

WHAT WAS HE THINKING?

**BEYOND BIAS-
TO DECISION MAKING AND JUDGING**

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I. Summary.

Psychological research demonstrates that a wide variety of **cognitive biases** and **heuristics (cognitive shortcuts)** adversely affect decision making, and the ability to judge decisions made by others. Coherence-based reasoning can lead to skewed decisions. Improved knowledge structures and schemas lead to better decisions. Due to **attribution errors** and **dispositionist** thinking, we tend to ascribe more to preferences and will, while missing the situation. This can skew opinions on causation, responsibility and blame, and decrease effectiveness of remedial measures.

Because there is an infinite amount of information which can be brought to bear on any decision process, the mind employs simplifying processes which facilitate timely decisions, with enough confidence to carry them out. Otherwise the situation could

¹The views expressed in this paper are my own and not the position of the Department of Justice or the U.S. Attorney for the District of Arizona.

become fatal before a decision is made. Information is quickly analyzed against one's own knowledge structures and schemas which operate subconsciously and include stereotypes and what firefighters call "slides" from past experiences. **Recognition Primed Decision making (RPD)** facilitates good, quick decisions in many situations, but the available information is often ambiguous and conflicting, requiring **Critical Thinking**. RPD is insufficient for the less experienced, younger firefighters, and can cause overconfidence in the very experienced firefighters - critical thinking fills the gap. However, critical thinking is contaminated with cognitive biases, heuristics (short cuts) and processes which need to be understood and mitigated for improved decision making.

During the decision process, alternatives begin to emerge in a bi-directional process which begins to favor one hypothesis for action over the others. The **confirmation bias** finds within memory, information which tends to confirm the favored hypothesis, while not recalling, minimizing or ignoring information which tends to refute the hypothesis. Temporary **coherence shifts** begin to attribute more belief that evidence which is ambiguous or conflicting actually supports the emerging decision, and the process results in a confident decision so the actor can act - the leader can lead - analysis - paralysis is overcome. More often than not these cognitive processes lead to correct or at least acceptable decisions. Unfortunately, poor knowledge structures and schemas, cognitive shortcuts, biases and coherence shifts can generate a confident decision which is just flat wrong from a purely rational analysis, especially in hindsight. Studies have shown that coherence shifts and many cognitive biases can be significantly reduced. Some cannot, and need to be mitigated.

The United States Navy has developed and implemented a program called **Tactical Decision Making Under Stress (TADMUS)** to improve decisions whether to engage a radar screen target - is it civilian, friendly, hostile, hostile but merely on patrol or harassing, or does the hostile intend to attack the ship? The program was built around known human cognitive decision making processes, including known cognitive biases such as the **confirmation bias, availability bias, representativeness heuristic, contrast bias and framing**. The program employs de-biasing decision support systems. The program combines decision making training with a **Decision Support System (DSS)** which is not "command" based (what to do), but rather "information" and "status" based, with **trigger point** reminders and a **"Quick Check" de-biasing technique** when time to decide is short. Unlike command based systems, the system provides critical information in graphic and other forms compatible with human cognitive processes. Short and long term memory is relieved, leaving more capacity for cognition. Situational awareness is enhanced. The system fits the **"story model"** of human decision making, in which the most coherent story - rather than specific pieces of evidence - becomes the decision and action taken. The DSS rejects the "checklist mentality", replacing it with an "intelligent"

assistant, promoting the development and analysis of alternatives within the human mind. The program acknowledges the role of RPD, and uses Critical Thinking to fill in the gap. The results of critical thinking training greatly reduced “**coherence shifts**” and the effects of biases, increasing the number of correct decisions and resulting actions. E.g., “Integrated Critical Thinking Training and Decision Support for Tactical Anti-Air Warfare”, Marvin S. Cohen, Ph.D., Jared T. Freeman, Ph.D., and Bryan B. Thompson; “Decisionmaking in Complex Military Environments”, Gary Klein; “Principles for Intelligent Decision Aiding”, Susan G. Hutchins, 1996.

Many scholars have noted the unfortunate use of the term “bias” in describing what has turned out to be normal human cognitive processes, such as the “**Hindsight Bias**”, but the nomenclature is firmly established in the literature and therefore unavoidable. Human emotions also plays a part in higher cognition - they are not completely separate processes, and emotion can play a strong role in decision making under stress and uncertainty. E.g., “Deep Survival: Who Lives, Who Dies, and Why”, Laurence Gonzales.

The **Outcome Bias** contaminates our ability to judge the quality of a decision and the character of the person who made it. There is an entire field of cognitive science on **how to judge the quality of another’s decision**, and at least three models for doing so. E.g. “On the Assessment of Decision Quality: Considerations Regarding Utility, Conflict and Accountability”, Gideon Keren and Wandu Bruine de Bruin, from *Thinking: Psychological Perspectives on Reasoning, Judgment and Decision Making*, Eds. Harding, D and Macchi, L., Wiley 2003.

The research also helps explain such things as inter-group conflict, why it is so hard to change someone’s mind, why history keeps repeating itself, and many other social and political phenomena. An interesting study on “**Belief Perseverance**” used a model in which people formed beliefs about which kind of personality made for a **better firefighter**. Groups were intentionally misled - lied to - and told afterward that they had been intentionally misled. Nonetheless, they continued to hold onto their misinformed beliefs against every effort to correct it, including explaining the lies and trickery. “Perseverance of Social Theories: The Role of Explanation in the Persistence of Discredited Information”, Craig A. Anderson, Mark R. Lepper, and Lee Ross, *Journal of Personality and Social Psychology*, Vol 39, No.6, 1037-1049 (1980).

Cultural cognition sheds light on why social-political issues can seem intractable – resistant to change based merely on empirical evidence, and provides methods for progress in resolving them.

The new **Foundational Doctrine** for Wildland Firefighters continues to rely on quality, professional decision making on the fire ground. Region One's recent Doctrinal policy explains, for example, that risk management is evaluated on the decision-making process, not on the outcome; training will teach employees how to think and make appropriate decisions; safe practices are to be embedded in all workforce decisions and actions; training will teach how to think, make good decisions, and act decisively - not what to think, and so on. "Foundational Doctrine and Guiding Principles for The Northern Region Fire, Aviation and Air Program", USDA Forest Service, October 2006.

Understanding and training in decision processes, including **Critical Thinking**, seems appropriate at every level from basic training to advanced leadership training. The current Leadership Training courses teach RPD but expressly do not teach critical thinking. Improvement of our existing **Decision Support Systems** could also facilitate better decisions under stress and uncertainty.

Building all the **appropriate knowledge structures and schemas** is also important at every level of training. Our knowledge of fire behavior, including conditions conducive to blow ups, has exploded over the past few decades.

The requirements for creating a "**Just Culture**" and "**High Reliability Organization**" is beyond the scope here, but this paper provides useful knowledge in understanding those requirements as well. Current accident investigation processes are inconsistent with the requirements. Dr. Mary Omodei and others at the Complex Decision Research Group, LaTrobe University, Melbourne, Australia, developed a protocol for wildland fire accident investigations to get to the bottom of human factors and decisionmaking. They are collecting the data. They note how the hindsight bias impedes collecting the information needed to understand the role of human factors. They also note how the self-affirming biases or "self-protective justifications" are a normal part of human cognition and should be expected to occur and need to be dealt with appropriately in an accident investigation. See "**Identifying Why Even Well-Trained Firefighters Make Unsafe Decisions: A Human Factors Interview Protocol**", In Butler, B.W. and Alexander, M.E. Eds. 2005. Eighth International Wildland Firefighter Safety Summit-Human Factors-10 Years Later. Dr. Omodei has commented to me that "The threat of litigation and/or being called before an enquiry, either judicial or agency mandated, is in my view the single biggest impediment to accurate investigation and/or research into the human factors underlying "problematic" decision making in incident management (at all levels)." They recommend separate, privileged investigations to get at the human factors. They recognize the value of Safe-Net type reporting.

In a similar vein, the following is from the medical side of the same issue:

“The importance of near-misses and no harm events stems from the documented observation of their frequency: they occur 300 to 400 times more often than actual adverse events and thus enable quantitative analysis and modeling.”

* * *

“One study documented that intensive care entails 178 activities per patient per day and reported an average of 1.2 errors per patient per day.[fn.29] This works out to safety ratio of 0.955 compared with civilian airline ratio of 0.98.” “Nature of Human Error, Implications for Surgical Practice”, Alfred Cuschieri, MD, FRCS, FACS (Hon), FRSE AMERICAN SURGICAL ASSOCIATION FORUM, Annals of Surgery • Volume 244, Number 5, November 2006.

For further analysis of how the hindsight bias and the outcome bias interfere with current accident analysis and prevention efforts, see also “**Perspectives on Human Error. Hindsight Biases and Local Rationality**”, Woods, D.D. and Cook, R.I., In F. Durso (Ed.), Handbook of applied cognitive psychology (pp. 141-191). NY Wiley.

The intent of this paper, then, is to encourage better decision making, better actions, better judgments about the decisions and actions of others, and to encourage development of better decision support systems and remedial measures.

II. Cognitive Biases.

A. Hindsight Bias

Research on the human mind has demonstrated that hindsight bias is robust and virtually impossible to eliminate. It wreaks havoc on people caught second-guessing their own actions, as well as others with outcome knowledge who judge those actions:

“Consider a decision maker who has been caught unprepared by some turn of events and who tries to see where he went wrong by recreating his preoutcome knowledge state of mind. If, in retrospect, the event appears to have seemed relatively likely, he can do little more than berate himself for not taking the action which his knowledge seems to have dictated. He might be said to add the insult of regret to the injury inflicted by the event itself. When second guessed by a hindsightful observer, his misfortune appears to have been incompetence, folly, or worse.” “Hindsight ≠ Foresight: The effect of outcome knowledge on judgment under uncertainty”, B. Fischhoff 1975.

- Hindsight bias naturally results from knowing the outcome of a situation. The mind uses outcome knowledge to judge or learn from the past - to make sense of it. People are generally unaware of the effect outcome knowledge has on their conclusions about predictability. Even if they are made aware of hindsight bias and attempt to reduce it, it cannot be eliminated, because the mind cannot ignore the truth of a known outcome when trying to judge an act, omission or decision in real time. Hindsight bias creates the illusion that the outcome was predictable. Worse, it creates in the post-event judge the illusion that he surely would have predicted it. See e.g., “Hindsight ≠ Foresight: The effect of outcome knowledge on judgment under uncertainty”, B. Fischhoff 1975 (Links to Abstract and full article):

<http://qhc.bmjournals.com/cgi/content/full/12/4/304>

<http://qhc.bmjournals.com/cgi/reprint/12/4/304>

-Hindsight bias has significant implications in determining liability, fault, or blame, bordering on creation of strict liability for an actor implicated in a bad outcome, judged by a person with knowledge of that outcome. Knowledge of subsequent remedial measures can also increase hindsight bias. Hindsight bias has been found to increase in some group settings. Most strategies to de-bias people, including judges and juries, are ineffective, but suggestions are made in this article concerning litigation techniques. Fully informing the decision makers of the cause and effects of hindsight bias may help reduce its effects, but tests continue to demonstrate that hindsight bias cannot be eliminated even by those who understand it. See e.g., “Hindsight Bias and the

Subsequent Remedial Measures Rule: Fixing the Feasibility Exception”, K. Eberwine 2005:

http://law.case.edu/student_life/journals/law_review/55-3/eberwine.pdf

-While Eberwine’s article suggests that the use of “**counterfactuals**” (if only X, there would have been a different outcome) may help reduce hindsight bias, studies indicate that counterfactuals actually increase hindsight bias. Counterfactuals ask the mind to disregard knowledge of what actually happened, the truth, and to put in place a falsehood, which simply cannot be done for the same reason that hindsight bias exists in the first place. However, the use of “**semifactuals**”, (even if X, the outcome would have been the same) does not increase hindsight bias, because it does not ask the mind to replace the true outcome with a false outcome - the known outcome stays in place. The issue is particularly important in efforts to find the cause(s) of a bad outcome. Use of semifactuals does not eliminate hindsight bias, it just does not make it worse. See e.g., “Counterfactuals, Causal Attributions, and the Hindsight Bias: A Conceptual Integration”, N. Roese and J. Olson, 1996:

[http://www.psych.uiuc.edu/~roese/Roese%20&%20Olson%20\(1996\).pdf](http://www.psych.uiuc.edu/~roese/Roese%20&%20Olson%20(1996).pdf)

-Attempts to debias hindsight with counterfactuals - forcing people to think about alternative outcomes, can backfire. One study found that people can be asked to consider one or two simple alternative outcomes (counterfactuals) without increasing hindsight bias, but when people were asked to consider ten alternatives which could have changed the outcome, hindsight bias was increased. In other words, the harder you try to debias hindsight the worse you can make it. “When Debiasing backfires: Accessible Content and Accessibility Experiences in Debiasing Hindsight”, L. Sanna, et al. 2002:

<http://www2.gsb.columbia.edu/divisions/management/seminars/papers/schwarz.pdf>

-One strategy when asking people to judge past events, is to use the semifactual “even if” rather than the counterfactual “if only”, since the semifactual method allows the “judge” to consider the antecedent act, omission or decision without trying to force the mind to accept an outcome other than the known true outcome. These concepts have the same impact on self-blame as they do on determinations of fault or liability. See e.g.,

“Semifactual “even if” Thinking”, R. McCloy and R. Byrne, 2002:

http://www.tcd.ie/Psychology/Ruth_Byrne/pdf/mccloyandbyrne2002.pdf

-Similarly, research found that when people are shown computer animated re-enactments, hindsight bias is increased rather than reduced. “Computer animations used in court colored by bias, researchers say”, J. Barlow, 2006:

<http://www.news.uiuc.edu/NEWS/06/0410animation.html>

-Testing on 167 U.S. Magistrate Judges confirmed the profound impact that hindsight bias (and several other biases) has on the quality of decision making. “Inside the Judicial Mind”, Chris Guthrie, Jeffrey J Rachlinski, Andrew J. Wistrich, 86 Cornell L.Rev. 777 (2001).

-Another law review article discusses the unavoidable inaccuracies of decision making, fairness issues, and other aspects of hindsight bias. “A Positive Psychological Theory of Judging in Hindsight”, J. Rachlinski, 65 U.Chi.L.Rev. 571(1998).

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“This Article develops the thesis that the law reflects an understanding of the hindsight bias. In Part I, it describes the psychological research on judging in hindsight, with special attention to the sources and explanations for the hindsight bias. Part II discusses the application of the hindsight bias to judgments of liability and fault in the legal system and concludes that the bias has a big impact on judgments of liability. Part III analyzes the consequences of this phenomenon for the legal system. Part IV *576 documents the adaptations that the legal system has developed to accommodate the hindsight bias, and Part V states conclusions.”

-A search of all Federal and state cases for “hindsight bias” yielded only one opinion in which the Court allowed an expert in psychology to explain hindsight bias to the jury in an effort to de-bias the trial. It was a medical malpractice case - failure to see a small mass on a lung x-ray. The radiologist still lost. No case was found in which such testimony was disallowed. *Gehlen v. Snohomish County Public Hospital District No. 1*, 2001 WL 815005 (Wash.App.Div. 1)(unpublished opinion). In the *Gehlen* case there was also expert testimony about the likelihood of negligence as the cause of not seeing the small mass:

“Dr. Paul Berger, a radiologist who practices in Coeur d'Alene, testified about 'perceptual error.' He described it as looking at an object and not seeing it or not seeing a characteristic or aspect of it. In his opinion, all radiologists make perceptual errors, and it would be impossible for a reasonably prudent radiologist to interpret x-rays on a daily basis without making perceptual errors. He stated that in 80 percent of cases in which a radiologist makes a significant diagnostic error, the reason for the diagnostic error is a perceptual error. Dr. Charles White, a chest radiologist from Baltimore, also testified about perceptual errors in radiology. In his opinion, no radiologist is 100 percent correct 100 percent of the time, and missing something on an x-ray is not necessarily negligence or carelessness.”

The statistical evidence would favor a conclusion that missing the small mass was, more likely than not, non-negligent. But Plaintiff's expert testified that in his (hindsight) opinion, the radiologist should have seen it.

An article published after the *Gehlen* case demonstrates the existence of “**visual hindsight bias**” using radiology data as an example in which 82% of missed tumors were “visual in hindsight” by radiologists with outcome knowledge:

“THE “SAW-IT-ALL-ALONG” EFFECT: DEMONSTRATIONS OF VISUAL HINDSIGHT BIAS”, Erin M. Harley, University of California, Los Angeles
Keri A. Carlsen and Geoffrey R. Loftus, University of Washington,
Journal of Experimental Psychology: Learning, Memory, and Cognition
2004, Vol. 30, No. 5, 960–968

There are many other cognitive biases which affect our judgment as well, which are helpful to understand in order to improve the quality of our decisions and choices we make based on those decisions. “Inside the Judicial Mind” supra. addresses **Anchoring, Framing, Hindsight Bias, Representativeness Heuristic and Egocentric Biases**:

Anchoring is a bias in which the mind in search of a value seizes upon whatever random value is available to use as a reference point. As explained in “Inside the Judicial Mind”:

“Anchors induce people to consider seriously the possibility that the real value is similar to the anchor, thereby leading them to envision circumstances under which the anchor would be correct. Even when people conclude that an anchor provides no useful information, mentally testing the validity of the anchor causes people to adjust their estimates upward or downward toward that anchor. As a consequence, even extreme, wholly absurd anchors can affect judgment. . . . people evaluating hypothetical settlement offers were more likely to accept a \$12,000 final settlement offer when it followed a \$2,000 opening offer than when it followed a \$10,000 opening offer. . . .In criminal cases, the influence on judges of biased or misleading anchors, such as prosecutor or defense attorney sentencing recommendations, can produce biased criminal sentences.”

(footnote omitted)

More on anchoring, from “Inside the judicial Mind”:

“In five separate studies, researchers have found that plaintiffs' lawyers' damage requests influenced mock jurors' assessments of the appropriate amount of damages to award in civil suits. [FN61] In one study, for instance, mock jurors awarded slightly more than \$90,000 when the plaintiff's lawyer requested \$100,000 in damages; but when the plaintiff's lawyer requested \$500,000 in damages in the very same case, mock jurors awarded nearly \$300,000. [FN62] Even silly and outrageous damage requests can influence juror decision making. For example, mock jurors in another study awarded the plaintiff substantially more in damages when the plaintiff's lawyer requested an outlandish \$1 billion than when the plaintiff's lawyer requested a more plausible amount. [FN63] The moral of these anchoring studies seems to be, "Ask and ye shall receive." In each, "when more money was requested for damages by the plaintiff's attorney, the jurors awarded more." [FN64]”

Framing, also from “Inside the Judicial Mind” (footnotes omitted):

“When people confront risky decisions--such as deciding whether to settle a case or to proceed to trial--they categorize their decision options as potential gains or losses from a salient reference point such as the status quo. This categorization, or "framing," of decision options influences the way people evaluate options and affects their willingness to incur risk. People tend to make risk-averse decisions when choosing between options that appear to represent gains and risk-seeking decisions when choosing between options that appear to represent losses. For example, most people prefer a certain \$100 gain to a 50% chance of winning \$200 but prefer a 50% chance of losing \$200 to a certain \$100 loss. From a rational-choice perspective, people's risk preferences should depend upon their wealth relative to the size of the stakes involved. In practice, however, people tend not to make such normatively appropriate calculations. Instead, people make choices designed to maintain or slightly improve the status quo, which translates into risk-averse choices for most gains and risk-seeking choices for most losses.”

The **Representativeness Heuristic** (a heuristic is a rule of thumb or cognitive shortcut). From “Inside the Judicial Mind”:

“When people make categorical judgments (e.g., assessing the likelihood that a criminal defendant is guilty), they tend to base their judgments on the extent to which the evidence being analyzed (e.g., the defendant's demeanor) is representative of the category. [FN130] When the evidence appears representative of, or similar to, the category (e.g., defendant is nervous and shifty), people judge the likelihood that the

evidence is a product of that category as high (i.e., evidence of guilt). When the evidence being analyzed does not resemble the category (e.g., defendant appears at ease), people judge the likelihood that the evidence is a product of that category as low (i.e., evidence of innocence). Psychologists refer to this phenomenon as the "representativeness heuristic."

“Although the representativeness heuristic is useful, it can lead people to discount relevant statistical information. In particular, people undervalue the importance of the frequency with which the underlying category occurs--this is known as the "**base-rate statistic.**”

This heuristic impacts decision making by over-reliance on representativeness evidence and under-reliance on hard evidence such as statistical evidence. This can lead to the “**inverse fallacy**”, which “. . . refers to the tendency to treat the probability of a hypothesis given the evidence (for example, the probability that a defendant was negligent given that the plaintiff was injured) as the same as, or close to, the probability of the evidence given the hypothesis (for example, the probability that the plaintiff would be injured if the defendant were negligent).” (Quoted from “Inside the Judicial Mind”).

Test Results from “Inside the Judicial Mind”:

“To test whether judges would commit the inverse fallacy, we gave the judges in our study a *res ipsa loquitur* problem [under this discredited legal doctrine a jury can infer negligence from an adverse event that is of the kind which ordinarily does not result in injury in the absence of negligence]. In an item labeled "Evaluation of Probative Value of Evidence in a Tort Case," we presented all of the judges with a paragraph-long description of a case based loosely on the classic English case, *Byrne v. Boadle*: [FN145]”

-For this paper I have converted the warehouse accident test to a wildland fire burn-over:

The firefighter was working near an escape route when the fire blew up and he was cut off and burned over, resulting in his death. The Incident Commander is not sure how the burn-over happened, but he agrees that either the escape route was negligently selected or the fire run was extraordinarily fast-moving. Government safety inspectors conducted an investigation and determined that in firefighting (1) when escape routes are negligently selected, there is a 90% chance that they will fail to provide adequate escape time (2) when escape routes are safely selected, they fail to provide a safe route only 1% of the time; (3) firefighters negligently select escape routes only 1 in 1,000 times.

Given these facts, how likely is it that the burn-over was due to the negligent selection of the escape route?

Chose from the following (circle your answer): 0-25%, 26-50%, 51-75%, 76-100%.



When presented with a problem like this one, most people commit the **inverse fallacy** and assume the likelihood that the escape route was negligently selected is 90%, or at least a high percentage. [FN146] . . . In fact, however, the actual probability that the escape route was negligently selected is only 8.3%.²

Explanation from “Inside the Judicial Mind”:

“Of the 159 judges who responded to the question, [FN148] 40.9% selected the right answer by choosing 0-25%; 8.8% indicated 26-50%; 10.1% indicated 51- 75%; and 40.3% indicated 76-100%. Overall, the judges did well; more than 40% of them got the correct answer to a difficult question in a short period of time. Those judges who did not get the correct answer, however, exhibited a significant tendency to choose the highest range. [FN149] Although we did not inquire into the reasoning process that led these judges to their answers, the number of judges who chose the highest range suggests that many committed the inverse fallacy. In fact, roughly as many judges gave the right answer as gave the answer suggested by the inverse fallacy.”

At the suggestion of Jeffrey Rachlinsky, Professor of Law, I ran the same test using civil and criminal lawyers at the U.S. Attorney’s Office, and came up with the same results.

The Representativeness Heuristic - Inverse Fallacy also creates erroneous legal doctrine. The **Res Ipsa Loquiter** doctrine provides that a jury can infer negligence from an adverse event that is of the kind which ordinarily does not result in injury in the

2				
		Event		Total
		Injury	No Injury	
Actual	Negligent	0.090%	0.010%	0.10%
Condition	Not Negligent	0.999%	98.901%	99.90%
Total		1.089%	98.911%	100%

Because the defendant is negligent .1% of the time and is 90% likely to cause an injury under these circumstances, the probability that a victim would be injured by the defendant's negligence is .09% (and the probability that the defendant is negligent but causes no injury is .01%). Because the defendant is not negligent 99.9% of the time and is 1% likely to cause an injury under these circumstances, the probability that on any given occasion a victim would be injured even though the defendant took reasonable care is 0.999% (and the probability that the defendant is not negligent and causes no injury is 98.901%). As a result, the conditional probability that the defendant is negligent given that the plaintiff is injured equals .090% divided by 1.089%, or 8.3%.

absence of negligence. The doctrine is erroneous and has been rejected in recent Restatements of the law.

The **Point Fire fatality litigation** may provide some lessons concerning the biases and thought processes addressed in this paper. This flat-ground sage brush fire had been fully contained, and other engines were moved to the northern perimeter to stop escape from the expected winds. Pumper 620 broke down as they were leaving to re-fill and stage on the road.

EXCERPT OF DISTRICT COURT FINDINGS OF LIABILITY FOR THE POINT FIRE:

8. The fire was caused by dry-lightning, and the National Weather Service in Boise had forecast--both the day before and the morning of July 28, 1995--that "gusty erratic winds to 55 MPH" could be "near any thunderstorms."

46. The procession of these four vehicles began working the northern perimeter of the fire.

47. 622 and 620 applied water through the front bumper nozzles to the flames, and had an immediate effect-- the flames diminished in the area where the trucks were working, and the smoke changed color indicating that the fire was being suppressed.

50. At about 8:15 p.m., the procession had nearly circumnavigated the fire's entire perimeter, and had reached the fence at the southeast corner of the fire.

58. When they reached the western perimeter, 622 ran out of the water. Black radioed IC Kerby on the BLM channel and asked for direction. IC Kerby told him to refill and stand by [on the road] because a wind storm was to pass through.

60. 622 then proceeded east through the black burned-out area until it turned north just before the fence in order to get to the fence break that was located at the northeast corner of the fire perimeter.

61. Just before 622 reached the fence break, 620 radioed 622 and stated that they were overheating and requested assistance. At this time, 620 did not appear to be in any distress. 622 responded that 620 should remove a screen on the front of the vehicle. 620 responded to the effect that they heard the message and would check the screen. That is the last radio contact 622 had with 620.

62. 622 proceeded through the fence and onto Swan Falls Road, stopping by the tender 625 to refill. Tender 625 was located at this time on Swan Falls Road at the southeast corner of the fire perimeter.

63. Black told Captain McPherson and Captain Stear that 620 was right behind them and coming in to refill.

64. When 620 did not arrive at the refilling site, captain McPherson started walking

north on Swan Falls Road to look for the truck. When Captain McPherson had reached the middle of the fire's eastern perimeter, he saw 620 in the black burned out area heading towards him, retracing the route taken by 622. When McPherson first saw 620, it was about 600 feet away from McPherson, heading for the northeast perimeter of the fire with the apparent intent to follow 622's path through the break in the fence.

65. In a wildfire, any black burned-out area might be a safety zone depending on how much unburned fuel remains there; a lack of unburned fuel ensures that the area will not be burned over a second time. But the black's function as a safety zone is also dependant on two other variables: the wind, and the movement of the firefighters. A high wind will kick up dust and ash in the black area, obscuring visibility. This poses little danger if the black contains no unburned fuel and the firefighters are stationary. However, when the firefighters are moving in the black towards the perimeter of the fire, beyond which lies unburned fuel in the path of the high winds, the black is much less of a safety zone. The complete lack of visibility that accompanies high winds in the black makes the firefighters prey to disorientation, not a problem while they are sitting still, but a major concern when they are moving toward unburned fuels in the path of the winds.

66. McPherson felt that 620 was just minutes from reaching the fence break, and the truck was close enough that McPherson could see passenger Oliver "real well."

67. McPherson started walking toward the fence break with the idea that he would meet up with 620 there.

68. At this point the winds increased dramatically. Visibility in the black burnt-out area was reduced to almost nothing as the winds kicked up the dust and ash.

69. 620, now close to the fence, turned north attempting to find the fence break. McPherson could hear 620 bouncing and moving north at a high rate of speed.

70. Due to a combination of obscured visibility, disorientation, and panic, 620 overshot the fence break and drove into unburned cheat grass and sagebrush due north of the fire's northern perimeter.

71. The winds revived the fire, pushing it northward at a furious rate.

72. 620 was still moving northward at a fast rate, but it was now trying to outrun the fire that was close behind it. After driving about 1,750 feet from the fire's northern perimeter, 620 stalled in the middle of unburned cheat grass and sagebrush.

73. Bill Buttram got on the radio and relayed a frantic message to Captain McPherson over the Kuna channel: "We're on the north line, Doyle, we got fire coming hard, this thing has died."

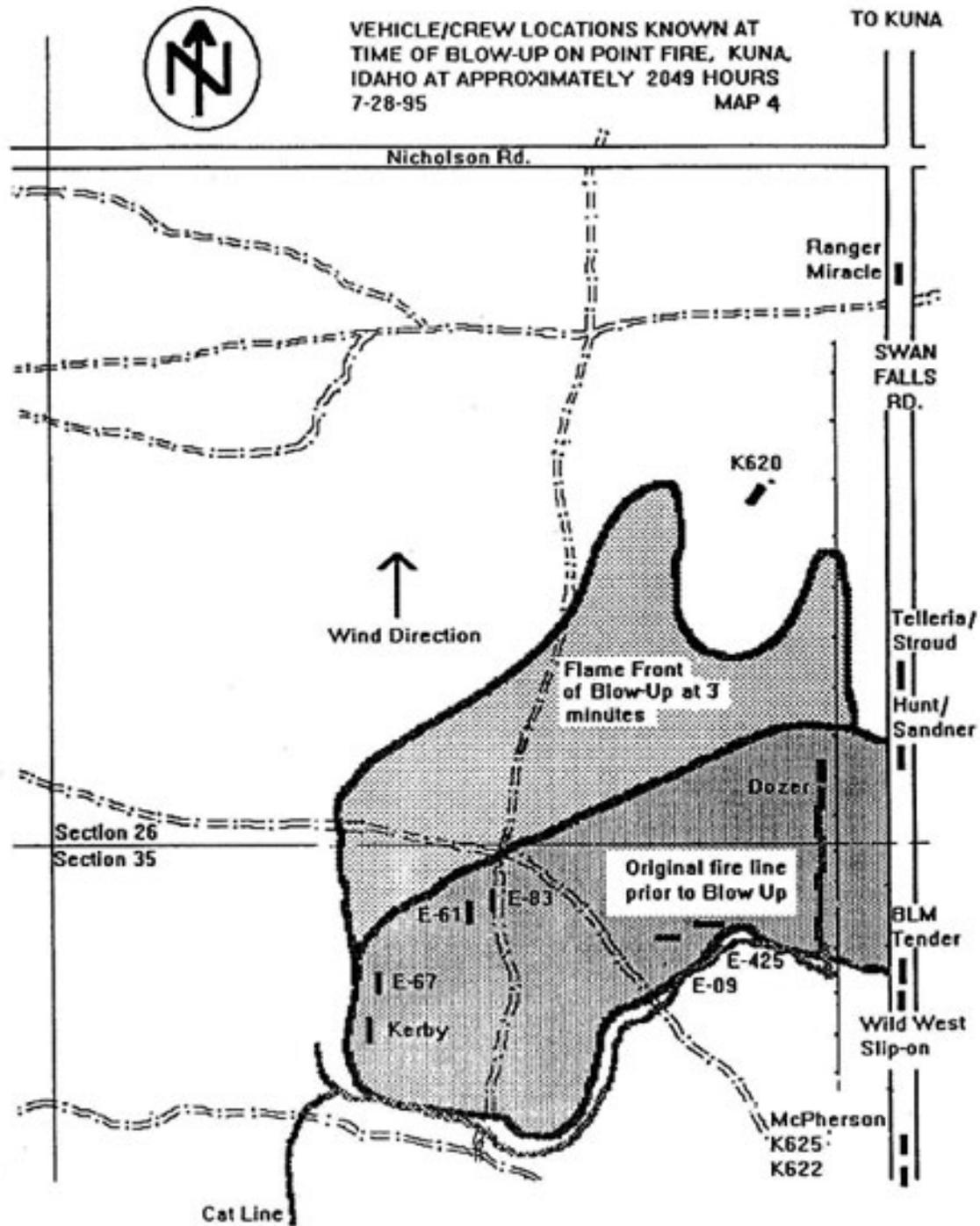
74. Captain McPherson responded inaudibly, and Buttram said "it's not going to let us out of here."

75. Chief Cromwell then came on the radio and asked 620 to identify its problem.

76. Buttram responded that "We're surrounded by fire." When asked to repeat his message, Buttram stated "The truck has been overtaken by fire."

77. That was the last radio communication anyone received from 620.

78. Shortly thereafter, 620 was overtaken by the fire.



DISTRICT COURT'S DESCRIPTION OF FORESEEABILITY AND WARNING TO AVOID HINDSIGHT BIAS:

91. A danger is reasonable [sic.] foreseeable if it "is apparent, or should be apparent, to one in the position of the actor. The actor's conduct must be judged in the light of the possibilities apparent to him at the time, and not by looking backward 'with the wisdom born of the event.'" W. Page Keeton et al., *Prosser and Keeton on the Law of Torts* § 31, at 170 (5th ed. 1984).

DISTRICT COURT'S CONCLUSIONS ON FORESEEABILITY, WITH KNOWLEDGE OF THE OUTCOME:

113. The BLM IC breached his duty to warn Buttram and Oliver after the red flag warning to stay away from the fire's northern perimeter because high winds would drive the fire in that direction. Instead of so warning 620, the BLM IC instructed them to refill. He knew that to refill, 620 would most likely drive toward the fence break at the northeast corner of the fire. In other words, the BLM IC directed 620 toward the northern perimeter of the fire at a time when high winds were forecast to drive the fire in that very direction. As the Court discussed previously in paragraph 65, the black's function as a safety zone is partly dependent on whether the firefighters are moving through the black towards the unburned fuels that are in the path of oncoming winds. The BLM contends that IC Kerby gave 620 "the safe assignment of going to the road and staying there. " See BLM's Post-Trial Brief at 11. The BLM asserts that "it does not make sense that [Buttram] would drive wildly around if he could not see at all." *Id.* From this, the BLM concludes there is no proof that the "BLM proximately caused Buttram to drive out of the safe zone and into harm's way." *Id.* The Court disagrees. At the time IC Kerby gave his refill order, it was foreseeable that the high winds could kick up the dust and ash in the black and completely obscure Buttram's and Oliver's visibility. It was also foreseeable that Buttram and Oliver would be very near the fire's northern perimeter -- and moving toward that perimeter--at the time the high winds were due to come through the area. Finally, it was foreseeable that the lack of visibility could cause panic and disorientation that would expose the firefighters to great risk because of their close proximity to the dangerous northern perimeter of the fire. By instructing 620 to refill, the BLM IC placed Buttram and Oliver in a foreseeably dangerous position, and thereby breached his duty to provide for their safety.

133. The BLM knew a great deal about the fire but nothing about the experience and

knowledge of Buttram and Oliver.

134. The Kuna RFD knew a great deal about Buttram and Oliver but nothing about the fire.

135. If either had shared its knowledge, this tragedy could have been avoided.

The Court's conclusions about foreseeability, causation, responsibility and blame do not attribute causation to mechanical failure or inadequate maintenance - 620 had earlier break downs that season. The Court's conclusions seem like a lot to foresee from an order to re-fill and stage on the road because high winds were forecast to arrive.

Egocentric Biases

Dr. Mary Omodei and others at the Complex Decision Research Group, LaTrobe University, Melbourne, Australia, developed a protocol for **wildland fire accident investigations** to get to the bottom of **human factors and decision making**. They are collecting the data. They note how the hindsight bias impedes collecting the information needed to understand the role of human factors. They also note how the self-affirming biases or "**self-protective justifications**" are a normal part of human cognition and should be expected to influence witness descriptions of what happened. She concludes that current accident investigation processes do not uncover human factors and are, in fact, detrimental to getting at that critical information. She suggests strategies, including separate types of investigations which include privileged conversations. See "**Identifying Why Even Well-Trained Firefighters Make Unsafe Decisions: A Human Factors Interview Protocol**", In Butler, B.W. and Alexander, M.E. Eds. 2005. Eighth International Wildland Firefighter Safety Summit-Human Factors-10 Years Later. Dr. Omodei has commented to me that "The threat of litigation and/or being called before an enquiry, either judicial or agency mandated, is in my view the single biggest impediment to accurate investigation and/or research into the human factors underlying "problematic" decision making in incident management (at all levels)."

The following article is particularly useful reading for **prosecutors and investigators** because it explains how the mind takes an initial impression and skews the subsequent processing of information during the investigation and development of the case. The article includes some de-biasing strategies such as ensuring that all evidence collected by investigators is turned over to prosecutors regardless of its perceived value, fresh-look or "devil's advocacy" exercises, neutral committees to assist with decision-making, etc.

"IMPROVING PROSECUTORIAL DECISION MAKING: SOME LESSONS OF COGNITIVE SCIENCE", 47 Wm. & Mary L. Rev. 1587, A. Burke, Associate Professor, Hofstra University School of Law, (2006). Excerpt:

“This Article explores four related but separate aspects of cognitive bias that can contribute to imperfect theory formation and maintenance: **confirmation bias, selective information processing, belief perseverance, and the avoidance of cognitive dissonance**. Confirmation bias is the tendency to seek to confirm, rather than disconfirm, any hypothesis under study. [FN34] Selective information processing causes people to overvalue information that is consistent with their preexisting theories and to undervalue information that challenges those theories. [FN35] Belief perseverance refers to the human tendency to continue to adhere to a theory, even after the evidence underlying the theory is disproved. [FN36] Finally, the desire to avoid cognitive dissonance can cause people to adjust their beliefs to maintain existing self-perceptions. [FN37] This Part summarizes the empirical literature regarding each of these cognitive phenomena.”

Page 1602:

“No reason exists to believe that lawyers are immune from the documented bounds of rationality, and yet the literature on prosecutorial decision making continues to describe prosecutors as rational, wealth-maximizing actors who would make better, more just decisions if they only had better, more just values. [FN95] Through the lens of the cognitive phenomena summarized in Part I, a more *1603 complicated story is evident. That prosecutors should be motivated by justice, not conviction rates, should go without saying. The harder question to answer is whether good motives, both individually and institutionally, are enough. The implications of the cognitive literature suggest not.”

Page 1616:

“Another possible method of improving prosecutorial decision making is to train prosecutors and future prosecutors about the sources of cognitive bias and the potential effects of cognitive bias upon rational decision making.”

In connection with civil case analysis, it should be recognized that the “**self-serving bias**” causes both civil litigants and their attorneys to overestimate the fair value of their claim, and to over-predict the likelihood of a favorable verdict, on both liability and damages, compared to a control group which does not know which side they are on when they analyze the same claim.

List of Cognitive Biases

Here is a link to a long list of cognitive biases which is interesting reading:
http://en.wikipedia.org/wiki/List_of_cognitive_biases

The list includes the **Planning Fallacy** in which we underestimate task-completion times, **Neglect of Probability** in which we disregard probability when making a decision under uncertainty and **Zero-Risk Bias** – the preference for reducing small risk to zero over a greater reduction in a larger risk, and the **Valence Effect**, commonly known as wishful thinking, in which we tend to overestimate the likelihood that good things will happen to us rather than bad things.

One can posit that the **Planning Fallacy** had a causal role in the Cramer Fire in which time to complete construction of the helispot was repeatedly under-estimated. Greater use of objective criteria rather than subjective estimates might help. For example, in the Dude Fire when Hotshot Superintendent Paul Gleason placed himself between the rescuers and the fire so he could push them to move out if needed, he did not just estimate the rate of spread of the blowup below them, he used his watch, measured and calculated the rate of spread, giving him a more objective window of opportunity for decision-making. Several fatal down hill line construction fires come to mind - how long will it really take to connect to that safer anchor point? On the other hand, if initial attack fails due to not doing it, will the consequential risks created by a larger fire increase? Here is an interesting note on deciding to accept risk by taking action, versus accepting risk by deciding not to act:

“Most real-life decisions are vague and ill-defined (Fischhoff, 1996). Decision makers may, for example, hold multiple and ambiguous goals, making it difficult to judge what would be the best decision. Yet, process-oriented students of decision making would argue that half of the solution involves appropriate structuring of the decision problem. Baron (1994) notes that people have difficulty in following this process-oriented approach. Normatively, the decision structure should incorporate potential outcomes, because only these affect the fulfillment of the decision maker’s goals—a requirement known as “consequentialism”. Even if it does not affect the consequences of a decision (in terms of their goals), people are sensitive to the manner in which an outcome has been obtained. Baron and his colleagues (e.g., Spranca, Minsk & Baron, 1991; Ritov & Baron, 1992) have shown that decisions with identical outcomes are judged as worse when they result from acts of commission than acts of omission. For example, most people are reluctant to vaccinate children against a potentially lethal flu when side effects of the vaccine can cause death. Faced with a flu epidemic that is expected to kill 10 out of 10,000 children, most people are not willing to accept a 9 out of 10,000 risk of death from vaccination, and the median acceptable maximum risk is 5 in 10,000. Apparently, killing a child with a vaccination (that is, an act of commission) is perceived as worse than causing its death by failing to vaccinate (that is, an act of omission) (Ritov & Baron, 1990). This pattern of results poses a violation of consequentialism, unless feelings of guilt (resulting from commission but not from omission) may be included in the

definition of “consequence”. Indeed, some argue that strong emotional responses should be considered as part of the decision outcome (see commentaries included in Baron, 1994).” “On the Assessment of Decision Quality: Considerations Regarding Utility, Conflict and Accountability”, Gideon Keren and Wandu Bruine de Bruin, from *Thinking: Psychological Perspectives on Reasoning, Judgment and Decision Making*, Eds. Harding, D. and Macchi, L., Wiley 2003.

III. Outcome Knowledge and Judging Quality of Decisions

After the hindsight bias contaminates our opinion that the outcome was foreseeable, and we would surely have foreseen it, the **Outcome Bias** contaminates our ability to judge the quality of the decision and the character of the person who made it. The outcome bias influences people to judge a decision more harshly if they are aware of a bad outcome, than they judge the same decision if they are unaware of the bad outcome. The outcome is irrelevant to judging the quality of a decision under uncertainty. Nonetheless, even in tests segregating out subjects who persisted in the belief that outcome is always relevant to the quality of the decision and the character of the person who made it, knowledge of bad outcomes significantly increased condemnation of the decision and the decision maker. See e.g., “Outcome bias in decision evaluation.”, Jonathan Baron and John c. Hershey, University of Pennsylvania.
<http://www.sas.upenn.edu/~baron/judg.html>

The hindsight bias and the outcome bias interfere with identifying the human factors contributing to an accident, cognitive and otherwise, in accident investigation and prevention. See e.g. “Perspectives on Human Error. Hindsight Biases and Local Rationality”, Woods, D.D. and Cook, R.I., In F. Durso (Ed.), Handbook of applied cognitive psychology (pp. 141-191). NY Wiley

The outcome bias is also affected by group identity: in-group judges can be expected to judge decision quality and the quality of the decision maker less harshly than out-group judges. See “The One-of-Us Effect in Decision Evaluation”, Raanan Lipshitz, Ziv Giland, and Ramzi Suleiman, University of Hofstra, 2000. Further comment about outcome bias in this paper:

“Judgment by outcome has received particular attention because of its important normative implications:

Judging single decisions on the basis of their outcomes is inappropriate for three reasons. The first reason is that the outcome of a decision, by itself, cannot be used to improve a decision unless the decision maker is clairvoyant (Baron & Hershey, 1988). A second, similar argument can be made from the standpoint of fairness: it is unfair to use information not available to the decision maker to judge the quality of his decision... [Finally], under risk or uncertainty... judgment-by-outcomes is logically unwarranted because it involves backward reasoning equivalent to affirming the consequent (a \rightarrow b, therefore b \rightarrow a), (Lipshitz, 1995, p. 123).”

* * *

“The one-of-us effect was demonstrated in a classical study by Hastorf and Cantril (1954). Following a Dartmouth-Princeton football game, two samples of students from the two colleges were shown the same film of the game. Results from a questionnaire

administered after the film revealed basic disagreements between the two samples over what actually took place during the game. In particular, each sample claimed that the team representing its own school played in a more sportsmanlike fashion than the opposing team. The hypothesis that judgment-by-outcomes is moderated by the one-of-us effect is also supported by Tajfel and Turner's (1985) social identity theory, Pettigrew's (1979) theory of the ultimate attribution error, and findings from research on procedural justice."

* * *

"The influence of outcome information attracted the attention of researchers partly owing to its normative implications. Its attenuating effects reflect violations of Decision Theory (i.e., "outcome bias," Baron & Hershey, 1988), hinder drawing of valid lessons from experience (Fischhoff, 1975), handicap just distribution of rewards and punishments, and weaken the authority of valid professional doctrines and standard operating procedures (Lipshitz & Barak, 1995). Unfortunately, the moderating influence of the one-of-us effect on outcome bias probably worsens rather than helps its dysfunctional consequences."

* * *

"Our findings show that cognitive models cannot be applied effectively in order to predict, for example, the effects of specific outcome information on decision evaluation in concrete real-world situations, without an understanding of the socio-cultural context to which the models are applied."

Another problem with making decisions about decisions is that there are at least three distinctly different models available for judging decisions. From "On the Assessment of Decision Quality: Considerations Regarding Utility, Conflict and Accountability", Gideon Keren and Wandu Bruine de Bruin, from *Thinking: Psychological Perspectives on Reasoning, Judgment and Decision Making*, Eds. Harding, D and Macchi, L., Wiley 2003:

"Referring to an operation as successful *after* the patient has died remains unsatisfactory for most laypersons."

* * *

". . . the majority of researchers emphasize that the process, rather than the outcome, should be the object of evaluation. Their theories are considered "normative", prescribing how people should make, and judge, decisions. "Descriptive" research, which describes how decisions are actually made, shows that people focus on decision outcomes. Normative and descriptive considerations are deeply interrelated, and there is an ongoing interplay between the two perspectives (Coombs, Dawes & Tversky, 1970; Keren, 1996). To assess decision quality, it is important to examine both normative and descriptive facets of the relevant issues. * * * An alternative option, and the one that we recommend,

is what Keeney and Raiffa (1976) termed the “prescriptive” approach. It offers guidelines to decision makers who search for optimization, yet takes into account their limited capacity for memory and information processing that makes them vulnerable to human error, reasoning biases and swaying emotions.”

* * *

“Which specific considerations prevail in the process of assessing decision quality depends, to a large extent, on the decision-making model that is adopted by the judge.”

* * *

“The first is the so-called gambling paradigm, which has been the dominating metatheory in the field of decision making since its inception. Its main underlying assumption is that every decision problem can be translated into a choice between gambles, relying heavily on utility theory (e.g., Luce & Raiffa, 1957; Keeney & Raiffa, 1976; Schoemaker, 1982). The second approach is the conflict model, which considers a decision to be the resolution of an emotional conflict, in which to choose one option means to forego another (e.g., Janis & Mann, 1977; Coombs, 1987). The third and last approach is the accountability model (Tetlock, 1991; Lerner&Tetlock, 1999), which asserts that the decision maker’s major goal is to defend decisions convincingly—if held accountable. Although the latter two models were not intended to be normative, each offers implicit guidelines to judge decision quality, assigning different (relative) weights to the outcome- and process-oriented approach.”

“This chapter emphasizes that the judge of the decision and the decision maker may not use the same framework to evaluate the decision – and, hence, may disagree. Evaluations may even vary between judges who endorse different perspectives and different models. For example, patients and colleagues may take a different approach to judging the quality of a physician’s decision. While the colleagues may emphasize the decision process, the patients will probably focus on the outcome. As suggested before, the latter will be more likely to consider a decision to operate wrongly if it leads to a death. Whatever the perspective taken, a perfectly neutral judge rarely, if ever, exists.”

* * *

“It should be emphasized that the three frameworks discussed in this chapter do not exhaust all possible views, and other paradigms or subtypes of paradigms are conceivable. For instance, the decision maker or the judge may adopt a “rule-based” view, according to which a decision is good when it conforms to certain “acceptable” rules of conduct. Another example refers to, the distinction between adapting a promotion or a prevention outlook (Higgins, 1998) may be a major source of discrepancies in judging decision quality.”

“The question of which model the judge (or the decision maker) should adopt is a question that obviously cannot be answered unequivocally. The major problem underlying the judgment of decision quality is largely a question of compatibility

between the decision maker and the judge (who performs a second-order decision). There are two major facets for which the compatibility between the decision maker and the judge can be assessed. First, there is the question whether both employ similar frameworks in structuring the decision problem. For instance, discrepancies between the decision maker and the judge may arise if the former was motivated by emotional considerations associated with conflict, whereas the latter, in making her judgment, was solely guided by utility theory. Even a judge who uses the same model as the decision maker may not entirely understand the decision maker's position at the time the decision was made. It is difficult, if not impossible, to ignore outcome knowledge when attempting to assess in retrospect the decision maker's situation. Similarly, differences between the decision maker and the judge may come about from different interpretations of the decision problem at hand. Indeed, framing effects probably constitute the most ubiquitous phenomenon of decision making. Thus, gaps may simply result from different framing of the decision problem by the decision maker and the judge. Besides such "perceptual" discrepancies that can lead to diverging interpretations, differences may also stem from differences in the tacit assumptions underlying the conduct of communication, as has been convincingly shown by Schwarz (1998)."

* * *

"The above two issues lead to a fundamental question: what exactly is meant by a good decision? Students of decision making would correctly claim that examining decision quality should be restricted to the first facet, the way the problem has been structured and the extent to which this structuring lends itself to acceptable solutions given the decision maker's goals. In practice, however, decisions and judgments are often strongly influenced by the underlying basic value system. Hence, judgments along the two facets mentioned above may often be confounded. More specifically, the perspective adopted by judges to assess the first facet may be strongly biased by their stand on the second facet."

* * *

"Our inquiry leads us to conclude that there are no unequivocal standards or guidelines for judging decision quality."

* * *

"At the end of the day, it is probably the case that, at least in practice, the justification of a decision or its judgment is mainly driven by the strength of the supporting arguments (Shafir et al., 1993). Such a conclusion is probably most compatible with the accountability model of decision making. The fact that those who assess and judge decision makers (for instance, committees assessing decisions made by societal decision makers) frequently adopt one or the other version of an accountability model should not be taken as normative evidence for the superiority of the model."

IV. Coherence Based Reasoning.

Unfortunately, the cognitive process can lead to “**coherence shifts**” which can result in decisions which are skewed to seem “coherent” and which are made with overconfidence that the decision is right. Evidence is given more weight than it deserves as it coheres with the emerging decision. The article below demonstrates for example that when the mind rejects weak evidence, the mind actually increases the strength of belief in evidence previously offered, which had not previously been believed with any strength. In other words, a defendant offering a weak alibi may think he is defending himself, while in fact he is contributing to his own conviction - when the weak alibi is rejected, the mind increases its belief in the strength of opposing evidence. The article includes actions to mitigate against coherence shifts including asking the decision maker to “**consider the opposite**”. This mitigation also works on the self when making decisions. This has significant implications for making firefighting decisions and for judging those decisions later. Accepting an assignment which appears in hindsight to have been too dangerous, might be an example of a “can do” coherence shift. The Navy’s **TADMUS** program (articles cited in Summary) greatly reduced coherence shifts, consistent with the scientific literature.

“A THIRD VIEW OF THE BLACK BOX: COGNITIVE COHERENCE IN LEGAL DECISION MAKING”, 71 U.Chi.L.Rev. 511, Dan Simon (2004). Excerpts:

Page 511:

Based on a connectionist cognitive architecture, coherence-based reasoning shows that the decision-making process progresses **bidirectionally**: premises and facts both determine conclusions and are affected by them in return. A natural result of this cognitive process is a skewing of the premises and facts toward inflated support for the chosen decision. The Article applies this research to four important aspects of the trial. It argues that the current doctrine in these areas is based on misconceptions about human cognition, which lead to systematic legal errors. By identifying the cognitive phenomena that lie at the root of these failings, the research makes it possible to devise interventions and introduce procedures that reduce the risk of trial error.

Page 513

Coherence-based reasoning posits that the mind shuns cognitively complex and difficult decision tasks by reconstructing them into easy ones, yielding strong, confident conclusions. The research reveals an unconscious transformation of the way decisions are mentally represented, ultimately leading to a seemingly straightforward choice between a

compelling alternative and a weak one. To date, experimentation has revealed eight cognitive features of coherence-based reasoning, which harbor interesting--and potentially troubling--implications for decision making in the legal domain and beyond.

Page 516:

Coherence-based reasoning applies to mental tasks in which the person must make a discrete decision or judgment in the face of complexity. Tasks are said to be complex when their constitutive considerations are numerous, contradictory, ambiguous, and incommensurate.

* * *

In a nutshell, coherence-based reasoning suggests that decisions are made effectively and comfortably when based on coherent mental models. Loosely defined, mental models capture the decision-maker's perception of the task at hand--that is, the way the considerations of the decision are represented in her mind. [FN18] A mental model of a decision task is deemed "coherent" when the decision-maker perceives the chosen alternative to be supported by strong considerations while the considerations that support the rejected alternative are weak.

*517 The central finding of coherence-based reasoning research is that the cognitive system imposes coherence on complex decision tasks. Throughout the decision-making process, the mental representation of the considerations undergoes gradual change and ultimately shifts toward a state of coherence with either one of the decision alternatives. Due to these coherence shifts, at the culmination of the process, the decision-maker's mental model is skewed toward conformity with the emerging decision. As the hard case morphs into an easy one, the decision follows easily and confidently. The fact that decisions are ultimately based on skewed mental models and backed by high levels of confidence facilitates the making of the decision, but at the same time it can also harbor problematic implications.

Page 518:

The **first application** follows from the finding that coherence shifts occur prior to the making of a decision.

* * *

Second, coherence-based reasoning speaks to an ongoing debate as to whether fact-finders evaluate evidence in a holistic or an atomistic manner. This debate has particular significance with respect to the admissibility of potentially prejudicial evidence. While the empirical findings support the holistic account, I argue that its corollary prescription

is wrong. I also caution against a Supreme Court decision that tends toward a relaxation of the restraints on the admissibility of evidence. [FN26]

* * *

The **third** application concerns verdict determinations in criminal trials. The primary finding of the research is that coherence shifts polarize perceptions of the evidence. Jurors with a slight initial inclination to acquit or convict are likely to amplify their perception of the case, so that evidence that is weakly probative of guilt can be transformed to create mental models that strongly support either innocence or guilt. Normatively, this matters for jurors who vote to convict, because the evidence is bolstered from overall ambiguity to a belief beyond a reasonable doubt. Thus, coherence shifts can undermine the role of the heightened standard of proof.

* * *

The **final** application pertains to the doctrine of harmless error in criminal trials, which has been torn between two modes of analysis: one that focuses on assessing the impact of the error on the trial outcome, and the other that focuses on assessing guilt as it appears from the remaining, presumably untainted, evidence. * * * In cases that concern the erroneous admission of impermissible evidence, the appellate judge's perception of the remainder of the evidence is likely to have been affected by the impermissible evidence due to coherence effects. Since that evidence might well be tainted, judges ought to shy away from guilt-focused analysis.

Page 520:

Connectionist Representations. All mental processing starts with a mental representation of the task. [FN27] Decisions are made within certain problem spaces that contain and delimit the representation of the task variables, that is, all the factors that are to be included in the decision at hand. The representations of the variables are called mental models of the decision task.

Coherence-based reasoning presumes a connectionist architecture of mental representations, which can be likened to an intricate electrical network. [FN28] Each variable is represented in the mind as a unit, *521 which is then connected through the network to all the other units. [FN29] The initial representation of a mental task is determined foremost by the rich and detailed store of background knowledge about one's physical, social, and conceptual worlds. [FN30] The mental model of a complex decision task contains a myriad of variables that point in more than one direction and thus do not all fit into a coherent mental model. One subset of variables (a1, a2, . . . an) supports conclusion A, and the other subset (b1, b2, . . . bn) supports the opposite conclusion B.

* * *

Constraint Satisfaction Mechanisms. In all but easy cases, neither subset of variables dominates the other. Since each variable has some bearing on the task, it can be said to impose a constraint on the network. [FN31] Connectionist systems process mental tasks through a nonconscious process in which the mentally represented variables interact with one another like an electrical network. Activation spreads throughout the mental model. [FN32] Each and every constraint influences, and is influenced by, the entire network, so that every processing cycle results in a slightly modified mental model. Over time, unsupported variables or those suppressed by other variables degrade and even die out, while those that are mutually supported gain strength.

*522 The central feature of constraint satisfaction mechanisms is that the mental model will reconfigure itself until the constraints settle at a point of maximal coherence. Coherence, the state at which similarly linked variables are similarly activated, occurs when the variables that support the emerging decision are strongly endorsed and those supporting the alternative are dismissed, rejected, or ignored. In complex decisions, the initial mental representation of the task is naturally incoherent. Constraint satisfaction processes force the task variables to change toward a better fit with the gradually emerging state of coherence. [FN33] This reversed induction gives coherence-based reasoning its bidirectional character: while the strength of supporting variables determines the conclusion, the variables themselves are transformed by the cognitive process so as to provide considerably stronger support for the conclusion. [FN34]

In sum, the ultimate state of coherence is essentially a byproduct of the cognitive system's drifting toward either one of two skewed mental models. Within each of these models, the initially complex and incoherent mental model has been spread into two subsets, one of which dominates the other, thereby enabling a relatively easy and confident *523 choice. This skewed representation reflects an artificial polarization between the inflated representation of the variables that support the chosen conclusion and the deflated ones that support the rejected conclusion; it differs considerably from the way the task variables were perceived before the decision-making process got underway, and it differs also from the way they will be perceived some time after the completion of the task.

Page 524:

The first finding concerns the fundamental property of coherence-based reasoning: that in the course of making a complex decision, the mental model of the task shifts toward coherence with the emerging decision.

Page 533:

The second feature of coherence-based reasoning concerns its metacognitive dimension--the degree to which people are aware of the process, particularly of their shifting perceptions of the task variables. We hypothesized that **coherence shifts transpire without awareness**--that they are mostly an automatic, rather than a controlled and conscious, form of cognitive processing. [FN63]

* * *

Page 534:

The next series of experiments examined the important theoretical question of the role that coherence shifts play in the decision-making process. It could be argued that the shifts play no active role in the process itself, but serve only as post hoc rationalizations for decisions driven by other factors or different mechanisms. This is the view offered by **cognitive dissonance theory**, which posits that attitudes and preferences change exclusively due to post-decision regret. Only after a person commits herself to a course of action does regret cause the arousal of dissonance, which is then reduced by rationalizing the decision. [FN66] We sought to test this aspect of coherence-based reasoning.

In a series of studies based on the Quest case, we induced participants to delay their decisions and measured their preliminary rating of the arguments during the period of delay. [FN67] **Contrary to dissonance *535 theory, significant coherence shifts were observed at this early stage.** [FN68] This finding suggests that coherence shifts play a functional role in the decision-making process, in that the spreading apart of the variables creates dominance of one alternative over its rival, thereby enabling a confident decision. Similar predecisional shifts were observed in a study based on the Jason Wells case. [FN69] In addition to the shifts that preceded the decision, coherence shifts were also observed following the point of decision, though the post-decisional shifts were typically marginal. [FN70] **Coherence shifts, the data suggest, precede decisions.** [FN71]

Page 536:

All mental processing draws closely from one's background knowledge. [FN73] A decision to cross a street, for example, is contingent on one's experience-born knowledge about vehicles, motion, and driver behavior. A choice to form a friendship is influenced by one's knowledge of cues for trustworthiness, love, selfishness, and the like.

Page 538:

Another feature of coherence-based reasoning that warrants attention concerns the effect of changes in one task variable on other variables. Connectionist theories posit that any

variable can potentially influence the entire network, including variables to which it is not directly linked. In a study based on the Quest case, one-half of the participants received an account in which the defendant Smith was described as a benevolent person, and the other half received a description of a malevolent defendant. We expected that this manipulation *538 would affect the verdicts so that more verdicts favoring the defendant would be rendered in the former case than in the latter. The crucial question, however, was whether and how this manipulation would influence the ratings of the other variables involved in the case, none of which had any plausible relation to Smith's character.

As expected, the information about Smith's previous conduct had a strong influence on the distribution of the verdicts. Of the participants who received positive information about Smith, 72 percent rendered verdicts in his favor, whereas only 22 percent of those who received negative information decided for him. More importantly, we analyzed the ratings of all of the other variables in the case to see whether they were influenced by the new information. All the variables shifted to cohere with the chosen decision. [FN78] **In other words, the manipulated piece of information had a substantial effect on variables with which it had no plausible relationship.**

Page 539:

Another experiment based on the Jason Wells case was designed to get a closer look at the dynamics of coherence-based reasoning by examining **what happens when people change their minds** during the decision-making process. In light of the finding that coherence effects occur before decisions are made, [FN80] one might believe that people should rarely change their minds in response to new information and that when they do, they are left in a state of strong incoherence with their previous mental models. Yet, experience suggests that, under some conditions, people respond to new evidence that contradicts *539 prior leanings by changing their minds, [FN81] and that changing one's mind does not seem to have notable influences on the resulting decisions.

* * *

The results showed that a majority of participants followed their initial leanings, but some did switch their verdicts. [FN84] Not surprisingly, participants who did not switch their verdicts displayed coherence shifts that resembled those observed in the previous delay studies--that is, a significant shift from the pretest to the interim judgments, and then a further, more moderate shift at the decision phase. [FN85] Of particular interest, though, were those participants who switched their *540 verdicts. Switchers displayed a unique pattern; their ratings dovetailed with their new verdict preferences. Their ratings first shifted from pretest levels to a state of coherence with their initial leanings, but as their preferred verdicts changed, so did their ratings of the evidence. [FN86] The ratings of the evidence, then, shifted twice--in opposite directions--from an initial state of

complexity toward coherence with whichever verdict seemed more appealing at that time. Interestingly, switchers were no less confident than those who did not switch.

The findings of this tracking experiment also support the conclusion that coherence shifts occur before participants commit themselves to verdicts. [FN87] Participants showed strong coherence shifts at the interim measurement, despite the unavailability of supposedly important evidence, and despite being urged to withhold the decision.

In all, the experiments showing the effects of indirect influences provide the additional methodological benefit of strengthening the basic finding of coherence shifts. In these experiments, we showed not only that people drift spontaneously toward polarized mental models, but that they can be driven to do so by experimental manipulation. [FN88]

* * *

People tend not to appreciate the incompatibility between their initial and eventual mental models of the task. This finding supports the view that **coherence shifts are governed by automatic cognitive mechanisms that operate under the level of conscious awareness**. Coherence shifts are part of the many important cognitive processes that take place in the background of our conscious arena, without which making sense of the world would be difficult, if at all possible. [FN106] This finding is consistent with a robust body of literature demonstrating that people have a general tendency to perceive objectivity in their reasoning processes, [FN107] and to view the world through a perspective of "**naive realism**." [FN108] The lack of awareness gives the decision-maker a false sense of constancy in his own perception of the case. The ensuing decision is thus experienced as rationally warranted by the inherent values of the variables, rather than by an inflated perception imposed by the cognitive system. The lack of awareness then helps the decision-maker maintain the phenomenological experience of rationality and objectivity.

Coherence shifts, consequently, do not represent conscious, strategic, or deceitful conduct on the part of a decision-maker; rather, they *546 are the natural consequence of the normal mechanisms of cognitive processing.

* * *

Coherence effects are not isolated from noncognitive characteristics of the task. Recently obtained findings strongly support the view that **coherence-based reasoning interacts with motivations. Not only do people's choices comport with their desired goals, but the mental models of the entire task tend strongly to cohere with the respective outcome**. In a separate set of studies we found that coherence effects interact with preexisting attitudes to generate mental models that cohere with those attitudes.

* * *

In a number of experiments, we found that changing one aspect of the case triggered changes throughout the mental models: not only did it alter the verdict distribution, but it

also influenced the ratings of variables that were unrelated to the manipulated variable. Such circuitous and indirect influences inhere in the connectionist nature of cognition. This finding becomes particularly acute in combination with the finding that people have low awareness of the shifts. **Decision-makers are likely to perceive sufficient reason to base a decision on a particular set of variables, unaware that their perception of those variables is influenced by an extraneous--possibly illegitimate--variable.**

* * *

The experimental evidence illustrates that coherence can be transitory. **Coherence shifts were found to decay one week after the task was completed.** At least in some conditions, then, coherence can be understood as an ad hoc state that is constructed only to solve the task at hand. Dissipation of coherence enables decision-makers to approach new tasks unencumbered by previous coherence shifts. In subsequent tasks, different, perhaps opposite, pressures may activate the same variables, causing them to take on different values.

* * *

From a prescriptive point of view, an important experimental finding is that coherence shifts can be reduced by means of a straightforward moderating technique. [FN111] A moderating instruction to "**consider the opposite**" **reduced coherence shifts by about one-half**, so that participants' reasons for deciding as they did were closer to their initial, pre-coherence perception of the case. The fact that the technique is simple and can be self-administered makes it a potentially powerful and expedient means of tempering the effects of coherence-based reasoning.

Undoubtedly, coherence effects have their limits. While the observed coherence shifts are substantial and highly significant from a statistical standpoint, they do not reach extreme values. [FN112] **Coherence shifts are mediated by task-specific factors, most notably, by the degree of ambiguity inherent in the task. Ambiguous variables are more amenable to change; [FN113] unambiguous variables, such as indisputable facts and paramount principles are less likely to shift. [FN114] It is also likely that coherence shifts are mediated by the idiosyncratic characteristics of the decision-maker. [FN115]**

* * *

Coherence shifts skew the mental models and generate *549 an inflated sense of confidence even in close decisions, but it cannot be said that the shifts necessarily result in objectively wrong decisions, nor that they cause cardinal changes in the decision-maker's own perceptions of the case. [FN116] They do, however, cause a substantial increase in the risk of error in certain circumstances.

* * *

According to **the story model**, people make sense of complicated bodies of evidence by constructing narratives, rather than by aggregating measures of the strength of the raw

evidence. Stories are structured around episodes held together by certain types of causal and physical relationships that explain the actors' conduct and mental states. A pervasive type of narrative structure is based on schemas of human action: initiating events cause characters to respond in a variety of ways and to form goals that then motivate subsequent actions. The acceptance of a story is determined by its global strength based on **four certainty principles**--coverage, coherence, uniqueness, and goodness-of-fit. Of the stories constructed from the evidence presented at trial, a juror adopts as the best explanation for the events the one that best meets these certainty principles. [FN167]

* * *

Coherence research fits with the story model. Both approaches posit that evidentiary conclusions are not derived from mathematical computations of the independent values of raw evidence. Inferences, rather, are based on constructed representations of coherence, and it is these constructed representations that ultimately determine the verdicts. Coherence research overcomes an important limitation of the story model. As indicated by its name, the story model proposes that the representation of evidence bears a distinct narrative structure. Pennington and Hastie's results showed that participants' stories were centered on a narrative that captured the intentional and causal scheme of the defendant's behavior--intentions, psychological states, *564 goals, and motivations. [FN176] But, in a range of evidentiary situations, the material facts "may concern a situation or state of affairs rather than a sequence of events." [FN177] A narrative of human intentionality is of little relevance to negligence cases where the contested issue is a failure in appreciating a risk, to identification cases, or to cases in which the material facts concern the physical conduct of the defendant, the quality of a product, the extent of damages, and the like. [FN178]

* * *

Complex decisions are solved rather by nuanced cognitive processes that progress bidirectionally between premises and facts on the one hand, and conclusions on the other. Ultimately, people make decisions through what appears to be a *584 rational-like choice in which a strong alternative is straightforwardly preferred over its rival. However, this dominance is the product of an unconscious cognitive process that reconstructs and transforms difficult and complex decisions into easy ones by amplifying one alternative and deflating the other. This transformation of the mental model of the decision lies at the heart of the decision-making process.

V. Knowledge Structures and Schemas.

This is an excerpt of an article on how the mind subconsciously uses knowledge structures and schemas when confronted with making a decision or judgment. Clearly the vast majority of Americans are not consciously prejudiced, and are offended when they encounter prejudice. At a subconscious level the problem is far more complex and intractable. Efforts to de-bias can also backfire – for example, studies have shown that instructing a jury to avoid racial prejudice actually increases biased results. We commonly see knowledge structures and schemas at work among firefighters debating issues of skill and competence based on which category they are in (FS, BLM, NPS, CDF, etc.) or (Hotshot Sup., Line Officer, IC, militia, etc.). Knowledge structures and schemas will also be at work in judging decisions in hindsight.

CATEGORICALLY BIASED: THE INFLUENCE OF KNOWLEDGE STRUCTURES ON LAW AND LEGAL THEORY, 77 S.Cal.L.R. 1103 (2004), Ronald Chen and Jon Hanson. Excerpts:

Page 1110:

This Article is the beginning of our attempt to understand better not only those who respond to the laws and those who make the laws, but also those who devise the theories on which those laws are based. **Knowledge** *1111 **structures**, as we shall see, influence virtually every feature of our cognitive processes and every thought we have--from the trivial and humorous to the profound and horrific. [FN26]

Page 1128:

Schemas do much more than simply constrain or bias our thinking in humorous or harmful ways. The human system of processing information is, in many cases, an efficient means of understanding our worlds and ourselves. Classification of people, objects, and other stimuli is often both indispensable and ineluctable. Like Polinsky's economic schema, our day-to-day schemas can be very useful in providing us a workable procedure for solving complex problems.

Still, as social psychologists have demonstrated, "virtually any of the properties of schematic functioning that are useful under some circumstances will be liabilities under others." [FN103] The categories and schemas that operate, usually automatically, influence all aspects of information processing--from what information we focus on, to how we encode that information, to which features of that information we later retrieve and remember, and to how we draw inferences and solve problems based on that

information. Given the unconscious and biasing influence of our schemas, combined with the fact that our schemas themselves will often reflect our unconscious motives, we should be mindful, even distrustful, of our schemas and the conclusions that they generate.

These effects, the processes that drive them, and the biases they engender are the primary subject of this Article. A central goal is to offer a broad understanding of how individuals utilize **categories, schemas, and scripts** to help make sense of their worlds. In doing so, we serve another main objective: to provide a comprehensive (yet manageable) synthesis of a vast body of social psychology literature. [FN104] This overview should transform how we make sense of our laws and legal-theoretic world.

Page 1131:

Categories and schemas are critical building blocks of the human cognitive process. [FN109] They allow humans to process or at least cope with the infinite amount of information in their environs. Categories and schemas influence every feature of human cognition, affecting not only what information receives attention, but also how that information is categorized, what inferences are drawn from it, and what is or is not remembered. [FN110]

Page 1132:

Here, categorization and the use of categories will refer only to the classification of elements, experiences, instances, or arguments into groups. Once an element is categorized, an individual can apply a schema to it **in order to draw inferences and derive predictions**. [FN113] Where categorization focuses on the classification of instances, schemas represent knowledge about the categories [FN114] and focus on the "application of organized generic prior knowledge to the understanding of new information." [FN115] Put slightly differently, where categories are the *1133 classifications into which we place the information we encounter, schemas refer to the embodiment of "our knowledge about the category and its members." [FN116]

Page 1139:

As we have been asserting, schemas have powerful effects. They help us organize, find meaning in, and make predictions about our environs *1140 including the actions and behaviors of others. [FN150] In doing so, schemas "influence the encoding of new information, memory for old information, and inferences where information is missing."

[FN151] Indeed, as Hazel Markus and Robert Zajonc explain, the influence of schemas on our systems for processing information is ubiquitous:

In general, information processing may be seen as consisting of schema formation or activation, of the integration of input with these schemas, and of the updating or revision of these schemas to accommodate new input. Accordingly, it should be [and is] possible to observe the influence of schemas at every stage of information processing (e.g., **encoding, storage, retrieval, inference**), at all levels of processing (conscious, preconscious), and on all parameters of the response (speed, confidence, accuracy, etc.).

[FN152] In short, schemas interact with our information processing at every step, at all levels, and on every parameter.

Page 1159:

In light of the significant role that schemas play in attention and categorization, **their dangers become more evident**. William von Hippel described the good and the bad of schemas this way:

Schema[s] clearly serve an important conceptual and organizational role in information processing, and they provide insight into what is likely to occur and what has probably occurred. For these reasons, they seem to allow perceivers to process more information with less effort. Yet herein lies their fault. . . . [Very often] schema[s] do not really allow more information processing with less effort. Rather, schema[s] simply allow the perceiver to quickly encode the gist of an event, thereby causing the perceiver not to attend to the available perceptual information. So the gist is stored, but the original perceptual event is lost. In such a fashion, the momentary facilitation in understanding that schema[s] bring about can *1160 be outweighed by the long-term loss to memory of the complex, perceptual world. [FN224] More tersely, Kunda explains that "the seemingly irrelevant details that [schemas] lead us to ignore may actually be important." [FN225]

Such dangers--created by the fact that our categories and schemas may bias our understanding of the world in numerous ways--are one of the key concerns of this Article.

VI. Dispositionist Thinking and Judging.

Dispositionist thinking coupled with other cognitive processes discussed in these articles appears to play a strong role in social and political processes as well as ascribing **causation, responsibility and blame**. There is more slavery today than ever before, just not openly sponsored by governments. Our dispositionism lets us believe these are just bad people doing bad things, comfortable with the fact that we are good people doing good things, while ignoring the root causes, and leaving the problem to law enforcement, which will never be adequate. To the extent we can categorize the victims, the **just world heuristic** helps us sleep at night, knowing that people get what they deserve. Here is an excerpt from an article on the subject.

THE SITUATION: AN INTRODUCTION TO THE SITUATIONAL CHARACTER, CRITICAL REALISM, POWER ECONOMICS, AND DEEP CAPTURE, 152
U.Pa.L.Rev. 129 (2003), Jon Hanson;David Yosifon

Page 312:

We all see dispositionally, and this dispositionism had long made people blind to the situation of slavery, and to the situational influence on slaves.

* * *

Page 313:

Yet this common sense dispositionist presumption about Africans had not always been the common sense. In fact, the dispositionism emerged in America precisely because it was needed, as indicated above, [FN654] to reconcile principles with practices. [FN655] And few people, we suspect, felt the dissonance and the need to reconcile more intensely than did Thomas Jefferson [FN656]--civil rights theorist, father of the American Revolution, author of the Declaration of Independence, President of the United States, and Virginian slaveholder. [FN657] Indeed, *313 Jefferson presumed to analyze the inherent nature of slaves' inferiority through a neutral and scientific approach. In an extended argument in his Notes on the State of Virginia, Jefferson enumerated in remarkably dispositionist terms the evidence that he found to justify the maintenance of slavery. [FN658]

* * *

It is important to note that Jefferson does not entirely disregard the influence of the situational effects of slavery. In fact, he purports to examine and control for such evidence.

* * *

Jefferson continues his proof by comparing American slaves to Roman slaves,

* * *

Thomas Jefferson, who announced to the world that "all men are created equal," [FN672] who founded the University of Virginia and carried the Enlightenment's torch through his lifelong emphasis on the importance of education, who believed he was an objective natural historian and scientist, still could not see the situation in the case of slavery. Dispositionism runs deep, and we can know with fair confidence that, were we living in Virginia at the time that Jefferson wrote, our position likely would have been even less situationally sensitive than his was. [FN673]

Excerpts from another article which outlines the importance of taking into account **internal (in the mind) and external situation** rather than merely **disposition - motives, preferences, choices and will**:

THE SITUATIONAL CHARACTER: A CRITICAL REALIST PERSPECTIVE ON THE HUMAN ANIMAL, 93 Geo.L.J. 1 (2004), Jon Hanson and David Yosifon

Page 6:

In The Situation, we highlighted several foundational studies illustrating both the strength of dispositionism and the extent to which our dispositionism is *7 wrong. [FN7] Our exposition centered on the path-breaking work of Yale psychologist Stanley Milgram, who cracked the dispositionist nut wide open in a dramatic series of experiments in the 1960s.

Milgram arranged an experimental situation in which subjects--compensated volunteers--were led to believe that they were participating in a study on memory. [FN8] In the basic design of the experiment, the subject first met another "subject"--who was actually one of Milgram's confederates--and the two drew straws to determine what part in the experiment they would take. The confederate was inevitably assigned the role of the "student," and promptly strapped into a chair with electrodes affixed to his body. The true subject was (seemingly randomly) assigned the role of the "teacher," and was instructed to administer an electric shock--by flipping a switch on a shock box--each time the "student" incorrectly answered a question posed by the experimenter. The "teacher" was led to believe that the shocks would be painful, and that their intensity would increase in fifteen-volt increments with each wrong answer-- from 15 volts all the way up to 450 volts, which was labeled "Danger! XXX!" on the shock box. [FN9]

Before the experiment was undertaken, Milgram described the protocol to lay people and psychologists and then asked both groups to estimate how far most "teachers" would

go with the shocking before refusing to continue. Those surveyed believed, as might the reader, that most would refuse early on. College students predicted that just 1 in 100 subjects would shock all the way to 450 volts, and professional psychologists predicted that only 1 in 1000 -- "the sadists"--would go that far. [FN10]

But we humans do not--and this is a central theme of critical realism-- understand ourselves well. [FN11] In the basic design of the experiment, 100% of the subjects continued with the shocking at least to 350 volts, and 65% went all the way to 450 volts ("Danger! XXX!"). [FN12]

* * *

In our dispositionism we *8 fail to appreciate the powerful, but unseen, situational influences over the subjects' behavior in Milgram's lab. Milgram performed his study in numerous settings on hundreds of subjects who were, in all respects, typical people. They were not sadists; they were simply, like all of us, situational characters who were subject to unappreciated but profound influences in the situation. Indeed, Milgram was able to alter his subjects' behavior by altering the situational influences. By varying the proximity of the "teacher" to the "student," or the "teacher" to the "experimenter," or by altering the prestige of the experimental setting (by moving the location of the experiment from Yale to Bridgeport, Connecticut), Milgram discovered he could increase or decrease the level of shocking that subjects would be willing to administer. [FN13]

Experiments like Milgram's, and there are literally hundreds of others, [FN14] have demonstrated that we place far too much emphasis on disposition--on an individual's perceived motivations, preferences, choices, and will--in accounting for her conduct. In so doing we fail to appreciate the very potent, though often unnoticed, influences of situation.

Page 8:

At almost every turn, dispositionism defines or biases what we see and how we construe what we see: behavior is strongly presumed to reflect freely willed, preference-satisfying individual choice. But as dispositionists, we are both consistent and consistently wrong.

Page 20:

Our purpose in reviewing a parade of dispositionism is to raise the stakes of what probably will come as a surprise: the dominant attributional schema informing our self-conceptions, our lay and social theories, and our laws, is, in important ways and to significant degrees, *21 wrong.

Page 21:

The stakes of dispositionism are huge--and they are, in our view, stakes we are losing and will continue to lose if we persist in ignoring the extent of our self-deception. Our sense of ourselves is wrong not just in the details or on average, or in some bounded way.

[FN64] Rather, it is monumentally wrong, or so suggests the best available social science.

Page 32:

5. The Situation of Our Interiors

"The more we examine the mechanism of thought, the more we shall see that the automatic, unconscious action of the mind enters largely into all its processes. Our definite ideas are stepping-stones; how we get from one to the other, we do not know: something carries us; we do not take the step." ~ Oliver Wendell Holmes, Sr. [FN103]

Our concern here is less with what so many of us, laypeople and theorists alike, find self-evident and more with what we do not. As was true exteriorly, it is the unavailable or less salient features of our interiors that often wield the most influence over us. It is, in the words of the elder Holmes, something "we do not know" that "carries us." Even Descartes' terse proposition about the unity of thinking and being is flawed in an illustrative way. The Cartesian insight imagines thinking as that cognitive process that we are aware of and that is independent from all else, including even the body in which that thinking occurs. That is the flaw that neuroscientist Antonio Damasio has dubbed "Descartes' Error" in his book of the same title. [FN104] Human cognitive processing is not simply the stuff of conscious thinking. Our thinking is situational, and is influenced outside of our awareness and control by everything from our bodies to our social environments: "Consciousness, the feature at the center of what makes humans unique, is the culprit [of our dispositionism], for it permits a view of who we are and what we are capable of that is independent of the knowledge and feelings that may drive beliefs, attitudes, and behavior." [FN105] But, *33 as Damasio states:

[T]he comprehensive understanding of the human mind requires an organismic perspective; that not only must the mind move from a nonphysical cogitum to the realm of biological tissue, but it must also be related to a whole organism possessed of integrated body proper and brain and fully interactive with a physical and social environment. [FN106]

Thinking may imply being, but our thinking is not what we experience it to be. The problem is, again, one of perceiving disposition and overlooking situation. That partial vision is, as we've argued, a key feature of being human and may be part of what Augustine was suggesting when he wrote: "Fallor ergo sum" (I am deceived, therefore I

am) [FN107] or, in any event, it is what we mean when we write "I think dispositionally, therefore I am deceived."

Our point in this discussion has been that there is more to the "**situation**" than what occurs outside of the human actor. Just as there is an unseen exterior situation that gives rise to the exterior fundamental attribution error, there is an interior situation--undetected but incredibly powerful--that gives rise to the interior fundamental attribution error. Our experiences are wrapped in two layers of situational influences. To better understand what moves us requires understanding them both; and to better understand the power of either requires understanding its relationship with the other.

Page 33:

Situation, as we mean it, includes anything that influences our attitudes, memories, cognitions, emotions, behaviors, and the like in ways that we tend not fully to appreciate or control. The situation, then, is part of the human predicament: it is in and around us, it is influencing us, and it is doing so in ways that we do not appreciate, do not understand, do not have a place for in our theories, and do not *34 individually or dispositionally control.

Page 39:

Most of the best-known choice biases occur within a precise time period and largely without relation to temporal considerations. In this subsection, we briefly consider three of them: **heuristics, endowment effects, and framing effects.**

i. **Heuristics**

People, for good reason, are cognitively frugal. Some say, as we noted earlier, that humans are cognitive misers. [FN127] Because cognitive capacity is scarce, corner cutting is not just useful, it is necessary. People engaging in inferential tasks "virtually always" rely on judgmental strategies--termed heuristics--that help them reduce complex problems into manageable ones. [FN128] Such strategies "probably produce vastly more correct or partially correct inferences than erroneous ones, and they do so with great speed and little effort." [FN129] Still, there are significant problems with such mental rules of thumb. First, "[a]lthough these heuristics often lead to effective reasoning, they also *40 lead to systematic biases and errors." [FN130] Second, we normally do not realize we have these biases, leaving us undefended against their harmful effects. [FN131] And, third, for the same reasons, our cognitive shortcuts leave us susceptible to exterior situational manipulation. [FN132]

Availability, for example, "is a heuristic that is used to evaluate the frequency or likelihood of an event on the basis of how quickly instances or associations come to mind." [FN133] **This shortcut may not mislead us, but it often does.** "There are many factors uncorrelated with frequency ... [that] can influence an event's immediate perceptual salience, the vividness or completeness with which it is recalled, or the ease with which it is imagined." [FN134]

Page 42:

iii. **Framing Effects**

And more generally, the way in which an issue is presented to us significantly influences how we perceive it. Psychologists have dubbed this the framing effect. Even minor alterations in the presentation of options that are substantively identical seem to influence our perceptions and attitudes regarding the options. [FN147] Kahneman and Tversky, the cognitive psychologists who identified and named the phenomenon, describe it as "both pervasive and robust." It is "as common among sophisticated respondents as among naïve ones In their stubborn appeal, framing effects resemble perceptual illusions more than computational *43 errors." [FN148] As another decision theorist has explained, the power of the phenomenon results from our "tendency to accept problem formulations as they are given ... [to] remain, so to speak, mental prisoners of the frame provided to us by the experimentalist, or by the 'expert,' or by a certain situation." [FN149] More succinctly, **"framing" is one identified piece of the manipulable situation.**

Page 43:

iv. **Summary**

There is something familiar about the source of these well-documented heuristics. They are different ways of talking about the same basic phenomenon. They are all just manifestations in different contexts of what we have been describing throughout this Article and its companion: **we see the vivid and we miss the pallid. Small pieces of the picture tend to dominate our assessment of the whole image. We readily see what is available, anchored, and presently normal, all according to how it had been framed, and we find it difficult to see much else.** As Ziva Kunda puts it, these choice biases "may be viewed as a kind of mental contamination Even though we do not want our judgments to be contaminated in this manner, it is very difficult to eliminate the contamination." [FN150]

That difficulty, we believe, is largely the consequence of our interior situations. We do not see these biases at work. We do not see, in other words, that we do not see. This inability to see our interior situation is the source of the **interior fundamental attribution error**. And our interior myopia helps give rise to the **exterior fundamental attribution error**. People's behavior, like news of a homicide, is available. Their situation, like statistics on stomach cancer, generally is not. We are dispositionists because of what comes to mind most easily--and, once in our minds, anchors our attributions. [FN151] **Interiorly and exteriorly, we humans miss the situational forest for the dispositional trees.**

In part because our exterior dispositionism is causally related to our interior dispositionism, our interior situation can be easily exploited through the manipulation of our exterior situation. Each study demonstrating a choice bias is itself indirect proof of that fact. **Scientists were able to manipulate cognitions by manipulating the exterior situation. And the interior situation leaves open and unguarded the gates through which the Trojan horse of exterior situation freely enters, not as a trophy of our dispositional triumph, but as a hidden means of influencing our behavior.** [FN152]

Page 51 re **schemas**:

Thus, the benefit of such knowledge structures is that they provide us, often automatically, with a way of understanding our world so that we can operate reasonably well within it, at the same time that they free up cognitive capacity to cope with other pressing issues. [FN198] Similarly, the concepts, insofar as they are shared, allow us to communicate efficiently with those around us. [FN199] In short, **without the knowledge structures "[w]e would be unable to extract meaning from the huge amount of information that surrounds us, unable to generalize from one experience to another, and unable to communicate effectively with each other."** [FN200]

But those benefits are not without costs: "A price is paid for this mental economy." [FN201]

Page 52 re **schemas**:

Some beliefs, theories, and schemas are relatively poor and inaccurate representations of the external world. Furthermore, objects and events are not always labeled accurately and sometimes are processed through **entirely inappropriate knowledge structures.** [FN203] "Without these structures stored in memory, life would be a buzzing confusion, **but the clarity they offer is helpful only in proportion to their validity and to the accuracy with which they are applied to the data at hand.**"

[FN204] And when that is not the case, they can be misleading and harmful. Indeed, that is the main point that this Article is making about the dominant self-schema: dispositionism. We are not who our knowledge structures tell us we are.

Indeed, the best known--indeed, for many, the only known--example of the operation of interior schemas is the **group-based stereotype**. [FN206] "[S]tereotypes *53 are typically viewed as cognitive structures that contain our knowledge, beliefs, and expectations about a social group" [FN207] They are described as "culturally shared, indeed hackneyed, notions" [FN208] about those groups. Here is where the human tendency to rely on knowledge structures has come to be understood as an inherently pernicious process, instead of as a necessary and often helpful one. [FN209] Stereotypes, in other words, are the stereotype of what we are calling "knowledge structures."

Page 54:

The dynamics of our stereotypical thinking are driven by the interaction of our interior and exterior situation. **Stereotypes that are prominent in our culture meet with a cognitive situation within us that is poised to confirm them. We tend to test a hypothesis by asking questions about whether there is evidence to confirm it and forgetting to ask whether there is evidence that would disconfirm it.** That unbalanced positive-test strategy and the resultant confirmatory bias [FN216] occurs, not only for hypotheses that we generate ourselves, but also for any hypotheses or schemas that occupy our interiors. Thus our minds automatically search for, and disproportionately emphasize, evidence in the world that will tend to confirm our racial or sexual stereotypes (be they negative or positive, conscious or implicit). [FN217]

The tendency is heightened by the fact that as a consequence of this bias in our mental processing, social psychologists have suggested that encouraging reflection about stereotypes, without more, may perversely result in the search and location of further confirmatory evidence for the stereotype under review. [FN218] **More attention, in other words, may not counteract the confirmation bias; it may simply give it more to work with.** [FN219]

Page 63:

i. Causation, Responsibility, and Blame

There is a second "fundamental process underlying much of social perception and action" that has long been understood by social psychologists, but not by the rest of us: namely, the process of **making causal attributions**. [FN266] People are eager to understand the causes of salient outcomes and actions in their environs and have fairly

deeply ingrained schemas (using the term broadly [FN267]) for identifying those causes. Fritz Heider introduced the concept of attributions in the middle of the last century, and since then probably no feature of cognitive process has received more attention from social and cognitive psychologists. [FN268]

First, social psychologists went on to discover a number of systematic biases in people's attributional processes--including the **actor-observer bias**, [FN273] the **false consensus effect**, [FN274] the **self-centered bias**, [FN275] **attributional schemas**, [FN276] *64 and, most important, the **fundamental attribution error**. [FN277] There is little need, in light of our discussion above (and below), to further describe those sorts of biases or their sources. They are all manifestations of the more general phenomena that we are highlighting in this Article: our perceptions and construals are skewed by what we tend to see, which tends to be only a small piece of the whole picture. For example, instead of relying on covariation principles of the sort that Kelley imagined, people too readily rely more on temporal and spatial contiguity and salience in making causal attributions. [FN278]

For those sorts of reasons, Kelley's preliminary hypothesis is now understood to have significant shortcomings, at least as a descriptive model. This leads to the second significant development in attribution theory. Numerous scholars have worked to develop more successful descriptive models of people's **attributional processes**. [FN279] For example, Bernard Weiner, with some of his colleagues, has shown that people tend to focus on three (or four) **causal dimensions**: locus, stability, control, (and, in some models, intent). [FN280] In his early work, which focused on how people made attributions in terms of these categories with respect to achievement efforts, he focused on three dimensions: whether the cause was stable or temporary, whether the locus of the cause was internal or external to the individual, and whether the person had control over the cause. [FN281]

A little introspection--or a careful read through the newspaper headlines-- should confirm that we humans are indeed focused on those dimensions when examining causation for all sorts of surprising outcomes that we encounter. Furthermore, as this line of research shows, our reactions (affective and behavioral) vary significantly depending on how we perceive a cause along those dimensions. Thus, the destruction caused by a **forest fire** seems different to us when it was caused by a person, rather than a bolt of lightning (locus). Likewise, it matters if the person had control over the outcome (controllability), whether the person has created several such fires in the past (stability), and whether the person was a careless camper or a profiteering arsonist (intent). Weiner's basic attributional model has enjoyed considerable empirical support and has been expanded to apply in numerous settings. [FN282]

And that leads to the third major development in attribution theory since Kelley's initial effort. Social psychologists, including Weiner, have constructed more refined theories to capture not just how people make causal attributions, but also how they assign **responsibility and blame** based on those causal *65 attributions. Kelly Shaver has argued that people tend to assign **responsibility** for harmful outcomes when, roughly, the harm was foreseeable and when the person acted volitionally and without justification. [FN283] And people assign **blame**, a more punitive designation, when the harmful outcome was intended. [FN284] In Shaver's words, "An assignment of blame is ... a particular sort of social explanation. It is the outcome of a process that begins with an event having negative consequences, involves judgments about causality, personal responsibility, and possible mitigation." [FN285] Again, there is considerable evidence to support those attributional theories. [FN286]

Page 65:

That leads to the most recent development in attribution theory. There is significant evidence that **many of our legal institutions reflect people's attributional impulses (and not, for example, a means of promoting efficiency or wealth maximization). Put most simply, just as people want to identify causation, they likewise want to, when attributionally appropriate, assign responsibility and blame.** Moving from causal attributions to attributions of responsibility or blame, the lay scientist turns in her lab coat for a judicial robe.

* * *

Just as the habits of the professional scientist reflect the same urges and biases as the habits of the lay scientist, [FN288] so do the judgments and sentences of the courtroom judge reflect those of the lay judge. And **our legal system appears to reflect and, to a significant degree, satisfy our impulses to establish causation, assign responsibility, and lay blame.** [FN289]

Page 66:

But, if they are not pointed out to us, our attributional processes begin and remain largely automatic and unconscious [FN291]; they are experienced, if at all, as obvious and natural. In that way, our attributions manifest themselves more as conclusions than as a process or analysis that yields a conclusion. **Like thinking, preferring and choosing, our attributional ascriptions appear to us as self-evident and, in a sense, dispositional. We miss much of the situation out of which they emerge.** [FN292]

Page 73:

Social psychologists have given a variety of names to this process--for example, **confirmatory bias, perseverance bias, hypothesis-based filtering, elastic justification, and, more generally, motivated reasoning.** [FN329] Perhaps unsurprisingly (given the topic), researchers have found a great deal of evidence suggesting that such devices are extremely powerful. Richard Nisbett and Lee Ross summarized the literature in 1980 as follows:

When people already have a theory, before encountering any genuinely probative evidence, exposure to such evidence (whether it supports the theory, *74 opposes the theory, or is mixed), will tend to result in more belief in the correctness of the original theory than normative dictates allow.

... When people approach a set of evidence without a theory and then form a theory based on initial evidence, the theory will be resistant to subsequent evidence.... [and]

... When people formulate a theory based on some putatively probative evidence and later discover that the evidence is false, the theory often survives such total discrediting. [FN330]

The influence of those biases, and others, [FN331] makes clear one of the great problems with our schemas: we create them too quickly and maintain them too loyally. And, again, this problem is not limited to the processes of just lay scientists: "The tendency of professional scientists to persist in adhering to theories well past the point at which such adherence can be justified by the evidence has been observed by many." [FN332] We will return to that point briefly below, [FN333] and more thoroughly in subsequent articles. [FN334] For now, **the crux of our point is that all of us are subject to the same biasing process that we just do not see.**

To be sure, we often see others as biased, prejudiced, vested, incoherent, inconsistent, or closed-minded. [FN335] **But those experiences are schematized as dispositional quirks, not as a reflection of their deeper interior situations.** [FN336] **In ourselves, we see what every person is presumed capable of--clarity, objectivity, and open-mindedness.** [FN337] **And we can maintain that self-affirming view--as do those who we feel should not-- in significant part because we do not see the interior situation.** [FN338]

As with the other biases, there's a critical kicker to this analysis: exterior *75 situation, which we began by emphasizing our failure to appreciate, can wield an immense influence over which schemas we adopt, which we reject, and how and when we apply them. And that process is itself guided in part by the operation of interior schemas functioning below the level of our conscious awareness. Furthermore, once our schemas are in place, exterior situation can provide us the evidence and ambiguity we need to sustain them.

Page 75:

No human inference process is without schematic structuring, and none is insulated from schematic distortions. [FN342]

Page 84:

As this discussion helps to demonstrate, professional scientists and lay scientists are bedeviled by the same situation. **Knowledge structures and schemas are all around us, guiding our every, or most every, thought, and simultaneously assisting and distorting what we "know."** The coloring concepts and theories we employ can lead us to focus on irrelevant details in our environment, to overlook the relevant details, and to misunderstand our world. [FN387] As we hope the reader has already recalled (with the aid of the knowledge structure that we are attempting to create), that is precisely the mechanism behind the exterior and interior fundamental attribution errors.

Page 84-85:

Where lay people and economists see "thinking," they vastly overstate its significance and vastly understate the interior situation of our thinking-- that is, our unseen cognitions. Social psychology and related fields make clear that all of our cognitive processes are more or less influenced by **unseen and distorting influences, from heuristics and framing effects on one hand to schematic and attributional processes on the other.** And all of those unseen cognitions and cognitive processes render us more or less **vulnerable to outside manipulation**--indeed, the experiments revealing the cognitive phenomena simultaneously *85 reveal the extent to which they can be tapped through exterior situation.

In short, **this section has shown some of the ways in which, although it is true that we experience ourselves thinking, we do not think the way we think we think. There is more to the situation.** And, as the next section illustrates, we have barely scratched the surface of our interior situations.

*91 It is not just that our minds have a mind of their own (as the previous analysis has indicated), it is also that those inner minds have a motivation--actually, a whole set of motivations--of their own. [FN421]

* * *

four general types of motivations stand out as particularly significant aspects of the situational character's inner life: **(a) the motive to understand; (b) the motive to self-affirm; (c) the motive to simplify; and (d) the motive to cohere.** [FN422] As our review of more specific motives will reveal, motivations can be, and often are, in tension with one another. The motive to understand, for example, is often in tension with the motives to self-affirm and simplify. The motive to cohere, then, pushes us to reconcile our conflicting motivations by altering exteriorly and interiorly our cognitions, attitudes, or behavior.

* * *

Sometimes, though, our self-affirming motives can conflict with our dispositionism--that is, there are instances, such as following a failed or disappointing performance, that we look to situation for causal attributions in order to avoid the disheartening conclusion that that failure reflected our own dispositional shortcomings. [FN461] One experimenter interviewed politicians several months after an election. The winners attributed their performance largely to dispositional factors such as hard work, perseverance, skill, planning, and strategy. The losers, on the other hand, looked to situation, and attributed their performance to the politics of the district, their opponents' name recognition, to their lack of money, and so on. [FN462] **The groups thus revealed the two-sided nature of the self-serving attributions: "a 'self-enhancing bias' (attributing success to internal relative to external causes) and a 'self-protecting bias' (attributing failure to external relative to internal causes)."** [FN463]

Page 101:

Our self-affirming motivations extend beyond our self and group identifications. Just as each of us is motivated to believe that "I am good," and, with respect to our groups, "we are good," so too are we motivated to believe that "our world is good."

In a pioneering project within social psychology, Melvin Lerner demonstrated that people seek to confirm a **"just world hypothesis."** Through a series of experiments, Lerner demonstrated that, "we do not believe that things just happen in our world; there is a pattern to events which conveys not only a sense of orderliness or predictability, but also the compelling experience of appropriateness expressed in the typically implicit judgment, **'Yes, that is the way it should be.'**" [FN479] And, yes, **"people get what they deserve."** [FN480]

* * *

In our effort to maintain our belief in a "just world" hypothesis, we tend to attribute bad outcomes to individual dispositions, because it is generally more comforting to presume that it is the person who was bad, rather than the situation.

Page 107:

We humans seek explanations that are coherent, that we can make sense of, and that can be supported by reasons. [FN508] This **coherence motive** animates the relationship and tradeoff among motives. Because we value coherence, the desire to see it in ourselves dovetails with our motive for self-affirmation. That powerful driving force in our self-conception has figured prominently in social psychological research. Inquiry into "**cognitive dissonance**," for example, has been a mainstay of the field for decades. [FN509] Often it is the case, as we have already suggested, that our motivations are in conflict. Though motivated to view ourselves positively, our behavior can pose problems for that self-conception. There can be many reasons for such dissonance--not least of which is the fact that we are dispositionist situational characters.

While social psychologists debate some of the details of the cognitive dissonance dynamic, [FN510] it is the basic pattern, about which most agree, that best illustrates the dispositional illusion. The dispositionist sees behavior as reflecting little more than thinking, preferring, and willing. From that conception, the dissonance can be eliminated by bringing behavior into line with those interior elements. But it can also be, and commonly is, eliminated, by bringing the latter into line with the former. [FN511] That basic challenge to dispositionism--that our behavior influences our beliefs and attitudes--has been a recurring theme in the cognitive dissonance literature: "Regardless of the exact motivational underpinnings of dissonance, the evidence clearly indicates that attitudinally discrepant actions can result in a reanalysis of the reasons why a person engaged in a certain behavior (or made a certain choice), and cause a person to rethink the merits of an attitude object." [FN512] That subconscious task can be accomplished in a myriad of ways, from changing our opinions outright to more subtly trivializing *108 a belief that is incongruent with our behavior. [FN513]

The important critical realist lesson here is not just that behavior may not reflect a preference or belief. That much we have said before when describing how situation can powerfully influence behavior--disposition notwithstanding. The lesson is also that our preferences, such as they are, are themselves malleable, constructed, and contingent--subject to changes in our behavior and in our situation. The malleability of our attitudes, combined with our sense that attitudes are stable, assists us in our motive for coherence. Page 109:

This desire to see ourselves in a positive light is an important motive behind what Lee Ross and his co-authors have dubbed "**naïve realism**"--the name *110 given to "three related convictions about the relation between [one's] subjective experience and the nature of the phenomena that give rise to that subjective experience." [FN523] First, we

naively believe that we see the world as it really is--through objective, unfiltered lenses. Most of us think that we "get it" for the same reason that the vast majority of us believe that we are above average drivers--it is self-affirming. Second, it almost goes without saying that anyone else who is similarly neutral and intelligent will see the world as we do--that is, accurately. At times, though, we are confronted with views that conflict with our own, an experience that creates a kind of dissonance. That suggests the third tenet of naïve realism. When our interpretation of a particular situation apparently conflicts with someone else's, something has to give. Because we presume that we see things as they are, something must be distorting the perceptions of those who see things otherwise. Social psychological research shows that an extremely common means of relieving that dissonance is to attribute the gap between our outlook and theirs to a lack of objectivity on their part. We assume that there is some dispositional source of their bias--lack of intelligence, or laziness, or corruption. To be sure, we ourselves will admit to having a particular vantage point and set of experiences that inform our judgment and perspective--but as it turns out, our particular background was the path to authentic insight. [FN524]

This is a key source of our biases: we don't believe that we are subject to them (allowing us to trust our own clear vision) and we are extremely quick to see them in others (allowing us to distrust others' obscured vision). [FN525] And so it is that we are quick to see ideological or political bias on the part of our adversaries and gullibility or vanity on the part of even our friends and family when they fail to share our worldview. [FN526]

Page 110:

In sum, we see bias there, but not here--and, in either case, dispositionism. [FN530]

Regarding groups:

page 119:

Social scientists have discovered numerous manifestations of our **motive for group coherence**. That motive, combined with the self-affirming faith we place in our own knowledge structures, contributes, for instance, to a phenomenon that social psychologists have dubbed the "**false consensus**" effect. [FN536]

* * *

This false consensus effect, a tendency to regard one's own views to be commonly held by others, has been demonstrated by more than a hundred empirical studies, over a wide range of topics from particular food preferences to broad political and social policy views. [FN539]

* * *

The group-coherence motive combined with dispositionism can yield some troubling and otherwise perplexing phenomena. Because we are dispositionists, our perception that certain behaviors are common (or uncommon) leads us to perceive that the attitudes, preferences and beliefs of others correspond to that common (or uncommon) behavior. Because we do not ourselves subscribe to those attitudes, we infer from others' behavior that our attitudes are exceptional. That dynamic contributes to the tendencies known in social psychology as "**pluralistic ignorance**" and "**false uniqueness**." Both illustrate the power of the group coherence motive.

* * *

The bad news was that some subjects began to alter their own behavior and beliefs to more closely correspond with their ignorant perceptions. [FN543] Prentice and Miller attributed that troubling example of self-fulfilling group perceptions to a basic motive to avoid dissonance with one's key constituencies. Once again, it is crucial to recognize that the subjects were not faking their new attitudes. These are not rational actors operating within stable preferences, altering their conduct through clever performance while remaining true to their core beliefs. These are situational characters in whom stable preferences and core beliefs are largely an illusion. Our behavior and attitudes and the behavior and perceived attitudes of our groups are all mutually constructed and reconstructed as the situation requires. As each of us looks out at others seeing disposition and missing situation, we infer attitudes that do not exist. But, as these studies reveal, our false perceptions can be tragically powerful as we each seek to bring our own view and behavior into sync with shared misperceptions. Prentice and Miller "believe that group identification is the root cause for many cases of pluralistic ignorance--*115 that individuals often act of a desire to be good group members but interpret others' similarly motivated behavior as reflecting personal beliefs and opinions." [FN544]

The problem of pluralistic ignorance and the motive for group coherence distorts many social norms and would seem to have significant implications for policy and law. The dynamic seems to be at work in creating and reinforcing gender and sex roles. [FN545] It is also behind the pervasive, dysfunctional classroom dynamic in which students do not ask questions because they assume that others' silence suggests they are themselves alone in their ignorance, thus contributing to the silence that encourages others to do the same. [FN546] And so it is that even in most "learning" environments, ignorance begets ignorance.

Regarding free will:

Page 124:

And so we come at last to the conscious will, that inarticulable, yet unmistakable, inner experience of "oomph" that is, in many ways, the crown jewel of our *125 dispositionist self-conception. [FN596] We have been emphasizing throughout this Article that there is a vast interior situation that invisibly influences our thoughts, preferences, and actions, and leaves us vulnerable to exterior situational forces that do the same. What, then, of the conscious will?

Page 125:

* * * None of the researchers in this field of social science have concluded, nor do we, that the "conscious will" is purely and totally an illusion. What is asserted--and what researchers have demonstrated--is that the experience of will is far more widespread than the reality of will. Wegner calls the latter the empirical will [FN599] and argues that our perceived will is often an unreliable and misleading basis for understanding our behavior. The experience of will occurs often without empirical will, and thus creates the illusion of will. Moreover, it contributes to the illusions of choice, preference, and, more generally, dispositionism.

Page 133:

What is now fairly clear is that the dominant lay and legal theories of the person (or "personology") are wrong--not just "too simple," but fundamentally wrong. Social science has clearly demonstrated that we are not who we think we are. It is true that we experience ourselves thinking, preferring, acting, and willing, but those comforting perceptions are often illusory, and they obscure the far more significant influence of our unseen interior situation.

Page 177:

We hold onto our dispositionist views tenaciously, even well beyond the point where our claims about the truth of the matter have been abandoned. We are dispositionists, not because humans are dispositional, but because there is too much that has already been built upon the dispositionist foundation to begin building elsewhere, and because dispositionism helps us to sleep.

As Nobel Laureate Isaac Bashevis Singer elegantly expressed the dilemma: "Of course I believe in free will. I have no choice." [FN820] And so it is that the illusion of our freedom, our dispositionism, our wills, are forced upon us by fears and forces in our situation that we do not see, and would prefer not to. We have no choice but to pretend that we have a choice.

Page 178:

Taken together, the social psychological findings we have reviewed here should shake our self-conception at its foundation. What has been revealed in the studies we reviewed cannot be considered marginal or anomalous. Situation, it seems, moves us far more than we suspect in our slumbering, blissful dispositionism. That conclusion is hard to take, hard even to get our mind around, because of this very dispositionism, which sees us as responsible for our situations and not the other way around.

Page 179:

There is a tragic irony in our predicament. By blinding ourselves to the very forces that impinge upon our **freedom**, we are surrendering to them. To be serious about **liberty** requires that we not unwittingly turn over the situational strings to whoever has the means and ends to manipulate them. Indeed, our greatest dispositional act may be to acknowledge that we are situational characters and to choose to understand and gain some voice and control over the situation that largely controls us. In that very important sense, **we do have a choice**.

VII. Interpersonal and Intergroup Conflict

The following article sheds more light on interpersonal and intergroup conflict grounded in cognitive biases and dispositionist thinking. Among the contributing causes are **Self Serving Attributions, Self Interest bias, Reactive Devaluation of Proposals from Counterparts, Fundamental Attribution Error, Positive Halo Effect, Perception of Hostile Media Effect against Group or Cause, Biased Assimilation of New Information to Preexisting Beliefs, Cognitive Dissonance, Belief Perseverance, Attitude Polarization, False Polarization Effect, False Consensus Effect, Illusion of Personal Objectivity, Overconfidence in Social Prediction, Rationalization, the Planning fallacy, Nonconscious Priming and Correspondence Bias.** The extent to which we see bias in other groups and not in our own is startling, as the testing among groups in this article demonstrates. I have not set forth the statistics in this paper. I discussed with Professor Pronin the extent to which this kind of knowledge was being implemented in society, government and politics, and did my own research on our major Departments, International Organizations and Non-Government Organizations. My conclusion is that we are not putting such knowledge to good use. Rather, it seems we are employing the same old agendas and strategies as we have been for thousands of years.

THEORETICAL NOTE

Objectivity in the Eye of the Beholder: Divergent Perceptions of Bias in Self Versus Others,

Emily Pronin, Princeton University; Thomas Gilovich, Cornell University; Lee Ross, Stanford University; *Psychological Review*, Copyright 2004 by the American Psychological Association, 2004, Vol. 111, No. 3, 781–799. The Summary:

“Important asymmetries between self-perception and social perception arise from the simple fact that other people’s actions, judgments, and priorities sometimes differ from one’s own. This leads people not only to make more dispositional inferences about others than about themselves (E. E. Jones & R. E. Nisbett, 1972) but also to see others as more susceptible to a host of cognitive and motivational biases. Although this **blind spot** regarding one’s own biases may serve familiar self-enhancement motives, it is also a product of the phenomenological stance of **naive realism**. It is exacerbated, furthermore, by people’s tendency to attach greater credence to their own introspections about potential influences on judgment and behavior than they attach to similar introspections by others. The authors review evidence, new and old, of this asymmetry and its underlying causes and discuss its relation to other psychological phenomena and to **interpersonal and intergroup conflict.**”

Page 794:

“Our account of the asymmetry in perceived bias is best appreciated when considered within the broader framework of naive realism. The essential component of naive realism—namely, the (false) sense that one sees the world as it is and not as it is filtered through one’s expectations, needs, or motives, or “constructed” by one’s sensory and cognitive apparatus—is presented in Figure 6. Also presented there are the two components of naive realism that follow immediately from this core conviction: the expectation that “objective and reasonable others” will share one’s perceptions and judgments, and the inference that those who do not share one’s perceptions and judgments are therefore either uninformed, biased, or under the influence of idiosyncratic dispositions. Finally, Figure 6 presents a number of more specific attributional and information-processing phenomena that stem from these three basic components of naive realism, some of which we shall enlarge upon briefly here. When others see things differently, when confronted by an individual whose responses differ from one’s own, the **naive realist faces an attributional dilemma**: Why does this person see the world so differently? Sometimes this dilemma is resolved in the fashion emphasized by Jones and Nisbett (1972): by concluding that the other person possesses some telling disposition (or set of dispositions) that is dictating his or her reactions. This inference is particularly likely when the discrepancy involves not a differing viewpoint or interpretation but a behavior that differs from the way one would behave (or anticipates one would behave). The tendency to resolve this attributional dilemma by drawing a dispositional inference is, in turn, related to the **correspondence bias** (Jones, 1990) or **fundamental attribution error** (Ross, 1977). Often, this error results from the incorrect and insufficiently examined assumption that the person who behaves differently is in fact responding to the same situation one has in mind oneself. By assuming that the other person is responding differently to the same “**object of judgment**” as oneself (Asch, 1952), one fails to appreciate the true situational constraints governing the actor’s behavior and thus runs the risk of drawing an unwarranted dispositional inference. As Figure 6 makes clear, the attributional dilemma set in motion by responses discrepant from one’s own is often resolved in other ways. Most charitably, perhaps, people may assume that those others are misinformed or have not had sufficient contact with the pertinent information. This motivates attempts to “**set the other person straight**,” accompanied by the expectation that such efforts at persuasion will prove easy and should proceed smoothly to a successful conclusion. When that expectation is not borne out, less benign attributions result, including the attribution of bias that we have emphasized throughout this article.”

Page 796:

“The convictions of naive realism can make parties feel that the other side is irrational or too biased to be reasoned with (rather than merely subject to the same cognitive and motivational biases that afflict all human beings—including oneself and one’s ideological and political allies). Moreover, when the parties do air their grievances, they may conclude that the other side is being “**strategic**” and doesn’t really believe what it is saying. Or perhaps worse, the conclusion reached may be that the other side really does believe what it is saying and that a rational, interest-based negotiation will thus prove fruitless, and that therefore only the use of force can win one’s own side the just outcome to which it is entitled. Of course, when force is applied, the cycle of aggression and retaliation is apt to be self-perpetuating, as both sides see the other as the instigator and their own side as acting in self-defense or trying to teach the other side a lesson.”

Page 797:

“The evidence is all too plain that human inferential shortcomings—including **overconfident prediction** and **biased assimilation** of the lessons of history, compounded by people’s unwillingness to consider the possibility that they are just as susceptible to those biases as those they revile—are continually and ubiquitously making their influence felt. At the very least, these shortcomings in judgment and insight serve to exacerbate and perpetuate the historical and economic roots of the conflicts that are all-too-present elements of the human condition.”

VIII. Cultural Cognition.

Some scholars have used information described above about the decision making process, to construct algorithmic models testing the ability of populations or groups to change their minds in light of their own cultural world views and situations. They discuss seemingly intractable issues such as the debates over gun control, abortion and the death penalty. Others have applied this body of knowledge to address terrorism. In one study, opposing sides on the Middle East crisis were tricked into accepting the settlement proposed by the other side, as being the best solution, simply by being told (erroneously) that the proposal had been made by their own leadership.

The following article tests whether a population can change strongly held beliefs from a “false” belief to a “true” belief simply based on empirical evidence, concluding it is very difficult. The article applies algorithmic models based on social and psychological science, and concludes that a population can change its mind if what they call their “**Breakthrough Politics Model**” is employed.

That agency action is supported by a compelling factual basis is often insufficient to achieve consensus when cultural values among groups are at stake – grazing, mining, environmental, Native American, etc. This article provides some lessons in solving this problem.

MODELING FACTS, CULTURE, AND COGNITION IN THE GUN DEBATE, Donald Braman (Yale Law School), Dan M. Kahan (Yale Law School) and James Grimmelmann (U.S. Court of Appeals for the Third Circuit); Social Justice Research, Vol. 18, No. 3, September 2005. A few Excerpts:

Page 285:

“Our argument turns on a particular account of how culture and empirical information interact in the formation and transmission of belief. We will fill out the details of that account—and the extensive research in social psychology on which it rests—by developing a series of **models that simulate the formation and transmission of belief**. Section 2 will present the “**Factual Enlightenment Model**,” which shows how persuasive empirical proof can indeed generate societal consensus on a disputed issue. Section 3 will present the “**Cultural Cognition Model**,” which shows how various social and psychological mechanisms can generate beliefs that are uniform within and polarized across distinct cultural orientations. Section 4 develops a model—“**Truth vs. Culture**”—that shows that cultural cognition constrains factual enlightenment when these two dynamics of belief-formation and transmission are pitted against one another. And

finally, in section 4, we develop a “**Breakthrough Politics Model**,” which shows how persuasive empirical proof can dispel culturally influenced states of false belief once policy options are invested with social meanings that make them compatible with diverse cultural orientations.

Page 292 (footnote omitted):

“The basic idea behind the Truth vs. Culture Model is that the same psychological and social processes that induce individuals to form factual beliefs consistent with their cultural orientation will also prevent them from changing their beliefs in the face of contrary empirical data. **Cognitive-dissonance avoidance** will steel individuals to resist empirical data that either threatens practices they revere or bolsters ones they despise, particularly when accepting such data would force them to disagree with individuals they respect. The cultural judgments embedded in affect will speak more authoritatively than contrary data as individuals gauge what practices are dangerous and which not. And the culturally partisan foundation of trust will make them dismiss contrary data as unreliable if they perceive that it originates from persons who don’t harbor their own cultural commitments.

“This picture is borne out by additional well-established psychological and social mechanisms. One constraint on the disposition of individuals to accept empirical evidence that contradicts their culturally conditioned beliefs is the phenomenon of **biased assimilation** (Lord et al., 1979). Unlike rational **Bayesian** information-processors, individuals don’t update their prior beliefs based on new evidence; instead they evaluate new evidence based on its conformity to their priors, dismissing as unpersuasive evidence that contradicts their existing beliefs. This feature of human decision-making is extraordinarily pervasive and robust; it affects not only ordinary citizens—who presumably are not in a position to evaluate complicated forms of empirical data on their own—but also trained social scientists who clearly are (Kohler, 1993).”

Page 293:

“A second mechanism that inhibits revision of culturally grounded factual belief is **coherence-based reasoning** (Holyoak and Simon, 1999; Simon, 2003). If after assessing a conflicting body of evidence a decision-maker finds one conclusion even slightly more persuasive than another, she will then reevaluate the body of evidence in a biased fashion, revising upward her perception of the persuasiveness of evidence that supports the favored conclusion and downgrading the persuasiveness of evidence that refutes it. After reevaluating the evidence in this way, the favored conclusion will appear all the more correct, inducing the decision-maker to revise her assessment of the supporting and

conflicting evidence all the more dogmatically, and so forth and so on—until she terminates the process without the slightest doubt as to either the correct outcome or the quality of the evidence that supports it. This process, moreover, continues over time and across contexts: any initial leaning toward a particular view will generate a persistent evidence re-evaluation and filtering effect (Simon et al., 2001). As a result of coherence-based reasoning, new pieces of disconfirming evidence will not only fail to shake culturally grounded factual beliefs but will fail even to induce in individuals the discomfiting experience of lingering doubt that might trigger reappraisal.

“Two additional mechanisms interfere with receptivity to empirical evidence that originates from individuals outside of one’s cultural group. The first is **naive realism**. This phenomenon refers to the disposition of individuals to view the factual beliefs that predominate in their own cultural group as the product of “objective” assessment and to attribute the contrary factual beliefs of their cultural and ideological adversaries to the biasing influence of their worldviews. Under these conditions, evidence of the truth will never travel across the boundary line that separates a factually enlightened cultural group from a factually benighted one. Indeed, far from being admitted entry, the truth will be held up at the border precisely because it originates from an alien cultural destination. The second mechanism that constrains societal transmission of truth—**reactive devaluation**—is the tendency of individuals who belong to a group to dismiss the persuasiveness of evidence proffered by their adversaries in settings of intergroup conflict (Ross, 1995).”

Page 297:

“The **Truth vs. Culture Model** showed empirical evidence and social meaning at war. We now describe a state of affairs in which the two might peacefully coexist. We will call it the **Breakthrough Politics Model**. The Model involves not just a set of mechanisms but also a process consisting of three steps. The first is the devising of policies that satisfy what we call the criterion of “**expressive overdetermination**.” A policy can be said to be expressively overdetermined when it is sufficiently rich in social meanings that individuals of otherwise opposing **cultural orientations** (“**hierarchist**” or “**egalitarian**,” “**individualist**” or “**solidarist**,” to use the types that figure in the cultural theory of risk) can see their way of life affirmed by it. Such affirmation helps to counteract the constraining pressure that **cognitive-dissonance avoidance** exerts when individuals contemplate revising a position or belief affiliated with their cultural identity. Experimental research shows that where individuals feel self-affirmed they are indeed more open to reconsidering their beliefs on culturally contested issues, including the death penalty and abortion (Cohen et al., 2000; Sherman and Cohen, 2002).

“The second step involves what we call “**identity vouching**.” Public figures who are associated with competing cultural orientations must be recruited to advocate expressively overdetermined policies.¹⁶ Their participation exploits the culturally partisan nature of trust; positions that individuals might otherwise have rejected out of hand will be acceptable to them if sponsored [by those] who possess high esteem within their cultural or ideological group (Lorge, 1936). It also reinforces the selfaffirming effect of expressive-overdetermination insofar as individuals determine what it means to support a policy in part based on the identity of those who are sponsoring it (Cohen, 2003).

“The third step we call “**discourse sequencing**.” The adoption of expressively overdetermined policies by identity vouchers can be expected to change the common perception that the outcome of the gun-control debate is a measure of the social status of competing social groups. The dissipation of that perception in turn neutralizes the tendency of individuals to dismiss as biased and disingenuous evidence originating from persons of opposing orientations (Robinson et al., 1995). The effects of naïve realism and reactive devaluation having been neutralized, the truth will indeed be empowered to cross cultural boundary lines and colonize those who previously held false beliefs on the basis of their immersion in their cultural norms. Empirical data thus does play a critical role in policy deliberation. But it comes into play only after the formation of a new expressively pluralistic regime of gun politics.”

Page 301

“Of course, it is silly to think that individuals never change their minds on culturally contentious issues in response to new empirical evidence. But it is just as absurd to believe that they ever do so at the expense of their cultural commitments. We accept J.S. Mill’s observation that truth, “even if extinguished once, twice or many times” is likely “in the course of the ages” to be “rediscovered” and finally to take hold at the point “when from favorable circumstances . . . it has made such head as to withstand all subsequent attempts to suppress it” (Mill, 1975, p. 29). But what we have shown is that culture is one of the forces that “suppress[es]” truth.”

IX. CONCLUSION

We should incorporate this body of knowledge in firefighter training from basic to advanced, improve our decision support systems, our accident investigations and our safety programs - including creation of a “just culture” in a “high reliability organization”. With the adoption of the new Foundational Doctrine, the time is

appropriate to use this knowledge to fully implement that Doctrine. All the stakeholders need to be involved in the process.