colorado Springs. These academies maintain discipline through a strict honor code, widely respected by the students.<sup>4</sup> The West Point version is particularly succinct: “A Cadet will not lie, cheat, steal, or tolerate those who do.” Of course there are always unreported infractions, but the codes are generally viewed to be successful. Property crimes among students are particularly rare, we are informed. We have also been informed by someone familiar with one of these academies that records of student internet usage suggest with near certainty that file-sharing of copyrighted music was very widespread in that institution. For a large group of students in this ultra-law-abiding society, “stealing” intellectual property simply didn’t register as theft.

Having a personal stake in the protection of creative production doesn’t seem to create better behavior, either. In conversation about a neurological approach to IP law, the general counsel of a major film production company admitted that many of his co-workers are active in downloading music and, increasingly, movies as well. This is a group for whom the logic of intellectual property rules should be very clear and compelling; and yet it had little impact on their day to day behavior. “What’s that about, then?” was this lawyer’s puzzled summing up.

## What Makes IP Harder? A Further Hypothesis

The approaches of cognitive science suggest a further hypothesis about intellectual property. Starting with a review of its strategic attributes, we see that IP does not map fully onto the full list of advantages of traditional property. While some are strongly present, others are missing. For instance, as is widely recognized, most intellectual property is not subject to rivalrous use disputes (Stake 2004, Landes & Posner 1989). The singing of a song or the use of an invention by one person does not prevent someone else from doing the same thing, although the utility of the song or invention may diminish if it is too widely used. Similarly, overexploitation to depletion is not

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<sup>4</sup> The honor codes can be accessed: Air Force: <http://www.usafa.af.mil/34trw/cwc/cwch.cfm?catName=cwc>; Army: <http://www.usma.edu/Cpme/>; Navy: <http://www.usna.edu/OfficerDevelopment/honor/honorconcept.html>

really a problem. Technological advances may permit the overexploitation of previously abundant physical resources (e.g. ocean fishing stocks in the 20<sup>th</sup> Century), but with IP the knowledge itself does not go away because many use it.

On the other hand, a property approach to the work of the intellect does create pay-offs for both the effort of creation and for the investment involved in development and dissemination. Providing such an incentive for the creator is the rationale set out in Article I, Section 8 of the U.S. Constitution for giving Congress the power:

To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.

Beyond creation, the incentives of copyright and patent also extend to the developers and marketers of inventions and artistic works, a critical factor for such intellectual property industries and music, television, computing, and pharmaceuticals. IP rights also provide a capital basis that can be used for further research and creativity.

So here we have a category of activity where a property convention can create productive opportunities for creative work and investment, but where it also undercuts the advantages of non-rivalrous sharing. At a strategic level, this partial fit is somewhat ameliorated by such factors as fair use and the idea/expression dichotomy in U.S. copyright law and the disclosure requirements and limited timescale for patent protection. At a cognitive level, however, the limited overlap fits with our historical knowledge that assigning property rights to creative expression and invention is a relative latecomer to human experience. If, as Maynard Smith's "Bourgeois Strategy" suggests, preventing rivalrous use contests is the initial impulse for the evolution of property, then works of the intellect may not have been part of any historical evolution of property in interaction with the human brain.

We believe that whatever neurological primitives or particularized networks may exist to help us make property-based, emotionally grounded, self-restraining decisions about the control and use assets, they do not easily recognize creative works as being part of their remit. Viewed from this standpoint, intellectual property could be economically sensible yet cognitively weak. Without a ready connection into the limbic system and highly motivated structures of inhibition, IP can make all the sense in the world as a social policy and still be behaviorally invisible, unable to motivate self-generated observance in hyper-honest cadets and self-interested IP creators alike.

So what, if any, is the emotion linked processing of IP related rights in the brain? Evolutionary biology suggests a different set of pathways that may have evolved to reward creativity: pathways related to respect and prestige on the one hand and to secret keeping on the other.

## **Acclaim and Secrecy**

### *What Rewards Drive Creativity?*

Property is not the only medium within which creativity can be rewarded. Prestige, status, sexual attractiveness, these are all areas where achievement can pay in non-monetary coin. The evolutionary biologist Geoffrey Miller (2000) has argued just such an origin for human creativity and artistic achievement:

“The human mind's most impressive abilities are like the peacock's tail: they are courtship tools, evolved to attract and entertain sexual partners. By shifting our attention from a survival-centered view of evolution to a courtship-centered view,...we can understand more of the richness of human art, morality, language, and creativity.” (Miller 2000 at \_\_\_)

While comfortable living is certainly a goal for many creative personalities, it is often most important as providing the means to continue to be creative. Many also respond to peer and fan recognition – after all, “money can’t buy you love.” Academics are also players for this coin. This chapter is a case in point. Little, if any, financial compensation will ever be paid to the authors; one of us is tenured and the other is a post-doc; neither will reap any kind of immediate monetary reward. On the other hand, we are aiming to increase our status within the academy by offering what we hope will be seen as a good piece of thinking. There may be long term rewards attaching to this strategy, but from a financial standpoint a similar amount of time spent on consulting would be a much more lucrative investment. For most scholars, copying, re-use, and adoption is the best reward. “Just don’t forget to cite me,” is the academic’s cry. Similar contests for prestige operate in Hollywood (don’t forget the credit), in the open source software community, and even among computer hackers.

That is not to say that creative people don’t want their share of whatever money may come from their work; they may get cross if they feel they have been used. On the other hand, the legendary inattentiveness to the commercial details of many creators and inventors (although of course not all) is further evidence for a cognitive disassociation between intellectual output and notions of property.

There is a counter-narrative in this story of acclaim, but it is not property – it is secrecy. In a world without intellectual property institutions, that which we want to reserve to ourselves, we keep secret. That which we don’t keep secret we trade for acclaim. In a world where IP rules exist, the messages are mixed together. The point becomes to spread it about but to charge a toll. If we are correct in our view of human psychology, however, the act of spreading the works of the intellect sends a deeply understood to the recipients of the knowledge that runs counter to property, a message that demands respect, but not money.

### *Fan Psychology*

We believe that the psychology of consumers makes better sense when viewed through this alternative story of the motivations and rewards for creativity. If authors and inventors are driven by the hope of respect, or, even better, adulation and acclaim, then consumers are willing to give it. We have a term for such a consumer: a “fan.” We take the idea, the song, the story, the technological advance, and we pay for it not with money but with appreciation and social deference. In this context, file sharing makes perfect sense – what better way to show respect than to pass the subject matter of the acclaim on to others?

### **Investor and Marketer**

Whatever the ambivalence of the creator to finance vs. prestige as a reward system, the developer and marketer of intellectual output by and large has a clear set of financial goals: a handsome return on investment. For this player, the bottom line is indeed the bottom line. In fact, there is a significant opportunity for arbitrage between the psychological motivations of the creator and the audience on the one hand, and the opportunities to demand payment for access and use under copyright and other IP laws, on the other.

The current hit of American television, *American Idol*, provides a perfect example of this (Hedegaard 2006). It is a most exquisite money-making machine wrapped around the desire of the performers for adulation and the willingness of fans to give it. The candidates for stardom (literally the “idol” of the title; it is not called *American Financial Success*) are willing to humiliate themselves in the early rounds for the chance of going to Hollywood for a real opportunities for temporary adulation, including voting by the fans, spiced with the understanding that all but one of the candidates will ultimately be dismissed.

The whole process makes money across a number of levels. First of all, there is the success of show in grabbing the attention of its viewers, which is then sold to advertisers for a whopping figure. Coca Cola reportedly pays \$15 million a year just to have the judges drink from glasses with the Coke name and logo on them (Sweet 2006).

Secondly, it has been reported that winning singers are often signed up to a recording deal controlled by the program organizers, such as Taylor Hick’s deal with Simon Fuller and 19 Recordings Limited (Reality TV Magazine 2006), so that the financial benefit of the idolatry relationships created through the show can be captured over the future life of stardom. Ironically, the losers from second place on down are apparently free to sign with any record label they can find, and rumor has it some losers end up with more profitable careers than the winners achieve. Season 3 also-ran Jennifer Hudson’s win of a 2007 Academy Award for her *Dreamgirls* performance is evidence of the immense recognition value that can flow from participation.

Finally, the show and its on-screen panel are themselves stars, with their own fan base to exploit through merchandizing, spin offs, etc (Sweet 2006). In effect, the R&D

process of a music business has been turned into something that can be sold – a necessary business expense turned into a profit center, and most of it made possible because of an intellectual property approach that puts control of the exploitation of the status and adulation driven psychology of the performers and the fans into the hands of investors and business management acting from financial motivation.

### **Three Property Hypotheses: Implications for Law and Empirical Research**

We have advanced a series of hypotheses about the cognitive aspects of property and intellectual property. To begin with, we suggest that traditional property approaches, and in particular those relating to tangible objects, are supported, at least in part, by functional neurological structures or networks that help recognize property-related choices and to link those choices to emotional, inhibitory processing. Second, we argue that these property-related primitives and/or networks are not readily recruited and mobilized by concepts of intellectual property. Third, and finally, we argue that creative work more naturally stimulates a different set of responses, linked to prestige and respect, rather than to property attributes.

These hypotheses, if correct, suggest that a “more of the same, only harder,” approach to the challenges of intellectual property law observance will not produce noticeably better results in terms of compliance. There are, of course arguments by some that our IP rules have become over-protective in their scope, and that better results are not desirable. The pros and cons of such arguments are outside the scope of this paper. Rather, it presumes that some level of IP protection is beneficial and that it would be best for society, both in terms of optimizing intellectual creation and use and in terms of respect for the rule of law generally, for the rules embodying that protection to be accepted and respected by the majority of the population independent of the technical difficulty of infringement and of any fear of punishment.

From such a starting point, we should seek a legal institution that will recruit the mental structures of its targeted humans so as to engage their emotional responses around the desired choices. This would be aimed both at potential infringers and at those who help enforce the rules in the actions of others. Decades of failure suggest that the rhetoric of property will not provide the necessary emotional content. Perhaps building a law around the idea of respect would be more

In traditional jurisprudence, advancing and arguing for such a model, and seeking to translate it into some kind of public policy and doctrinal approach would be the end of the story. Thanks to the technological advances of neuroscience, coupled with the methods of traditional psychology, these hypotheses about the cognitive basis for property and intellectual property are no longer just a matter for philosophical speculation; like face recognition or language use, they can be the subject of empirical exploration and testing.

## **Next Steps: Testing the Hypotheses and Reexamining Intellectual Property Doctrine**

If this paper were a novel, we would be forced to admit that the final chapters can't be written yet. At best, a summary of the expected plot can be sketched in. So far, we have laid out hypotheses about the cognitive basis of the challenges facing any property regime as a means of protecting creative works in a digital age, and we have suggested a methodology for attacking the problem and testing the hypotheses. Designing and implementing an empirical program of experimentation is clearly the next step in the process. The possibility of confirming – or falsifying – of jurisprudential hypotheses through direct testing is one of the advantages of a cognitive approach. It is also one of its challenges. Work on this testing is going forward, but at this writing is still in its preliminary phases.

Targets for the research include a better identification of the physical structures involved in the various cognitive approaches we have discussed: property, respect, secrecy, and intellectual property. The emotional engagement of subjects involved in making choices about these kinds of problems will need to be examined. The different positions of a creator of copyrighted material, of its taker, and of a third party sitting in judgment will need to be considered. Finally, linkages between the anatomical activity and the behavior involved will need to be made and tested. Because our understanding of each of these is still in its early stages, there is work that will stretch over some years waiting for us and, we hope, for others who may be inspired to join this effort.

We believe, however, that the work will be worth the investment of time and money, as it can help inform a doctrinal overhaul of the intellectual property field, particularly in copyright. As we discussed at the opening of this essay, the need for an overhaul is manifest. The current doctrine may have worked well in a technological state that made copying difficult and self-policing by end-users relatively unimportant. The new world of easy replication and dissemination has made the old approaches increasingly untenable (e.g. Slater et al. 2005, Ginsberg 2001) – a development some applaud (e.g. Lessig 2001, 2004).

If we are correct in our hypotheses, then we are likely to need a new model for providing financial support for artistic creators. While simply turning everything loose for free has a kind of anarchic appeal, it would probably lead to a marked diminution of creative output. The new model can involve a move from a pay-for-each-copy approach to one involving payments linked to the technology itself – such as a fee attached to computer sales or to the sales of iPods, burnable CDs and other means of copying. Such an approach has been tried widely in the European Union (e.g. White 2006), which has a history of such technology-tied fees. A subscription approach might also work (e.g. Reese 2001, Slater et al. 2005), similar to the blanket licensing currently used by performance rights societies such as ASCAP and BMI for hard-to-monitor circumstances such as live music in bars and clubs. The role of the record companies and other traditional intermediaries would necessarily change, but it would not necessarily disappear. (Slater et al. 2005, Lemley & Reese 2004, Reese 2001)

We should also be able to design new approaches, better linked to human psychology. For instance, if we are correct in targeting respect and acclaim as easily triggered sources of emotional motivation, our legal institutions could be crafted to use this as a basis for rewarding creativity. The moderate success of iTunes as an intermediary (Slater et al. 2005, Gasser et al. 2004) might be further strengthened by tapping the power of self-policing emotions. Some of this is already going on in the private sector. The Motion Picture Association of America, for instance, has run a campaign of commercials called Respect Copyright intended to do just that:

This commercial packs an emotional punch: it uses patriotic-sounding music in the style of Aaron Copland, and it co-opts a popular movie to remind us how exciting action sequences can be. But most importantly, it recasts copyright infringement, a supposedly victimless crime, as injurious to a likeable, presumably working-class individual. By giving a face to film production, the Respect Copyrights campaign appeals to our sense of fairness. (Demers 2006 at 11)

Demers goes on to point out that this image is at least partly a fraud – the movies are owned by studios, and not by these individuals. Furthermore, at this writing (March, 2007) the Respect Copyright website has reverted to a message of enforcement and fear. “If you think you can get away with illegally trafficking in movies, think again,” it’ homepage stridently declares.<sup>5</sup>

Notwithstanding the challenges, a respect based approach needs to be incorporated into the future of intellectual property. If large scale production is not to go the way of dinosaurs, some kind of inhibiting, emotional contact between the consumers and the creators must be put to work. The law providing a structure of economic support for creative activity needs to engage the sense of ought, and not just provide a technically coherent body of rules (Goodenough 2002). Better knowledge about the psychology of respect and ownership should lead us to better results.

## **Conclusion**

The revolution of cognitive neuroscience is sparking remarkable advances in understanding human thought and behavior. This new understanding has the potential to help solve a number of classic conundrums of the law, allowing us to create more effective legal regimes. By identifying the functional working of the brain as it tackles particular mental jobs, we can form and test hypotheses about the processing of decision making on issues of respect for property and the person, moral judgment, and punishment. We can call this kind of approach cognitive jurisprudence.

We suggest that law works best when it is able to recruit brain functions strongly linked to attention, motivation and action. Although we often think of the law as cooling emotion, the process is a two-way street; emotion gives law cognitive salience and effectiveness. We examine possible cognitive models for both traditional and intellectual

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<sup>5</sup> See <http://www.respectcopyrights.org/content.html>.

property, particularly copyright, both by way of an example and as a proposed target for further research. We advance three hypotheses that can explain why our systems of intellectual property are less successful in recruiting self-enforcement and restraint than are our rules for more traditional forms of ownership.

Finally, we recognize the need test these hypotheses and sketch a few of the implications which confirmation of the approach would have creating a more effective body of intellectual property law. While the full potential of cognitive jurisprudence awaits the results of empirical programs such as these, we believe that we are at the early stages of what will be a remarkably productive interaction between law and science.

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Figure 1

Traditional, Massively Oversimplified Model of the Movement from Sensory Input to Action in the Brain

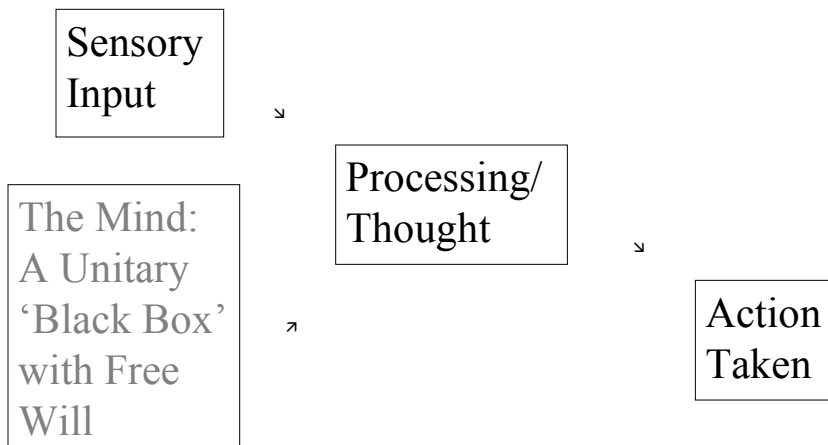


Figure 2.

Plausible, Less-Oversimplified Model of the  
Movement from Sensory Input to Action in the Brain

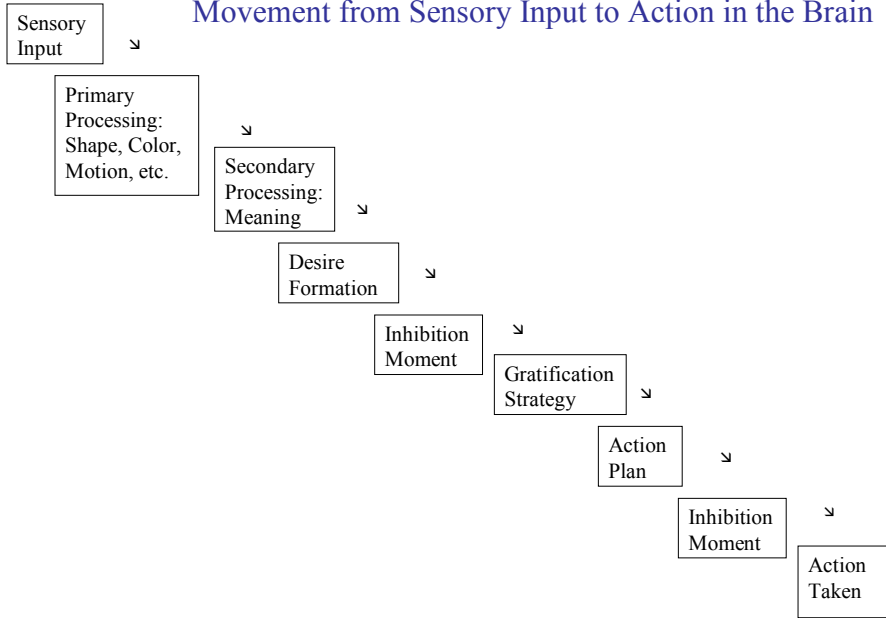


Figure 3.

