neuroawareness™

Applying 10 neuro-principles to successful advocacy in ADR

Agenda of the session

1. Overview of the emotional, social and cognitive brain
2. Why and how attention, stress and memory matter
3. How clients and neutrals make decisions and judgments
4. Lawyer heuristics: the legal syllogism
5. Conclusions: Using a neuro-compass

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Why should lawyers care about neuroscience?

- The importance of facts and the law
- The Emotional, Social and Cognitive brain
- The 10 neuro-principles: an overview of key biological drivers of human behavior
- Myths and current debates about the brain
- Neurotransmitters

Memory, Attention and Evidence Gathering

- Attention deployment - facts vs. perceptions
- How we encode, store and retrieve memories
- Availability and imaginability
- Reflexive and reflective brain function (conscious, sub-conscious and automatic behaviour)
- Testimony, recollection
- Refreshing recollection and optimizing memory
- Formulating questions (rewards linked to reflection/reframing)
- Hearing witnesses separately or in groups (witness conferences)
- Experts and hot tubbing techniques
- Scripts during drafting, reviewing documents and pleadings

Project & Case Diagnosis: social, emotional and cognitive dynamics of proceedings

- Conflict Escalation Theory
- Self-awareness
- Process Design
- How to select and use neutrals, judges or juries
- Positional vs. Interest-Based proceedings
- Status and social issues
- Tailoring preparation to the process
- Generating first impressions
- Setting goals and possible strategies

Decision-making

- Risk-analysis and outcome assessments (BATNAs/WATNAs/PATNAs)
- Heuristics, patterns and predictions
- Compensating for biases and overconfidence (pre-mortems, devil's advocate)
- Loss aversion and risk aversion
- Framing & formulating
- Anchoring & related expectations
- Assumptions about choice & choice-associated stress
- Decision fatigue and ego depletion
- Impact of stress on decision-making
- Resiliency and perseverance
- The importance of pacing and timing
- Understanding the tribunal's thought processes in decision-making
- Dealing with split juries and divided tribunals

Trust and persuasion

- Group dynamics (in-group vs out-group)
- Relatedness, dominance and social influences
- Dealing with expectations
- Mirror neurons & oxytocin

- Mimicry & empathy vs. perspective-taking
- Strategies to deal with coalitions
- How to gain trust and keep it

Modulators of human behavior

- Culture and cross-cultural dynamics
- Age
- Gender
- Personality
- Strategies for identifying and dealing with modulators (metaphors, etc.)

Priming

- Key experiments
- Ethical considerations for practitioners
- Useful priming strategies for negotiation, pleadings and decision-making

Emotional regulation

- The impact of emotions in conflict
- Impact of danger/reward reflexes in negotiation, pleadings & decision making
- Tools for dealing with danger/reward responses e.g. "fear or anger"
- Emotional Regulation techniques
- Mindfulness

Critical junctures in negotiation and mediation

- Preparation
- Openings
- Exploration
- Option generation
- Negotiation
- Closing
- Compliance

Creativity in negotiation

- Stimulating reward vs danger circuits
- Using interests as reward stimulants
- Insights and option generation
- Group dynamics
- Facilitation techniques to maximize creativity

Applications to the management of your law firm

- Applying 10 neuro-principles in managing your human capital
- Developing your practices over time and in keeping with your interests
- Client management and personal relations
- Billable hours, value-added compensation and musketeer plans
- Proactive v. reactive lawyering
- Team building and succession-planning

Optimal efficiency

- Brain care
- How to optimize brain performance
- Understanding the process as part of the problem
- Personal reflection and observations
- Developing personal "take-away" points and action plans

THE NEUROPHYSIOLOGY OF ADR AND PROCESS DESIGN: A NEW APPROACH TO CONFLICT PREVENTION AND RESOLUTION?*

*Jeremy Lack and François Bogacz***

"We do not see things as they are. We see things as we are."
– Anais Nin

"We have to start by defining the process as part of the problem."
– David Plant

I. Introduction

Neurobiology seems to be popping up everywhere. It is being taught in leadership conferences, sales and marketing seminars, management meetings, business schools, and increasingly in law schools and bar associations. The cover of the American Bar Association's Summer 2011 Dispute Resolution Magazine was dedicated to the topic of "Neuroscience and Negotiation."[1] In it, Professor Richard Birke observes that "Neuroscience is everywhere." Is it a new fad or a fundamental awakening, providing new insights for the legal profession?

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[1] Richard Birke, *Neuroscience and Negotiation: What the New Science of Mind May Offer the Practicing Attorney*, 17 Disp. Res. Magazine 4 (Summer 2011).

As the science for measuring brain activity advances, and new breakthroughs are made in electroencephalography (EEG), magnetoencephalography (MEG), Functional Magnetic Resonance Imaging (fMRI), transcranial magnetic stimulation (TMS), positron emission tomography (PET), and single photon emission computed tomography (SPECT), there is a confusing arsenal of new and convoluted, high-tech-sounding imaging technologies, by which scientists are seeking to penetrate the various layers, regions and neural assemblies of the human brain, to decipher our behavior and the essence of our very being as a highly evolved and unique species of animal.[2] This runs the danger of becoming the twenty-first century's new phrenology, as the science is still rife with errors.[3] On the other hand, the research raises intriguing new insights into the brain, conscious decision-making processes, the role of emotions, and the ways in which our neurobiological "hard wiring" might be impacting our behavior in dispute resolution processes.

The bulk of these findings to date support Anais Nin's quotation given above, whereby we do not perceive things as they really are (i.e., objectively), but as *we* are (i.e., subjectively). This raises important new implications for lawyers, judges, arbitrators, in-house counsel, mediators, conciliators, and a variety of other ADR professionals. It has an impact on how we should start to interpret evidence, weigh witness testimony and (re)consider findings of "fact." Professor Birke argues that lawyers ought to care accordingly about neuroscience, and gives several examples of why this is the case.[4] The purpose of this paper is not, however, to delve into the implications of neurobiology from the perspective of advocacy or judicial appreciation. Nor is it to support Professor Birke's self-evident premise that understanding human perception is likely to

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[2] *See generally* ROBERTO CABEZA & ALAN KINGSTONE, HANDBOOK OF FUNCTIONAL NEUROIMAGING OF COGNITION (MIT Press 2001).

[3] *See, e.g.*, Craig M. Bennett et al., *Neural Correlates of Interspecies Perspective Taking in the Post-Mortem Atlantic Salmon: An argument for Multiple Comparisons Correction* (2009), *available at* http://prefrontal.org/files/posters/Bennett-Salmon-2009.pdf (showing how the data generated in an fMRI experiment could either suggest that a dead salmon was still engaging in conscious perspective-taking tasks, or that the technology itself can yield spurious results that need to be corrected when doing data analysis).

[4] *See also* Ken Cloke, *Bringing Oxytocin Into The Room: Notes On The Neurophysiology Of Conflict*, *available at* http://www.mediate.com/articles/cloke8.cfm; Richard Birke, *Neuroscience and Settlement: An Examination of Scientific Innovations and Practical Applications*, 25 OHIO ST. J. ON DISP. RESOL. 477 (2010); Michelle LeBaron & Mario Patera, *Reflective Practice in the New Millennium*, *available at* http://law.hamline.edu/files/4-LeBaron-Patera-Reflective_Practice_FINAL_May_09.pdf.

be of great importance to trial attorneys and judges. Rather, the purpose of this paper is to focus on current processes by which parties, counsel, and ADR neutrals try to resolve disputes, initial innate human reactions that may occur when conflicts begin to arise, and to assess how effective our processes for dispute resolution may be in terms of what current discoveries in neurobiology would seem to suggest. It will seek to examine not only how subjective perceptions may shape outcomes but also how the choice of the process itself can have unintended consequences in terms of triggering certain behavioral pathways rather than others, and possibly cause the conflict to escalate.

It is possible that large parts of this paper may prove to be erroneous in the future, or reflect cultural biases. This explains the use of a question mark in the title of this paper. Its contents, however, summarize new findings that already provide new food for thought, and raise new concerns about dispute resolution processes and the traditional ways in which lawyers and parties seek to resolve conflicts, as well as the innate tendency of conflicts to escalate. They raise new concerns regarding ethical behavior in dispute resolution and a new appreciation of how parties, lawyers, and neutrals may be manipulated or become unconsciously manipulative. The point is to generate some self-reflection and to start the debate somewhere, as to whether, and if so how, an understanding of neurobiology should become part of legal education and cause us to query our traditional views of justice and our choice of dispute resolution processes.

II. The Ten "Neuro-Commandments": Emotion, Socialization, And Cognition

Much ink has been spilled in describing the evolution of the human brain, and how it has evolved from the level of our reptilian ancestors. According to many theories (and especially the physician and neuroscientist Paul MacLean), the human brain has evolved in terms of three independent but interconnected layers of brain matter, referred to as the "triune brain."[5] The result is that just as an archaeologist can visit an ancient site and determine the historical evolution of that site, the human brain shows three layers of distinct evolution, as shown in Figure 1 below. These layers re-

[5] *See generally* Mark F. Bear, Neuroscience: Exploring the Brain (Lippincott, Williams & Wilkins, eds., 3d ed. 2006).

flect different moments in the history of the evolution of the human species, and how our decision-making processes have evolved. The ways in which these layers may operate and interrelate can provide fascinating new insights into how humans react and deal with situations of conflict.

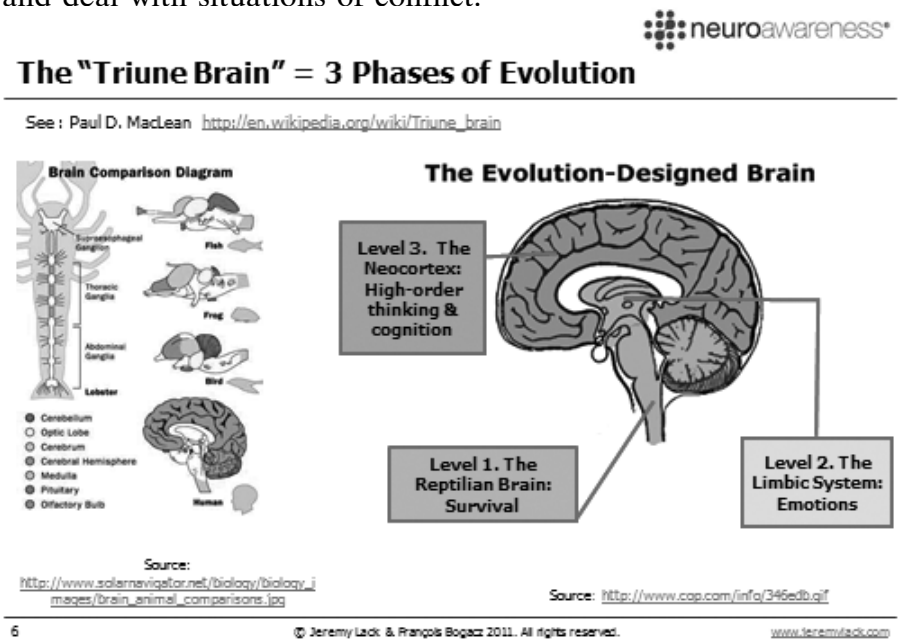

FIGURE 1: THE THREE LEVELS OF EVOLUTION OF THE HUMAN BRAIN

A. *The Three Levels of Evolution of the Human Brain*

The Reptilian Brain is the most primitive level of the human brain and sits at the bottom of the brain, in the brain stem region. It is believed to have evolved over 500 million years ago and greatly resembles the brain of reptiles, from which it bears its name. The Reptilian Brain contains automatic, basic instincts (such as breathing and heartbeat) and is the area in which we have our instinctive and evolutionarily conserved survival reflexes. These include the "fight, flight or freeze" instincts that we share with reptiles. These reflexes are believed to instinctively take over and dominate when fundamental issues of survival are at stake

The second layer of the brain that can be discerned evolutionarily is the Limbic System, which evolved when mammals first appeared (and is therefore sometimes referred to as the

"paleomammalian complex" or as the "mammalian brain"). Mammals are the first creatures to suckle their young and to have strong emotional instincts. It is believed to be the part of the brain through which all of our senses (sound, taste, smell, sight and touch) are first processed, and the area in which we generate emotions, our first and most basic cerebral reactions to any stimulus. This area would have evolved, according to evolutionary theory, as a rapid relevance and detection system, helping animals to rapidly work out (within milliseconds and before time for cognitive appreciation) whether something was to be feared (in which case it was to be instinctively avoided), or a reward (in which case it could be approached). This part of the brain includes the thalamus, a sort of signal and primary-sensory filter station in the brain, as well as two small almond-shaped regions called the amygdala, which are believed to be the areas associated with early stage, autobiographical, traumatic and unconscious memories, and where feelings of fear, safety, and pleasure are first generated and registered, along with other primary emotions such as anger and sadness. The amygdala acts as a rapid relevance detector, helping the human body to rapidly sort out and prioritize the terabytes upon terabytes of data that the human brain captures every fraction of a second.[6]

The Neocortex is the outer and most recent layer of the human brain in evolutionary terms, which is particularly developed in primates and other advanced mammals, and allows us to do high order thinking and cognitive appreciation. It allows complex coordination of motor and sensory functions, and is what allows speech comprehension and conscious memory. The frontal part of this outer layer, called the frontal lobe or frontal cortex, is particularly developed in humans, accounting for approximately 1/3 of the entire human brain. It is the area that deals with conscious, high-order integrated brain functions, such as abstract thought, conceptualization, planning, and the conscious appreciation of emotions. This third level of the brain seems to be closely regulated by the amygdala (and also can act as a feedback loop to the amygdala, to regulate emotional responses), which are connected to all but eight regions of the cortex.[7]

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[6] For a detailed discussion of the intriguing role of the amygdala and their possible importance in conflict situations, *see* David Sander et al., *The Human Amygdala: an Evolved System for Relevance Detection*, 14 REVIEWS IN THE NEUROSCIENCES 303–16 (2003).

[7] *See* Luiz Pessoa, *On the Relationship Between Emotion and Cognition*, 9 NATURE REVIEWS NEUROSCIENCE 148–58 (2008).

Whether or not this theory of the evolution of the human brain is sufficiently precise or accurate, it provides a useful metaphor for considering human beings in situations of conflict. Assuming that the human brain has finite and limited resources in glucose and oxygen at any given moment in time, and that the human being has evolved to maximize the efficiency by which oxygen and glucose are conserved or consumed in the brain (which can be visualized by fMRI in the case of oxygen), it would appear that all senses are first scanned through an unconscious emotional appraisal system (in the Limbic System), and depending on its first analysis (e.g., whether there is a sense of fear–generating an avoidance reflex–or a sense of reward–generating an approach reflex) either the Reptilian System will be activated (e.g., fight, flight or freeze reflexes), or the neocortex (and particularly the frontal cortex) will be enabled to provide a cognitive appreciation of the stimulus and indulge in rational reflection as to how best to adapt to the data the emotional system has highlighted for attention. The Limbic System (and the amygdala in particular) can thus be viewed as a sort of rapid relevance detector and a switch that activates or suppresses "cortical thinking" or reptilian "non-thinking". Depending on initial reflexes of fear or reward, oxygen and glucose may be distributed and consumed differently within the brain, which suggests that all perception, no matter how objective or rational it may seem to be, is in fact first perceived and filtered through emotions.

This model thus emphasizes the primordial importance of emotions as the basis for all perception and subsequent cognitive thinking, which can only occur downstream of, and after unconscious, emotional appraisal of stimuli and data has first occurred. This model would explain the difficulty human beings have in being logical and highly emotional (e.g., angry) at the same time. It suggests that once the neural pathways that lead to anger have been activated, glucose and oxygen are provided primarily to those areas of the brain that regulate this emotion, and that the frontal cortex is deprived of such essential nutrients until the body has had time to self-regulate. This would also explain why an angry person tends to become angrier when asked to think logically, or why it is difficult for a person who is doing a highly cognitive and absorbing task (e.g., adding complex numbers, or solving mathematical puzzles) to experience strong emotions at the same time. The three layers of the triune brain can thus be thought of as three highly interconnected, but at the same time independent neural networks,

which can have different levels of activity and different levels of arousal. Our emotions would thus reflect how our most fundamental needs may drive our behavior at an animalistic and instinctive level, before cognitive appraisal can occur, and how our subsequent reactions and behavior affect our abilities to consciously self-regulate and change our way of thinking and processing information at any given moment in time.[8]

B. *The Ten "Neuro-Commandments"*

Borrowing from creationist theory, extrapolating beyond what is actually known with scientific certainty, and setting aside many responsible debates on possible interplays between cognition and emotion that exist today, it is possible to vulgarize recent discoveries in neuroscience by suggesting that humans may be "hardwired" evolutionarily or may have been created to respond to the following ten "neuro-commandments";

1. "Thou shalt consume your brains resources efficiently and create patterns"

The human brain is just 2% of the average person's body weight. Yet it demands 20% of the body's blood flow and 20% of its oxygen at all times.[9] The human prefrontal cortex is also unusually large, accounting for approximately 1/3 of total brain size (which is what makes the human brain unique). The prefrontal cortex is a large consumer of glucose and oxygen, and conscious cognitive capabilities are severely depleted when the brain is low on glucose or oxygen, or has had sub-optimal time to rest (including sleep). The activity of many regions of the brain follows an inverted U-curve, where capabilities peak at a certain moment and then decrease in the absence of a period of rest or ingestion of food. This can lead to decision fatigue or ego depletion.[10] In order to conserve energy, the human brain constantly and instinctively

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[8] For further discussions on the role of emotions in the brain, *see, e.g.*, Patrik Vuilleumier, *How Brains Beware: Neural Mechanisms of Emotional Attention*, 9 TRENDS IN COGNITIVE SCIENCES 858, 885–94 (2005); Richard J. Davidson et al., *The Privileged Status of Emotion in the Brain*, 101 PNAS 11915, 11915–16 (2004); Uwe Herwig et al., *Self-related Awareness and Emotion Regulation*, 50 NEUROIMAGE 734, 734–41 (2010).

[9] Terry Small, *6 Things You Didn't Know About Your Brain*, BRAIN BULLETIN, *available at* http://www.terrysmall.com/bb_54.asp.

[10] For an excellent review of these phenomena, which go beyond the scope of this paper, *see* John Tierney, *Do You Suffer from Decision Fatigue?* N.Y. TIMES (Aug. 17, 2011), *available at*

reallocates internally that 20% of the body's energy it consumes. It does so by creating patterns and neural networks. If the brain had to maintain a conscious appraisal of all of the sounds, smells, sights, and other sense the body is exposed to, its resources would soon be depleted. We have thus evolved with neural patterns and networks that do not require conscious awareness, but that allow us to be aware of and screen our environment unconsciously, thereby conserving the brain's oxygen and glucose resources.

2. "Thou shalt predict according to thy patterns"

As humans grow, they develop new patterns and scripts of behavior to adapt more easily and more efficiently to their environments. These new scripts are developed at different phases in life, especially in family and early social interactions (e.g., playground, school, etc), in professional training contexts (e.g., law school), and in organizational contexts. Each group or social setting in which a person works (e.g., moving to a new law firm) can create a new corporate culture and patterns of behavior to which the person has to adapt.[11] As we acquire and develop these patterns we try to use and recycle them to anticipate events and be prepared for new situations. Memory, it now appears, has not evolved to record things as they actually were, but to be able to predict things better in the future, should certain similarities in observed events occur, and to provide a script should such similarities arise.[12] It will also tend to rationalize decisions once they have been taken, to fit them into a consistent pre-existing pattern of behavior, especially after having made difficult choices or having experienced a cognitive dissonance, where two contradictory choices of behavior seem to be possible. Post-choice rationalization occurs in these cases, when one's choices (usually one's actions) conflict with one's prior attitudes about choice options, and do not comply with cogent predictable behavior. This dissonant state is unpleasant and can motivate a change in attitudes about what was chosen and/or not chosen (or done or not done), which serves to both justify the choice *ex post*

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http://www.nytimes.com/2011/08/21/magazine/do-you-suffer-from-decision-fatigue.html?_r=1&pagewanted=all.

11 This combination of early scripts and patterns is referred to by M. Patera and U. Gamm as the "mental model" by which each person develops their personality.

12 Laura Biel, *The Certainty of Memory Has Its Day in Court*, N.Y. TIMES (Nov. 28, 2011), *available at* http://www.nytimes.com/2011/11/29/health/the-certainty-of-memory-has-its-day-in-court.html?_r=1&pagewanted=all.

facto and reduce further future dissonances from occurring, possibly affecting memory in the process.[13]

3. "Thou shalt avoid and be far more sensitive to danger/fear than to reward/pleasure, which thou shalt seek"

The human brain instinctively develops two fundamental patterns of response: an "away reflex", which is associated to pain or fear, and a "towards reflex", which is associated with pleasure or reward. These instinctive "reflexes" are apparent in all social interactions, especially in commercial disputes, where money may be perceived as a reward that is instinctively associated with feelings of pleasure or safety, or as a pain, where having to pay damages can trigger fear and aggression. The "away reflex", however, appears to be far stronger and longer lasting than the "towards reflex".[14] Stimuli of pain or a threat are typically much faster acting, last longer and are likely to increase adversarial behavior and reduce cognitive capacity, as more resources are conserved for "fight or flight" behavior, should the person need to defend themself. Stimuli of pleasure or reward, however, tend to be slower acting, milder, and are shorter in duration. They are likely to stimulate cooperative and creative thinking, as the person tries to work out how they can get the award they are now aware of. A single negative stimulus, however, may outweigh many positive stimuli and affect human behavior for far longer.

4. "Thou shalt first perceive via emotions before being able to self-regulate (unconsciously) before being able to self-regulate (consciously or by habits)"

The human brain will instinctively assess stimuli through emotions first, within the first few milliseconds of exposure to a stimulus (especially one creating feelings of fear), before the brain is able to have a cognitive appreciation of this emotion or stimulus. This is part of the evolved efficiency of the brain to conserve resources. As we try to conserve resources by relying on patterns and mental scripts, so that we do not require cognitive awareness of all stimuli provided to us, our limbic system (and the amygdala

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13 LEON FESTINGER, A THEORY OF COGNITIVE DISSONANCE (1957). A typical example is smoking, where people accept that smoking can be lethal, but will rationalize to themselves their decision to continue smoking.

14 *See* Siri Leknes & Irene Tracey, *A Common Neurobiology for Pain and Pleasure*, 9 NATURE REV. NEUROSCIENCE 314, 314–20 (2008); Morten L. Kringelbach & Kent C. Berridge, *The Neuroscience of Happiness and Pleasure*, 77 SOC. RESEARCH 659, 659–78 (2010).

in particular) acts as an early and rapid relevance detector to prioritize sensory input and determine what we should pay attention and give priority to in terms of our limited resources.[15] It is only after conscious awareness of a stimulus (after approximately half a second from original exposure to the stimulus) that a person is conscious of a stimulus, and can begin to self-regulate and try to overcome scripted patterns of behavior. Strongly rooted emotions can thus be dampened by having a conscious appraisal of the emotion, through habit and or conscious modification through deliberate behavior. This ability can be developed at any time and touches on the plasticity of the brain.[16] It appears to be strongly regulated by interconnections between the amygdala and the frontal cortex.[17] Interestingly, the brain also seems to have an automatic and almost emotional desire to avoid stress and assess difficult decisions after they have been taken, to avoid cognitive dissonances when difficult decisions have been taken, thus facilitating an *ex post facto* justification of prior behavior.[18] This can also lead to decision fatigue and ego depletion.[19]

5. "Thy 'Social' stimuli shall be as powerful as thy 'Physical' ones"

Human beings are gregarious animals that evolved to live in small groups or cliques. Like other mammals, there is an automatic and instinctive need to assess one's social status in a group. Negative social stimuli, such as social exclusion, bereavement, being treated unfairly or being negatively compared in a social context, can activate trigger feelings of pain, that activate networks similar to those that are activated in cases of actual physical pain. Likewise, positive social stimuli, such as having a good reputation, being treated fairly, cooperating, giving to charity, and even *schadenfreude*, can active physical pleasure networks and stimulate cooperative behavior and reciprocity. We tend to underestimate

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15 *See* Sander et al., *supra* note 6.

16 *See* Mario Beauregard et al., *Neural Correlates of Conscious Self-Regulation of Emotion*, 21 J. NEUROSCIENCE 1–6 (2001); CONSCIOUSNESS, EMOTIONAL SELF-REGULATION AND THE BRAIN (ADVANCES IN CONSCIOUSNESS RESEARCH) (Mario Beauregard ed., John Benjamins Pub. Co. 2004).

17 Sarah Banks et al., *Amygdala–Frontal Connectivity During Emotion Regulation*, 2 SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE 303, 303–12 (2007).

18 *See* Johanna M. Jarcho et al., *The Neural Basis of Rationalization: Cognitive Dissonance Reduction During Decision-making*, 5 SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE 1–8 (2010).

19 *See* Tierney, *supra* note 10.

this in adult life, but it is often a primary driver of social behavior, which can operate at an unconscious but instinctive level.[20] This sense of belonging to a group can influence not only our family and sense of culture, but may be linked to a socio-economic environment and can influence our senses of perception and willingness to buy certain brands as opposed to others. This circuitry also appears to be regulated by interrelations between the amygdala and the frontal cortex.

6. "Thou shalt seek safe or comfortable status positions at all times"

This is a combination of the fifth rule above and the overwhelming reflex to avoid pain, which is a more dominant and long-lasting feeling (rules one and two above). According to a recent study, the result is that in situations where people are positively primed socially (e.g., as "clever"), they may behave more cautiously to conserve their positive status, whereas they may act more rapidly or incautiously, where they have not been positively primed, or have been primed negatively (e.g., as "stupid").[21] It also may explain the complex and multifaceted nature of what has been termed "human-ecosystem interactions" and the acceptance of allocations of common pool resources by and within communities, and how people seek to avoid shaming or shunning within their communities.[22] A sense of status will also affect the ability to empathize with others. Empathy and altruistic behavior appear to differ between humans, depending on whether they believe themselves to belong to groups of high or low socio-economic status.[23]

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[20] *See* Matthew D. Lieberman and Naomi I. Eisenberger, *Pains and Pleasures of Social Life*, 323 SCIENCE 890, 890–91, (2009); Hidehiko Takahashi et al., *When Your Gain Is My Pain and Your Pain Is My Gain: Neural Correlates of Envy and Schadenfreude*, 323 SCIENCE 937, 937–39 (2009); Naomi I. Eisenberger et al., *Does Rejection Hurt? An fMRI Study of Social Exclusion*, 302 SCIENCE 290, 290–92 (2003).

[21] *See* Sarah L. Bengtsson et al., *Priming for Self-esteem Influences the Monitoring of One's Own Performance*, 6 SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE 417, 417–25 (2011).

[22] These "neuro-commandments" may also be useful in interpreting the work of Elinor Ostrom (2009 Nobel Laureate in Economics) on tendencies of groups to shame, shun or refuse to do business with others, or the "tragedy of commons" and collective action problems. *See* MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS (Harvard University Press 1965, rev. 1971).

[23] Yina Ma et al., *Neural Responses to Perceived Pain in Others Predict Real-life Monetary Donations in Different Socioeconomic contexts*, 57 NEUROIMAGE 1273, 1273–80 (2011).

7. "Thou shalt relate and empathize "in-group" (but not "out-of-group)"

Humans have a fundamental need to trust and be able to rely on other animals within their social or family groups. This need appears to be "neuro-biologically driven" in two ways: (i) by a neuropeptide that is found in the brain called oxytocin; and (ii) by the presence of neurons in the brain, called "mirror neurons", which induce the same activation of neurons in an observer as are actually flaring in a person being observed who is doing an action (e.g., playing a sport) or expressing a facial emotion (e.g., grimacing). The neuropeptide oxytocin has been studied in detail and plays a key role in social attachment and affiliation in mammals. It increases the willingness to accept social risks in interpersonal interactions within the same social community.[24] This increase in trust due to oxytocin only appears to occur intra-group, however, and not as between groups, where others may be perceived as being different. In fact, increased oxytocin can lead to more defensive and aggressive forms behavior towards persons perceived as competing or being outside of a social group.[25] This automatic tendency to empathize and relate to other humans (at least intra-group, if not out-of-group) may also be supported by the activity of mirror neurons in the brain, that allow non-verbal communication between people and a natural sense of empathy to occur.[26] According to recent research in which mirror neurons were directly measured in humans for the first time, the existence of mirror neurons provide a complex and rich mirroring of the actions of other people. Because mirror neurons fire both when an individual performs an action and when one watches another individual perform that same action, it is believed that this "mirroring" is the neural mechanism by which the actions, intentions and emotions of other people can be automatically understood by the observer, in particular via facial expressions of emotion.[27] These mechanisms are be-

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[24] Michael Kosfeld et al., *Oxytocin Increases Trust in Humans*, 435 NATURE 673, 673–76 (2005); Paul J. Zak et al., *Oxytocin Increases Generosity in Humans*, 2 PLOS ONE 11 (2007), *available at* http://www.plosone.org/article/info:doi%2F10.1371%2Fjournal.pone.0001128# references.

[25] Carsten K.W. De Dreu et al., *The Neuropeptide Oxytocin Regulates Parochial Altruism in Intergroup Conflict Among Humans*, 328 SCIENCE 1408, 1408–11 (2010).

[26] *See* an interview of M. Iacoboni in *The Mirror Neuron Revolution: Explaining What Makes Humans Social*, SCIENTIFIC AMERICAN (July 1, 2008), *available at* http://www.scientificamerican.com/article.cfm?id=the-mirror-neuron-revolut.

[27] Roy Mukamel et al., *Single-Neuron Responses in Humans during Execution and Observation of Actions*, 20 CURRENT BIOLOGY 750, 750–56 (April 8, 2010).

lieved to create an automatic and instinctive ability for humans to detect emotions and be able to empathize with one-another. It appears, however, that mirror neurons flare less when similar behavior is observed in groups that are perceived as being different, and that oxytocin can amplify all types of "approach" responses, including negative ones such as anger, aggression, jealousy or gloating instead of trust when another person is perceived as belonging to another group or animal "clique".[28] It would thus seem that our abilities to empathize are not as effective when a person is considered to belong to a different group or "clique."

8. "Thou shalt react negatively to unfair behavior"

Functional neuroimaging investigations in the fields of social neuroscience and neuro-economics indicate how decisions affecting a sense of status, social belonging, or about money may activate pain/reward reflexes, and that a part of the brain called the anterior insular cortex (the "AI") is consistently involved in empathy, compassion, and interpersonal phenomena, such as fairness and cooperation. These findings suggest that the AI plays an important role in social emotions, defined as affective states that arise when we interact with other people and that depend on them in a social context. In certain studies (e.g., the Ultimatum game, where one player has to split money in a way that is accepted by another player in order for the money to be kept by both), a receiving party will refuse a benefit even if it is to his/her net advantage, if they feel the other person making the split is behaving unreasonably or selfishly (e.g., by proposing a 99:1% split, even though the 1% increment would still benefit the receiving party as opposed to receiving nothing). Behavioral experiments show that where proposals are deemed as being fair (a 50:50 split being perceived as most fair) they have far higher chances of being accepted, whereas unfair proposals are more likely to be rejected. When participants play such games in an fMRI scanner, a complex interaction between the AI and an area of the frontal cortex appear to be activated very rapidly, in milliseconds, preceding the time possible for a cognitive decision. In a more extreme fMRI experiment, participants observed fair or unfair players receiving painful electrical shocks. This study showed an interesting difference in behavior between men and women. Men's empathy-related neural responses

[28] Andrew H. Kemp & Adam J. Guastella, *The Role of Oxytocin in Human Affect: A Novel Hypothesis*, 20 CURRENT DIRECTIONS IN PSYCHOLOGICAL SCIENCE 222, 222–31 (2011); De Dreu et al., *supra* note 25.

were significantly reduced when they observed unfair players, which was not the case in women. While mutual cooperation usually results in feelings of trust and friendship, a lack of cooperation results in anger and indignation, and thus an acceptance or a willingness to punish (more so in men than in women). The AI seems to play a central role in social empathetic emotions ranging from pain, and pleasant emotions to fairness, admiration and compassion. The AI seems to have evolved as a primary means of generating and predicting self- and other-related feelings, where a sense of unfairness is experienced as a form of pain.[29]

9. "Thou shalt be motivated by autonomy or by feeling autonomous"

Humans do not cope well when they believe they are forced or obliged to behave a certain way. A recent review of scientific literature confirms that humans require the perception that they are in control of their environment and have free choice in order to feel well. This need for a perception of control is profound. It is a need that is not only psychological but profoundly biological. The body's neural systems seem to have hardwired the need for control as a biological imperative for survival, although this can be tempered in certain collectivist groups. For this reason, most humans (as is the case for the majority of mammals) will languish when deprived of autonomy.[30]

10. "Thou shalt operate cognitively in two gears ('X' & 'C' modes)"

This is a theory proposed by Matthew D. Lieberman, according to which human beings have two basic modes of conscious functioning. The first is called the "reflexive mode", which is mediated by neural assemblies in the brain (referred to as the "X-system"). This system relies primarily on our patterns to predict unconsciously and on our "cognitive reflexes." This is the state we tend to function in most of the time, and can be exaggeratedly described as a sort of "zombie" or "auto-pilot" state, which occurs when we are in a low state of conscious arousal. The second mode is called the "reflective mode" and is mediated by a different neural assembly system (the "C-system"). This level of cognitive be-

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29 Claus Lamm & Tania Singer, *The Role of Anterior Insular Cortex in Social Emotions*, 214 BRAIN STRUCT. FUNCT. 579, 579–91 (2010).

30 Lauren A. Leotti et al., *Born to Choose: The Origins and Value of the Need for Control*, 14 TRENDS IN COGNITIVE SCIENCES 457, 457–63 (2010).

havior is seldom activated and involves high level concentration. Humans tend to cruise like a car in first gear, using their "X-system" mode, where glucose and oxygen are consumed very frugally (e.g., when a driver of a car is conscious but cannot remember much of what was consciously done, on a routine basis, during the journey). Furthermore, although many of us believe we are good at multi-tasking, it appears that our cognitive appreciation and responses are impaired when we seek to do so. We seldom move into our second and optimal gear of cognitive thought–using our C-system. When the "C-system" is activated, it is far more focused and demanding in terms of oxygen and glucose consumption. The brain becomes deeply absorbed in very complex activities requiring intense concentration (e.g., mathematical calculations), and cannot sustain this mode of cognitive behavior without frequent breaks and nutrition.[31] According to this theory, we tend to go about our daily affairs (and remember things) paying little attention to internally-focused processes and only have strong senses of cognition when sufficiently aroused to do so by externally-focused tasks requiring full concentration.

What do these ten "neuro-commandments" suggest for mental decision-making processes or in situations of conflict? The author submits that much of observed behavior may not be optimally assessed at the cognitive level, and that we seldom activate our "C-systems" when resolving conflicts. Our tendencies to instinctively and rapidly filter information via emotional networks before the frontal cortex can exert fully cognitive assessments of the situation, our need to predict and avoid situations of uncomfortable status or pain, and our social needs prevent us from behaving objectively. We also can influence outcome by priming disputants' abilities to empathize with one-another and engage in cooperative behavior if they are able to create a sense of belonging to a common group, such as seeking a mutually acceptable outcome. Our desire to avoid uncomfortable cognitive dissonances and post-choice rationalization means that the use of a single word as opposed to another can trigger entirely different neural pathways and forms of behavior before we have had the time to consciously realize this and make a fully informed decision.

An excellent example of how our scripts are activated unconsciously, leading to different cognitive behaviors and outcomes, can be found in a recent experiment conducted in the United Kingdom

31 Matthew D. Lieberman, *Social Cognitive Neuroscience: A Review of Core Processes*, 58 ANN. REV. OF PSYCHOL. 259, 259–89 (2007).

where two groups were given identical choices framed differently by the use of only two words: "keep" and "lose."[32] Both groups were given a fifty pound note and were given the option of gambling to keep the full amount of £50. The only difference between the two groups was that one group was told it could ""keep £20 or gamble" whereas the other group was told it could "lose £30 or gamble". The risk of losing the entire £50 by gambling was the same in both cases, and carried a high probability of loss (2/3). From a mathematical perspective, "keeping £20" is identical to "losing £30." A rational assessment by both groups should therefore have led to identical behavior, which is what one would expect if high order "C-system" thinking were engaged. As it is, the two groups behaved very differently, and observations of their brains under fMRI showed that the decision was modulated and shaped very rapidly by two different neural networks, depending on the use of the words "keep" as opposed to "lose." The word "keep" is a safe word. In the group offered the "keep £20" option, the decision appears to have been modulated by a zone in the frontal cortex, as there were no adverse emotions activated. The majority of the people in this group, who appeared to be processing this decision in their frontal cortex according to fMRI pictures, chose not to gamble, thinking it better to keep £20 than risk losing £50. On the other hand, the word "lose" is not a safe word. It can trigger a fear reflex, depending on individual subjective conditioning to prior pressure responses, and socio-economic influences. In the group offered the "lose £30" option, the decision appears indeed to have been modulated by fear networks in the limbic system–more precisely in the amygdala–as shown by fMRI imaging (See Figure 2 below). The majority of this group chose to gamble, thinking it better to risk everything rather than lose £30.

[32] Benedetto De Martino et al., *Frames, Biases, and Rational Decision-Making in the Human Brain*, 313 SCIENCE 684, 684–87 (2006).

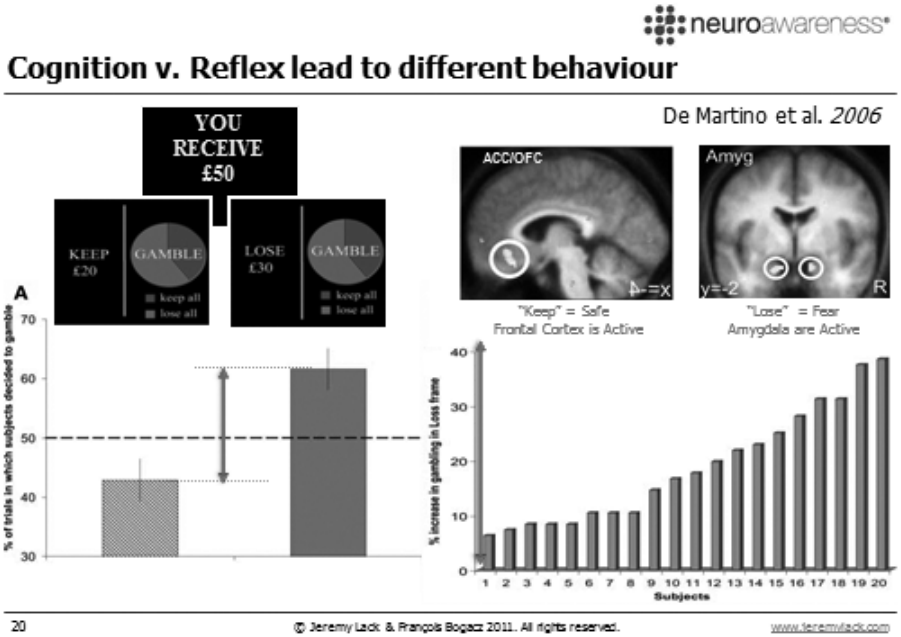

FIGURE 2: THE FRAMING EFFECT OF "KEEP" V. "LOSE"

What is interesting about this experiment is that it shows the extent to which human choices and behavior can be influenced by a single word. By framing or re-framing directions as procedural choices instead of as orders, or by using neutral, positive or negative words, it may be possible to change the very neural pathways and mental processes by which decisions are made, leading to different outcomes. This is well known by experienced mediators, who have discovered that an offer that was refused in the past from another party may suddenly become attractive solely as a result of the way in which the offer was reformulated, or due to the fact that the offer was perceived as coming from the mediator. The absence of fear in these cases may mean that different assemblies in the brain are activated.[33] It is with this experiment in mind and a knowledge of the hypothesis of the "ten neuro-commandments"

[33] Although it may be a somewhat uncomfortable thought, mediation may be considered as a form of hypnosis. Even though the common definition of hypnosis is that it is a trance-like state that resembles sleep, it is in fact a process that permits a new mental state of mind, where subjects are fully awake and can refocus their attention. Insofar as a skilled mediator may change a party's perception, by using different words or reformulations, (s)he may in fact be acting by inducing or activating new pathways for conscious appraisal, e.g., by activating a party's C-system to assess an option as opposed to their X-system, or by triggering their "towards reflexes" as opposed to their "away reflexes." This raises potentially disturbing and new concerns about the ethics of using neurobiology to shape ADR processes, as discussed *infra* IV.

that we can now turn to conflict resolution procedures, and discuss how well our default mechanisms for resolving differences are suited to our neurobiological composition and conditioning as a species.

III. Appropriate Dispute Resolution: Competitive vs. Collaborative Processes

There is a wide range of Appropriate Dispute Resolution ("ADR") processes available to the parties whenever a dispute arises.[34] We tend, however, to operate at the extreme ends of this ADR spectrum when faced with an emerging conflict, jumping straight into litigation after attempts to negotiate have failed, or using processes that tend to escalate the dispute rather than seek to resolve it optimally when considered from a neurobiological perspective. Joanna Kalowski, a leading Australian mediator, presents the spectrum of choices as follows:

[34] For reasons already explained by this author in a previous publication, it is better to describe "ADR" in terms of "Appropriate" as opposed to "Alternative" or "Amicable" Dispute Resolution. By separating litigation or arbitration from negotiation, mediation, conciliation and other dispute resolution processes, parties and their counsel will start to think of them as mutually exclusive options, as opposed to as possibly complementary processes, which may have positive neurobiological synergies. *See* Jeremy Lack, *Appropriate Dispute Resolution: The Spectrum of Hybrid Techniques in* ADR in Business: Practice and Issues across Countries and Cultures (A. Ingen-Housz ed., 2011), *available at* http://imimediation.org/index.php?cID=278&cType=document.

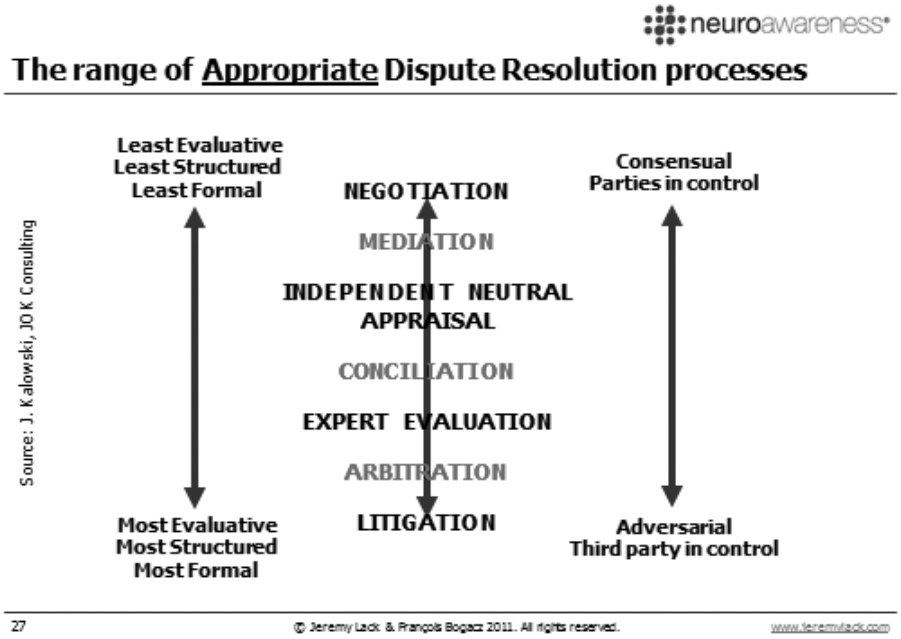

FIGURE 3: J. KALOWSKI'S ADR SPECTRUM

The default and natural form of behavior of most disputants (and their lawyers) is to act adversarially or competitively. Little thought is normally given to the process itself, or its impact on the future relations between the parties. There are three distinct types of ADR processes that use a neutral within Kalowski's ADR spectrum: mediation, conciliation, and arbitration, as indicated in red in Figure 3 above. Each of them may have a very different impact on the parties' future behavior, when viewed from the perspective of neurobiology or the "10 neuro-commandments." The increased loss of control or increasingly adversarial nature of the process, as one moves from one extreme of the spectrum to the other, suggests that different fear and cognitive appraisal processes may be activated depending on which process was chosen. This puts a new light on the statement given at the beginning of this paper by David Plant, a well-known arbitrator and mediator, regarding the importance of choice of process, and the varying uses or styles of an ADR neutral, which may be a key part of the problem to be resolved from a neurobiological perspective. Selecting an optimal process "neuro-biologically" may thus very well shape the outcome itself. The use of a neutral, however, presupposes a natural tendency by the parties to try to negotiate at first. It is important, therefore, before comparing these three forms of ADR that are

facilitated by a neutral (a mediator, conciliator or arbitrator) to therefore focus on negotiation.

Although negotiation is presented in Kalowski's spectrum as being the most consensual process, where the parties retain full autonomy, and where there is nobody else present to evaluate the process or with whom a party can seek a coalition in deciding who is right and who is wrong, there is a natural tendency for humans to try to use power or persuasion to convince the other party to let the dominant party have things its way. Thus, although negotiations may start off pleasant and consensual, there is also a tendency for them to become increasingly adversarial, which is why third parties are often brought in to help resolve the matter or to simply decide it.

There are two fundamentally different modes of negotiation possible, which typically lead to different forms of human behavior: one is intuitive, and resorts to our natural neuro-biological tendencies (the "ten neuro-commandments"), and the other one is counter-intuitive, but can lead to a better social process and optimize "C-system" thinking to envisage and create new solutions. The former type of negotiation is called "positional negotiation", in which two parties realize that they have different positions as to what should be an acceptable outcome, and seek to persuade and influence one-another (exerting pressure if necessary) to abandon their respective positions. The latter type of negotiation is called "interest-based negotiation" (sometimes also referred to as "problem-solving negotiation"), where the parties try to avoid taking positions but seek to identify one-another's needs and concerns, and jointly explore options for mutual gain. Much has been written about both types of negotiation, but they merit being reviewed once again in light of the possible neurobiological implications that using one system or negotiation may entail as opposed to another, and in light of the "ten neuro-commandments" presented in section II above. Although it is possible to frame this debate in terms of "positional" (or "adversarial" or "competitive") as opposed to "interest-based" (or "cooperative" or "amicable") negotiation, this analysis extends not only to negotiation but to all forms of ADR, where the natural human reflex to resolve matters adversarially or competitively (i.e., starting from positions) also tends to influence the ways in which neutrals tend to be appointed and used (e.g., as evaluative neutrals, as opposed to non-evaluative neutrals).

A positional negotiation or ADR process is essentially a competitive or adversarial process. It is a tug of war of positions, each

side trying to influence the other party to reach a compromise closer to its own starting position. This is a natural and instinctive way of resolving disputes, where each party will use a combination of carrots and sticks to activate "away reflexes" and "towards reflexes" and try to influence the other disputant. By definition, the parties separate and distinguish themselves as belonging to one or another camp, as separate groups, which makes it more difficult to empathize with one-another. Parties will often use power (financial, social, reputational or otherwise) to convince the other party to move in their direction, and will leverage their legal rights and threaten in terms of what might happen in a court of law as a sanction for not behaving. This form of negotiation is basic and instinctive. It activates long-lasting and dominant fear reflexes. It leads to the psychological phenomena of anchoring (whereby each party will refuse to make a further concession or shift its position until it has seen a sign from the other side that it is willing to make a similar concession or equally shift its position) as well as reactive devaluation (where an offer from the other party is viewed as a risk in view of its source, and is consequently automatically rejected or devalued). These sorts of conflicts frequently escalate as the frustration builds up, while each party accuses the other of being intransigent. What seemed to initially be perceived as the other side's inability to understand rapidly escalates to being perceived as stubbornness, bad faith, or a threat that needs to be controlled, initially by limited steps and ultimately by a form of war. Neutrals are often brought into such negotiations when the parties start to hit a wall. The instinct is still to use the neutral competitively, however, by asking them to take a position as well, or seeking to create a coalition with that neutral. Whereas neutrals can invoke the law, rights or external objective norms to try and act fairly, or to reach an outcome that will be deemed to be in accordance with social norms, this too is essentially a positional approach, using externally shaped norms as the basis for reaching an outcome. In such cases, although a neutral will start off as being impartial, the neutral will be pulled to one-side or another and will usually end up taking one party's side over the other's, based on their evaluation of the law and the facts. By the time an award is rendered, an arbitrator is often perceived as being partial, no matter the care taken to try to act, and be seen to act, impartially. If the neutral is acting as a mediator, (s)he is still likely to be pushed by the parties to express a view in favor of one side as opposed to another. Mediators may be asked to facilitate purely positional negotiations, where it is common for the parties to try and convince the mediator to put

pressure on the other side in caucus. These mediations often involve the neutral doing a lot of reality testing with the parties, and relying greatly on caucuses or private sessions. Mediators when facilitating such positional or competitive negotiations will often use bracketing techniques to allow each side to demonstrate their willingness to compromise if the other will reciprocate fairly and compromise as well, depending on how deeply anchored or entrenched they are with respect to their positions. Positional negotiations or ADR processes may be viewed neuro-biologically in terms of the "ten neuro-commandments" as diagrammatically depicted in Figure 4 below.

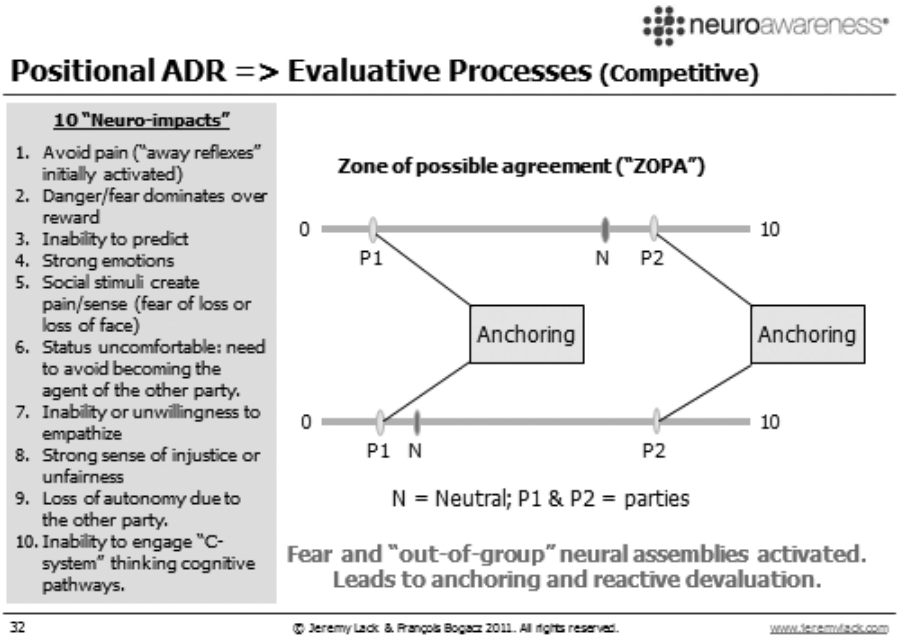

FIGURE 4: POSITIONAL (COMPETITIVE OR ADVERSARIAL) DISPUTE RESOLUTION

In positional ADR processes the "ten neuro-commandments" are likely to be primed negatively due to the inherently competitive or adversarial nature of these processes. The parties will not behave empathetically and expect to be pressed to make concessions. They will expect and seek to avoid pain, are likely to be dominated by patterns of fear, may have no sense of certainty or predictability due to their perception of the other's irrational or bad-faith behavior, may be influenced by strong emotions of anger, are likely to avoid all social interaction with the other party (often preferring to speak through their lawyers, or using caucuses if a

mediation has been started), may feel their status being questioned or undermined (e.g., having been accused of wrongful behavior), may become completely incapable of empathizing at all with the other side (who is viewed as belonging to an adversarial group), may perceive that other as acting unfairly (thus further exacerbating senses of pain or social exclusion), may feel the other party is impinging on their autonomy, and may be rendered incapable of high order "C-system" cognitive thinking, as dominant emotional neural networks may consume oxygen and glucose and limit the ability for objective and dispassionate analysis. This explains the tendencies of the parties towards anchoring and reactive devaluation. The likely result of such processes, if the parties have not been able to reach a compromise within their zone of possible agreement, and if the neutral is not able to change the process or impose an outcome (as in arbitration) is further escalation of the conflict, and it is not unheard of for parties to reject an arbitral award and refuse to comply with it.[35]

The alternative form of negotiation or ADR processes, however, whereby the parties are encouraged not to focus on threats or fears, but on their interests, are much less instinctive or intuitive. This re-orientation of the parties' attention to what is positive as opposed to negative can have fundamental effects on their behavior and permit entirely new ways of processing data relating to the conflict in their brains, somewhat analogously to De Martino's example of reframing things as "keep" v. "lose." Positional negotiations or ADR processes typically end in "win-lose" or "lose-lose" outcomes. It is possible, however, to generate "win-win" outcomes using interest-based ADR processes, even in the most entrenched positional situations. This is where an understanding of the neurobiological implications of various processes may be key. The choice of process may in and of itself change the neural pathways that are activated in the parties' decision-making networks, and lead to completely unexpected results or faster, better and/or cheaper outcomes as compared to positional ADR processes. This form of negation was first proposed by Roger Fisher, William Ury and Bruce Patton in their seminal work *Getting to Yes*, and is sometimes referred to as "problem-solving" negotiation or dispute

35 *See* FRIEDRICH GLASL, CONFRONTING CONFLICT (Hawthorn Press 2002) (mapping out the escalation of conflicts in such cases in nine steps). These nine steps can furthermore be used to diagnose the conflict and craft appropriate interventions. They are discussed below *infra* IV. *See also* Lack, *supra* note 34.

resolution, whereby the parties work collaboratively on solving the problem rather than trying to convince one-another of anything.

Interest-based negotiation or ADR processes are counterintuitive and highly cognitive, requiring heightened cortical thinking. They require conceptually separating the parties from the problem (thus de-personalizing negative personal emotions), focusing on interests rather than positions (invoking "towards reflexes" as opposed to "away reflexes") and invoking mutual needs rather than independent strategies. In interest-based negotiations or ADR processes, the parties are encouraged to understand one-another's alternatives to a negotiated agreement (i.e., their best, worst, probable and/or reasonable alternatives to a negotiated agreement – referred to in ADR jargon as their respective "BATNAs," "WATNAs," "PATNAs" and/or "RATNAs"), but not for the purpose of inducing positional or competitive behavior. The purpose of understanding these alternatives is rather to provide a reference point with respect to time, costs, possible outcomes and likely consequences if no agreement is reached, and to see if the parties can work cooperatively to generate outcomes that would be better than their respective BATNAs or PATNAs.[36] This involves working cooperatively, brainstorming to explore and generate new possible solutions (based on needs and interests) before evaluating them, and seeking options for mutual gain that can be implemented or monitored using objective criteria, so that both parties will have an incentive to comply with the final outcome. Such processes also create a sense of shared purpose and can create a new sense of belonging to the same group, where the parties are more likely to empathize with one-another and seek to cooperate. Where these processes are properly handled, there is little chance of the conflict escalating and the parties are often able to come up with solutions that would not have been dreamed as even being remotely possible using a positional, competitive or adversarial ADR process.

[36] Usually one party's Best Alternative to a Negotiated Agreement (BATNA) will be the other party's Worst Alternative to a Negotiated Agreement (WATNA) and vice-versa.

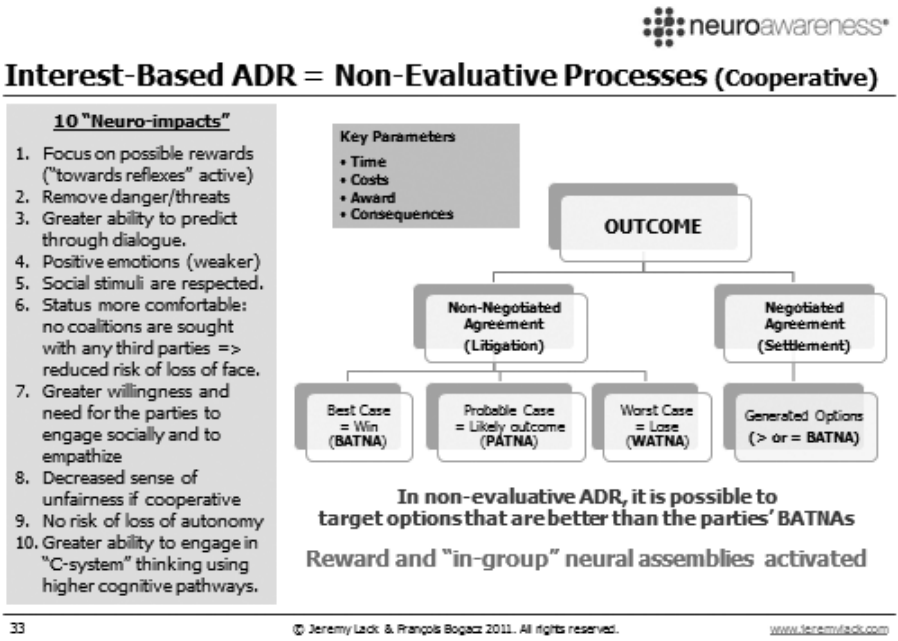

FIGURE 5: INTEREST-BASED (COOPERATIVE OR AMICABLE) DISPUTE RESOLUTION

The neurobiological impact of using non-evaluative interest-based or problem-solving ADR processes is summed up diagrammatically in Figure 5. From the perspective of the "ten neuro-commandments", such processes are likely to activate neural pathways and decision-making processes that are very different from those normally used in positional ADR processes. They are likely to trigger "in-group" behavioral patterns and allow the parties to empathize naturally, and generate trust between themselves. By seeking a cooperative approach from the very beginning, the disputants are not conditioned to respond to potential fears but to try and shape and generate their own rewards. If the techniques of *Getting to Yes* (and related literature) are skillfully applied, it is likely that "away reflexes" will be abated and the parties will activate reward (and "towards-reflex") circuits. If threats are removed, the parties should be more willing to engage in dialogue, listen to one-another, and engage in instinctive empathy and cognitive perspective-taking (which is more energy consuming). Social gregarious impulses create a sense of "in group" cohesiveness as the parties jointly tackle the problems that face them. The absence of any evaluative third party in interest-based negotiations means that no coalitions can be sought, so there are reduced risks to status, loss of face or loss of

autonomy. The reduced activation of the anterior insular cortex (the "AI") is likely to allow more interpersonal phenomena, such as compassion, fairness and cooperation. Most importantly, by breaking the process down into a joint exercise, where the parties align themselves by seeking options for mutual gain that can be objectively tracked and implemented, trust (and oxytocin) may be released, "X-system" standard interpretation of patterns of behavior may be abated, and the parties are more likely to be able to activate their higher level "C-system" analytical pathways to assess the situation from a different perspective. This is the logic behind Collaborative Law, whereby the parties and their counsel forsake future litigation and commit to resolving a dispute cooperatively by jointly signing a participation agreement obliging the lawyers to withdraw from engaging in any litigious activities if negotiations are not successful. In doing so, parties and their counsel effectively commit to working in a cooperative framework with greater social integration and enhanced cortical thinking. Such processes often do not include a neutral for fear that a neutral may start to act evaluatively.

Bringing in a neutral, however, can bring many benefits, even in interest-based negotiations or in collaborative law situations. If skilled facilitators are brought in to act non-evaluatively, they may have an immediate systemic effect and their mere presence may immediately provoke unconscious changes in status. It is important, however, for these neutrals to realize the potential impact of their additional presence, and to adapt themselves and their social behavior to build upon pre-existing cooperative and "in group" behavioral reflexes. It is all the more important in such cases for the neutral not to act evaluatively, not to assert a high sense of status, nor to act as if this were a positional ADR process. They should understand their role not only to be primarily facilitative but in the context of a social process.

Although two different approaches of "positional" v. "interest-based" ADR may sound somewhat theoretical and even utopian, they are commonly used with great success by skilled ADR professionals. It is extremely important for the parties and these professionals, however, to understand how their role and presence may impact the neurobiological propensities of the parties and their counsel to perceive or process things differently depending on whether a positional/competitive/adversarial ADR framework is used, or an interest-based/cooperative/amicable ADR framework is used. It is important to also remember, however, that humans

are biologically primed to instinctively use the prior ADR framework by default, and that these processes have existed since the dawn of time. These processes correspond to human nature and the way disputants and their counsel are hardwired, and are likely to prefer to act as animals, when resolving conflicts. Interest-based ADR processes are more difficult to explain or implement in view of their counter-intuitive nature. They often require suspending disbelief and setting aside natural instincts. This is one of the reasons why many disputants and lawyers will prefer litigation over mediation, and why so few cases will actual end up in mediation in the absence of external pressure from judges or public policy pressure to do so. The use of hybrid ADR processes may be of particular interest here, as the parties can seek to operate at both levels simultaneously or sequentially: following their natural tendencies to act competitively but at the same time allowing them to approach the conflict in a new way, with the benefits that cooperative problem-solving often entail. Once interest-based ADR processes have been implemented they tend to work extremely smoothly and reduce the risk of further conflict escalation. They can also provide far better outcomes than positional, competitive or adversarial ADR processes. The neural pathways of the parties and their counsel become attuned to building rapport and working cooperatively as a team.

In many situations, however, there is no real choice. Collaborative Law processes succeed because the lawyers involved in them are highly skilled and trained in interest-based negotiation. The formality of the process (e.g., the signing of a participation agreement) creates a clear "in-group" dynamic where the team is united on its desire (and need) to reach a mutually acceptable outcome through cooperative behavior. It is difficult for disputants or lawyers, however, who have had little or no training in interest-based ADR to abandon their positions, expose their interests to one-another, take stock of their emotions and their patterns of cognitive reflection, and indulge in empathy building. It is for this reason that bringing in a neutral can be helpful as a complement to negotiation, and why court-annexed ADR programs are to be encouraged. Once again, the choice as to which type of ADR process or neutral to use, and what skills to bring in, is very important. Should this neutral be directive or facilitative, non-evaluative or evaluative?[37] If evaluative, should this be as a norm-generating

[37] *See* Leonard L. Riskin, *Decisionmaking in Mediation: The New Old Grid and the New New Grid System*, 79 NOTRE DAME L. REV. 1, 1–53 (2003).

neutral, a norm-educating neutral, or a norm-advocating neutral?[38] The choices can be laid out in a modified Riskin Grid as shown below in Figure 6.

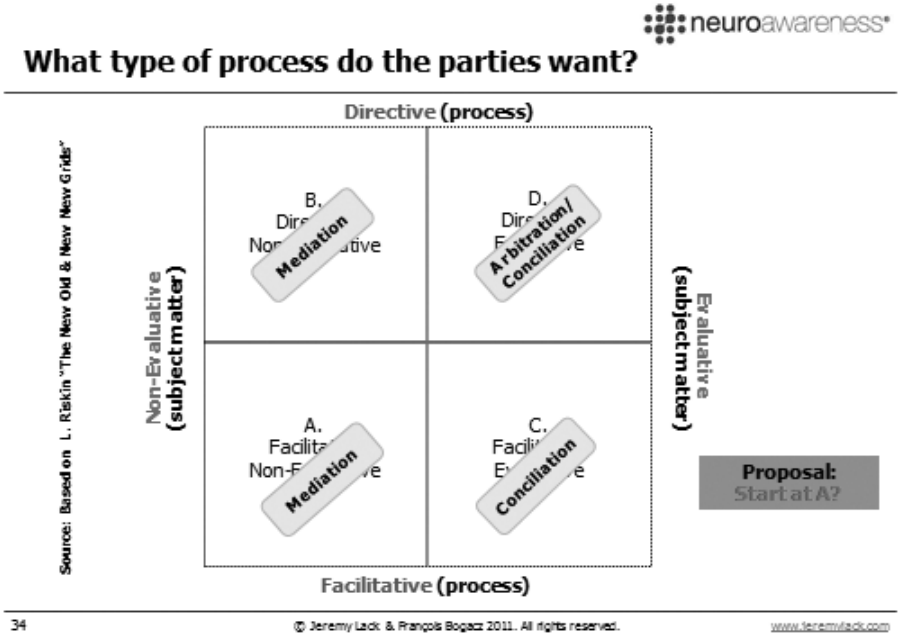

FIGURE 6: SELECTING ADR PROCESSES USING A RISKIN GRID

Each of these neutrals or styles of ADR processes may activate the neural pathways of the parties and their counsel differently, depending on how the neutral's role is perceived. It is important for the parties to decide if they wish the neutral to act a mediator, a conciliator or an arbitrator, which going back to Kalowski's ADR spectrum, reflects three different zones in the ADR spectrum. It is important to differentiate between these three types of ADR neutral, as each process is likely to implicate the "ten neuro-commandments" differently.

There is considerable confusion in the international conflict resolution circles between the words "mediation" and "conciliation," which are believed by many lawyers to be synonymous, but are in fact very different processes from a neurobiological perspective. In order to better understand the difference between mediation and conciliation, it is useful to start with arbitration, and to compare them visually as is done below.

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38 *See* Ellen A. Waldman, *Identifying the Role of Social Norms in Mediation: A Multiple Model Approach*, 48 HASTINGS L. J. 4 (1998).

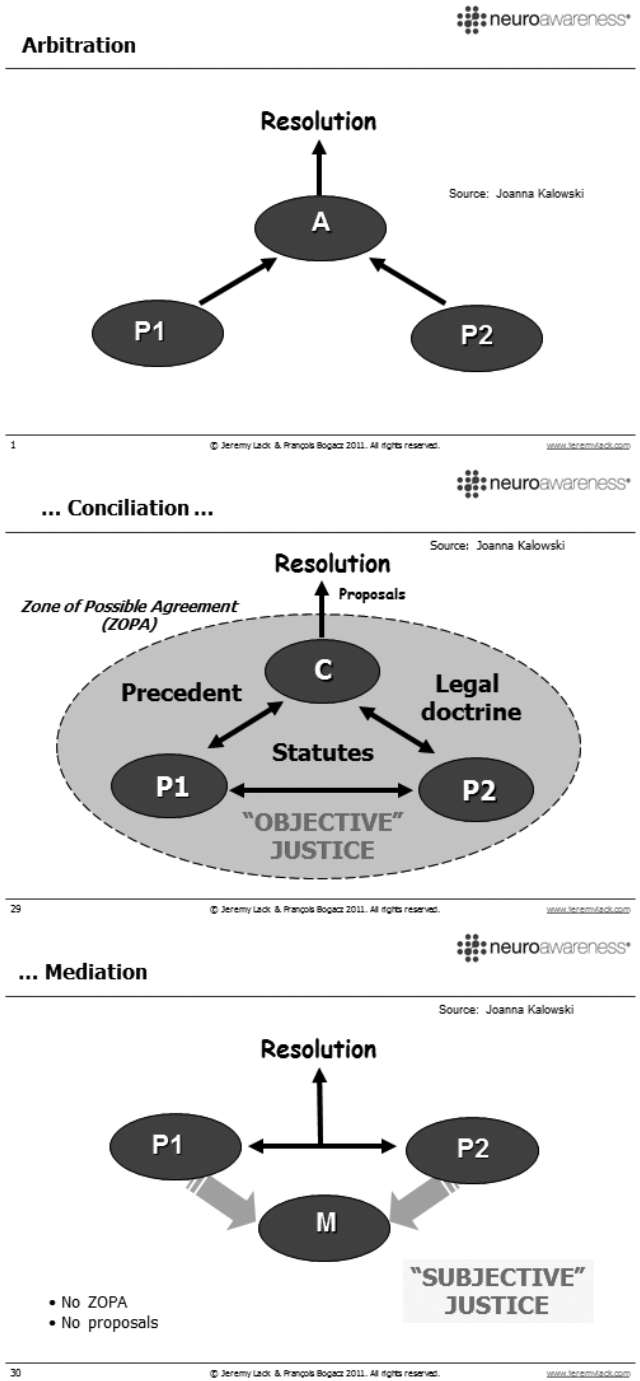

FIGURE 7: ARBITRATION, CONCILIATION AND MEDIATION COMPARED (J. KALOWSKI)

Arbitration, conciliation and mediation are three commonly available forms of Appropriate Dispute Resolution. Understanding the differences between them is important when assessing these procedural choices from a neurobiological perspective, as mediation is a non-evaluative process (where no evaluation or coalition can be sought with the neutral), whereas in conciliation and arbitration the neutral's subject matter expertise is typically sought to help set norms, make proposals or decide the matter (acting evaluatively and as a person with whom a coalition can be built). This distinction between arbitration, conciliation and mediation is very important from a neurobiological perspective, but is often confused, especially in international commercial disputes.[39]

In arbitration the parties delegate control of the process and the outcome to a third party, the arbitrator or panel of arbitrators sitting as an arbitral tribunal. The resolution of the dispute is thus decided by the arbitral tribunal. This is a clear positional ADR process. The role of the lawyers and the objective of the parties is to convince the tribunal to resolve the matter in accordance with the positions on which the tribunal has been briefed, and which the lawyers have advocated.

In conciliation, the process is somewhat positional, but also less clearly so than in arbitration. The conciliator acts somewhat as an arbitrator, but does not have the power to resolve the matter. The conciliator acts evaluatively, by identifying objective norms by which the process would be involved by a tribunal or court. The conciliator typically helps the parties to understand the parameters that could be used to dispositive of the matter, and to understand

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[39] This confusion between conciliation and mediation is captured by the UNCITRAL Model Law on International Commercial Conciliation (2002). Article 1(3) of the Model Law states that

> For the purposes of this Law, *"conciliation" means a process, whether referred to by the expression conciliation, mediation or an expression of similar import,* whereby parties request a third person or persons ("the conciliator") to assist them in their attempt to reach an amicable settlement of their dispute arising out of or relating to a contractual or other legal relationship. The conciliator does not have the authority to impose upon the parties a solution to the dispute.

Id. (emphasis added). Yet under Article 6(4) it is clear that the UNCITRAL model law is aimed at an evaluative process, since it states: "The conciliator may, at any stage of the conciliation proceedings, *make proposals for a settlement of the dispute.*" (emphasis added). Mediation purists would deem this to mean that the UNCITRAL model law is not directed to mediation–where no proposal should ever be made by the neutral–but only to conciliation, where a conciliator is encouraged to make proposals and can be used competitively as a result. Purists will argue that a mediator should never make settlement proposals, and in any event not at an early stage of the proceedings or before having been asked to do so by all parties. From a neurobiological perspective these differences are quite fundamental. They spell out the differences between a competitive ADR process and a cooperative one.

the key elements in each party's line of reasoning, identifying key issues of fact or law. It is ultimately a process of helping the parties to reach a compromise within a Zone of Possible Agreement (ZOPA) defined by the parties' positions. Based on the conciliator's understanding of the applicable law or the rules of the relevant industry by whose standards a solution may be sought, the parties are assisted in identifying precedents, rules or academic doctrines that would suggest an outcome. The conciliator helps the parties to understand possible outcome that would be reached applying these norms, and helps the parties to set a new ZOPA in which they can negotiate an outcome similar to what the law or another "objective" process would provide for, but doing so more speedily or cost-effectively. The conciliator can also make proposals based on these parameters, and suggest possible outcomes to the parties based on these norms. Conciliation is thus a process that can be procedurally facilitative, but substantively evaluative, since possible outcomes are identified and resolved by means of objective norms and criteria. It remains, however, a positional and competitive process, albeit one where the parties have greater autonomy.

In mediation, however, the process ought to be purely cooperative and interest-based.[40] There is no ZOPA. Nor are there any objective criteria. The goal in mediation is for the mediator to focus on each party's subjective desires, and to help them to articulate them and reach an outcome based on these subjective considerations, which will be mutually satisfactory to both sides. Unlike a conciliator, a mediator refrains from making proposals unless requested to do so by both parties or as part of a general brainstorming exercise to propose new options. The mediator's job is to help the parties to reach a resolution to the dispute that is

[40] This more the case in continental Europe than in North America and the UK, where mediation is considered to be a dispute resolution process that is distinct and separate from conciliation. In the USA and UK, however, mediation is often combined with or handled in the same way as conciliation, as a somewhat evaluative process. It is often the case that mediations are run as a single day-long process in these countries, where the mediator starts off acting non-evaluatively in the morning (e.g., purely facilitatively), but becomes increasingly evaluative during the day (and thus, changing into a conciliator) closer to the end of the day, when the neutral has had several caucuses during the day and has an idea as to where the case might settle. It is also increasingly common in these countries for the parties and the mediator to propose that (s)he makes a mediator's settlement proposal at the end of the day if the case does not settle, which means that the parties tend to view the neutral as a person whose opinion matters, and needs to be influenced. The focus is thus less on the other side's understanding and interests than on trying to influence the mediator competitively to form a view of the case closer to the party's positions.

based on their subjective needs and interests, looking to the future.[41] From a neurobiological perspective, the job of a mediator may be described as minimizing perceptions of danger, enabling cognitive appreciations of emotions (e.g., verbalizing them) to dampen the amygdala and help the parties self-regulate, recognize ADR not only as a facilitated negotiation, but as part of a social process in which the disputants can relate "in-group", bond, demonstrate empathy, and build comfortable social relations. The mediator enables the parties in so doing to dampen "X-system" cognition, and resort to "C-system" optimal decision-making, allowing cognitive assessments of possible rewards (perspective taking v. empathy) to shape future outcomes cooperatively.

This is not to say that mediation is better than arbitration or conciliation. Each dispute has its own dynamic and all three processes have the benefit of enhancing reflective v. reflexive appreciation, albeit in different ways. Each one, when managed properly, can assist the parties in reaching outcomes that can be enforced (if necessary) or complied with, and faster and cheaper outcomes than resorting to traditional litigious pathways. Each one has its respective advantages and disadvantages, when assessed in terms of where the parties are located in terms of conflict escalation. There is a higher risk, however, after an award is issued by an arbitrator or a proposal or opinion are rendered by a conciliator, for the parties to view it as unfair or biased, even if this can be proven not to have been the case.[42] The point is that these various ADR processes should all be considered and assessed in parallel, in terms of their possible neurobiological impact on the parties, their counsel and their mental decision-making processes, taking into account the "ten neuro-commandments."

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[41] This distinction between mediation and other forms of ADR is captured in the Swiss Rules of Commercial Mediation, *available at https://www.swissarbitration.org/sm/download/swiss_mediation_rules_version_2007_english.pdf,* as follows:

> "Mediation is an alternative method of dispute resolution whereby two or more parties ask a neutral third party, the mediator, to assist them in settling a dispute or in avoiding future conflicts. The mediator facilitates the exchange of opinions between the parties and encourages them to explore solutions that are acceptable to all the participants. *Unlike an expert the mediator does not offer his or her own views nor make proposals like a conciliator, and unlike an arbitrator he or she does not render an award.*"

Id. (emphasis added).

[42] *See* Benoit Bediou et al., *Effects of Outcomes and Random Arbitration on Emotions in a Competitive Gambling Task*, FRONTIERS IN EMOTION SCIENCE (Oct. 4, 2011), *available at* http://www.frontiersin.org/Emotion_Science/10.3389/fpsyg.2011.00213/full.

IV. Conflict Escalation Theory And Process Design

An understanding of the "ten neuro-commandments" clearly suggests that the type of process that is used is likely to have a huge influence on the outcome. It gives credence to David Plant's quotation at the beginning of this article, which is often a "blind spot" in many litigations. Once a process has been chosen it actually becomes part of the problem itself. The parties and their counsel often limit their thinking to what the process requires, and will be conditioned to behave in a certain way, "trapped" by their unconscious patterns of perception and behaviour, and only using their traditional "X-system" networks, thus often gradually leading to increasingly entrenched positions or an inability to look to the future or to seek possible outcomes for mutual gain that analyse the clients' interests differently.

Much has been written about the dangers of conflict escalation and the propensity of positional or competitive ADR processes to escalate if they do not resolve themselves, or if the neutral is not able to assist the parties in reaching an agreement or imposing an outcome. Conflict escalation theory, however, is a topic seldom taught in law schools. Yet it is a vital element to take into account when designing ADR processes. It is not a topic on the bar exam of most countries or states and it is a concept many lawyers are not familiar with at all. The concept can be helpful to diagnose and identify where a conflict currently stands, and its propensity to escalate further or to de-escalate. This can help the parties to reflect on possible neurobiological mechanisms influencing the process, which may even be driving its escalation. Identifying a conflict along a measurable scale (even if it requires subjective appraisal) allows parties and their counsel to think numerically, where and how they are currently positioned on it, and which area of the scale they would like to resolve their dispute. The simple act of asking the parties and their counsel to numerically state where they are on a scale and where they think the other party is on the same scale, can trigger new thinking and perspective-taking, using cortical pathways to reveal unexpected answers.

An example of such a scale is the nine-step diagnostic test developed by Professor Friedrich Glasl, an Austrian neutral and consultant. It is extremely helpful when analysing conflicts from a neurobiological perspective and when thinking of appropriate procedural interventions. Glasl's nine step scale suggests that there are three possible zones in which the parties may wish to resolve a

conflict: a "win-win" zone (which is essentially where interest-based ADR is practiced, and where the parties can work cooperatively), a "win-lose" zone, (in which there can be a winner and a loser in a conventional positional ADR process), and a "lose-lose" zone (where the parties may be stuck and may feel that they need a third party neutral to simply come in and decide the situation for them).[43] This scenario is termed "lose-lose" because even if the neutral (e.g., an arbitrator) is capable of fully resolving the matter in a cost-effective and rapid manner, the emotions, time, energy and other resources that have been spent to date as well as lost relationships can never be recouped.

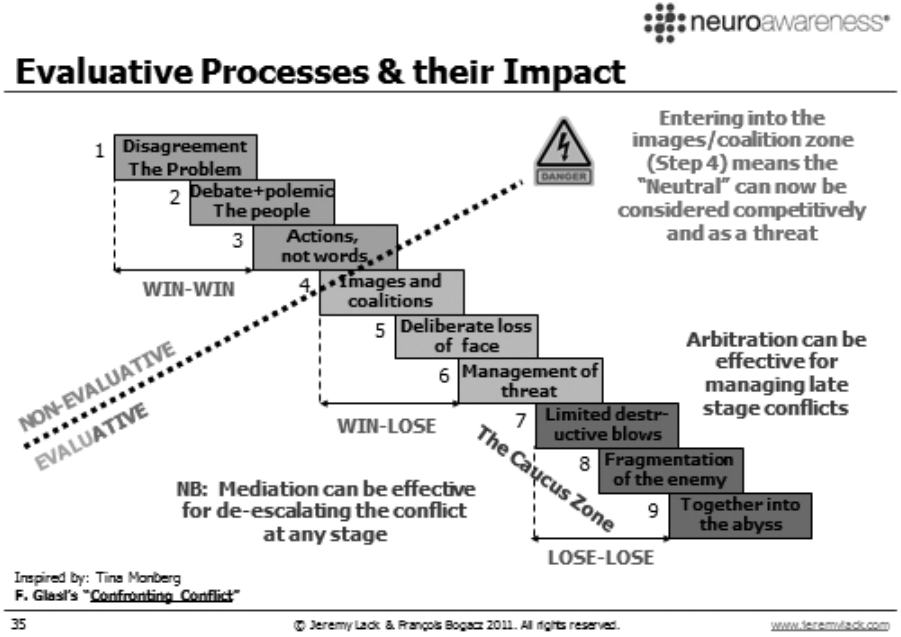

FIGURE 8: GLASL'S 9 STEPS OF CONFLICT ESCALATION AND ADR OPTIONS

These three zones correspond to Glasl's nine steps in the conflict escalation scale as indicated in Figure 9 above. This escalation cycle is typical in positional ADR processes, which are the default methods we use to resolve conflict, and each step merits further attention and can be described as follows:

[43] FRIEDRICH GLASL, KONFLIKTMANAGEMENT. EIN HANDBUCH FÜR FÜHRUNGSKRÄFTE, BERATERINNEN UND BERATER (Bern: Paul Haupt Verlag 1997).

Stage 1: Disagreement – The Problem

The parties become aware that they have different views about an issue. The disagreement takes on the dimension of a problem, where the parties start to discuss the problem and seek to bring the other party around to their line of thinking. If they cannot agree, their views then tend to harden into positions.

Stage 2: Debate & Polemic – The People

The problem has turned into a positional dispute. The parties are arguing and debating their respective positions. They wish the other to understand the logic and strength of their position, and to agree with it. If a debate has not resolved the matter, a sense of frustration sets in, and the parties enter Stage 3.

Stage 3: Actions, not Words

One or both sides will start to take action. The parties' perceptions are that they have tried to negotiate in good faith but failed, and that the other is being obstinate, unreasonable or in bad faith. Communication breaks down as each party believes that further discussion is useless. The natural step in the escalation cycle is Stage 4, as the parties feel that nothing can be achieved through further dialogue.

Stage 4: Images and Coalitions

The disputants start creating groups or camps, seeking recognition from peers, leaders or experts as to the correctness of their position and to reinforce their image of themselves as being "right" and the other party as being "wrong." They are in pain. Having failed to convince the other side, each side tries to convince third parties to confirm they are right, or to intervene on their behalf.

Stage 5: Loss of Face

The moment a party has succeeded in winning over a group of people, the other side will see its image as being tarnished and as being under attack. The result is perceived as a deliberate loss of face deliberately caused by the other party. In collectivist societies this may give rise to profound feelings of shame. Public refutation is now required. This refutation must show that the other disputant is neither right, nor reasonable but simply wrong, causing him/her to also lose face within his/her own community. There is a strong sense of anger or humiliation that has been created, which

requires corrective measures. The parties will also start attributing antagonistic intentions to the other party's observed behaviour.

Stage 6: Management of Threat

By Stage 6, the other side's behaviour and refusal to change has now become a threat that must be managed and contained. There are now clearly two groups: those who are "right" and those who are "wrong". The disputants will start to make counter threats and impose ultimatums. Letters before legal action will be sent. Parties are now entrenched in their positions and there is mutual fear given that their initial threats and deadlines have not been heeded. If the threat will not disappear, remedial action will be needed. The brain resorts to instinctive pressure tactics to convince the other side to give in.

Stage 7: Limited Destructive Blows

The parties feel compelled to take protective measures and start to exert real pressure, such as initiating legal proceedings. They feel they have become the agents of the other party's actions, and are compelled to take appropriate measures to defend themselves. They perceive their actions as reasonably constrained and feel that they are mere responding to the other party's intransigence, having no other options. Their autonomy is seriously impinged. By now, all communication between the parties is deemed to be useless and even counterproductive. The disputants prefer to communicate only via their lawyers, and all social relations and opportunities to restore relations are cut off. It is now a matter of survival and protecting oneself. Fear and the "away reflex" has become the fundamental factor driving the parties' behaviour.

Stage 8: Fragmentation of the Enemy

At this stage the parties are in pure self-preservation mode. The consequences of each party's limited destructive blows is that the other party feels wounded, and under increased pressure to take even more forceful and demonstrable measures. The concern is not becoming one of survival. As the parties increase the pressure on one-another, this leads to further fragmentation and the parties start fighting openly. At this stage, the other party ceases to be considered as a person but as an enemy. It needs to be dealt with once and for all. No empathy or human contact is even conceivable.

Stage 9: Together in the Abyss

By this stage, the parties are no longer reasoning in terms of their own preservation. Anger and a desire to punish the other starts to set in. In extreme cases, the goal has no longer become winning the dispute but simply inflicting the greatest amount of damage and destroying the other party. At this stage the concern is not only about survival, but punishing the enemy and exacting revenge. Matters have degraded so far that inflicting greater harm on the other side than they have inflicted themselves becomes a serious motivation. The desire to destroy the other side overtakes everything else. Whether the disputant loses all of its assets, has to fabricate evidence, has to lie, go bankrupt, or risk a jail sentence is no longer important to them, so long as the other side is destroyed. This phase is aptly called "together into the abyss."

It is possible to see from Figure 8 how these nine steps correspond to the "ten neuro-commandments," and to understand how each of these ten social and behavioural drivers can be impacted by procedural interventions as the conflict escalates. The challenge becomes how to de-escalate the conflict, and move it back into the green "win-win" zone, if possible and if this is what the parties wish. It is also important at this stage to realise how the presence of an evaluative or non-evaluative neutral can make a big difference. The border between stages 3 and 4 is crucial, since that is where the presence of the neutral may shift the parties' behavior from a positional/competitive stance into an interest-based/cooperative one. This can occur both ways. Bringing in a facilitative (but non-evaluative neutral) can have an impact at all stages of the conflict – even at stage 9 – since it allows the parties to take time out to focus for a moment on possible rewards and whether, and if so how, they wish to bring the conflict back into the green zone. This can often be achieved by using combinations of ADR processes and hybrids.[44] Whereas arbitrations can be very effective in the red zone, where the parties feel incapable of resolving the problem themselves any longer, conciliations can help the parties to compromise rapidly and cheaply the yellow zone. Mediation, however, remains a ubiquitous possibility, that can help the parties reach the green zone and stay within it. The neutral in this case, however, must be very careful and conscious of the consequences of becoming evaluative and allowing the conflict to migrate to step 4. By acting evaluatively the neutral runs the risk of escalating the pro-

[44] *See* Lack, *supra* note 34, for a discussion of hybrids and how they can be used.

cess once again through the creation of a coalition, thus reactivating competitive and positional neural pathways.

Viewed differently, it is possible to caricaturize the escalation process in terms of neural pathways and regions of the brain that exert a key influence on how the case is evolving, as shown in Figure 9 below.

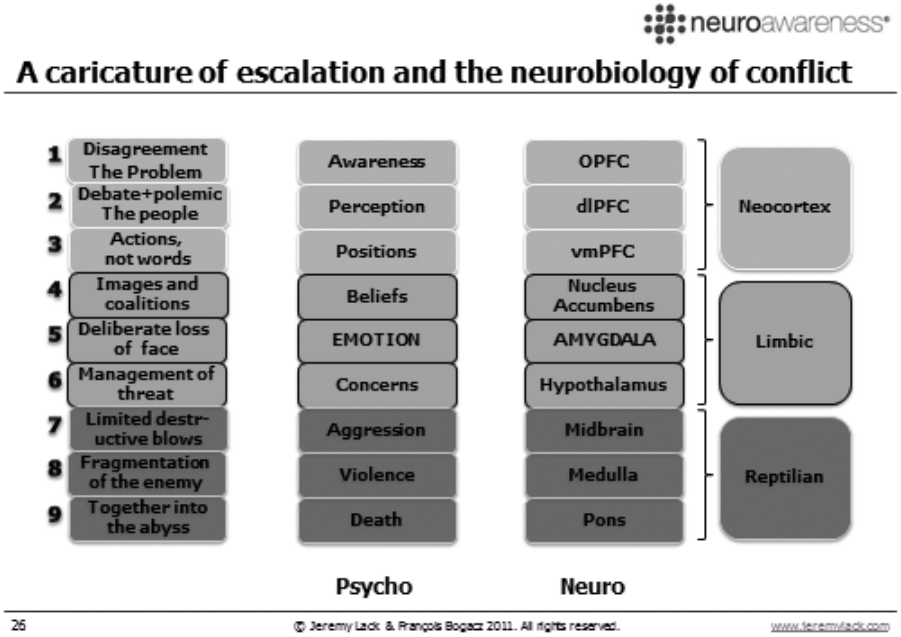

FIGURE 9: POSSIBLE BRAIN REGIONS THAT MAY BECOME MORE PREVALENT AT EACH OF GLASL'S 9 STEPS

Although it is preposterous and scientifically impossible to accurately characterize the green, orange or red zones of Glasl's stages to the brain, it may be helpful to do so simply as a metaphor for conflict, and to understand that different zones of the brain or neural assemblies may be dominant at various stages. Thus, the green zone in which high order cortical thinking (the "C-system" in particular) is dominant, can be delineated from the orange zone, in which emotional or limbic responses prevail, and the red zone may correspond to disputes where the parties are behaving instinctively and animalistically through their fight, flight or freeze survival instincts, without cognitive reflection. Understanding this can help the neutral, the parties and their counsel to have a renewed appreciation of how they are functioning and in what zone of the scale they wish to resolve it. It is then possible to shape appropriate and neurobiologically compatible interventions to alter the process, us-

ing interest-based ADR techniques, or by combining neutrals such as a mediator, a conciliator and an arbitrator, working together.

V. USING A "NEURO-COMPASS" IN ADR

Keeping track of the "ten neuro-commandments" and trying to guess possible implications of what might be happening in the brain at various instances can be a dizzyingly complicated task and lead to dangerously wrong prognoses. Our knowledge of neurobiology is woefully incomplete, and much more remains unknown than known. Fortunately, simple tools already exist that can be used to help navigate these complicated waters, which do not require scientific understanding or accuracy, but can help to trigger an awareness of invisible neurobiological influences that may be driving the process and can be used by neutrals to shape ADR processes. The overarching principle from a neurobiological perspective that that optimal cognitive outcomes can only be achieved by paying attention to the process itself, as well as the underlying emotions and social dynamics that are affecting the parties' behavior "in groups" or as "between groups". This principle may be summed up with the acronym "COPES" as summarized in Figure 10 below.

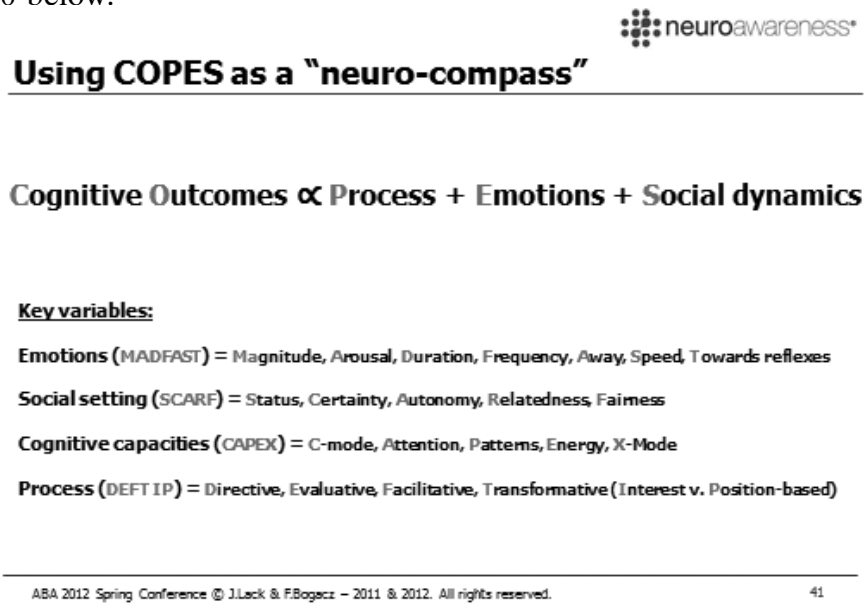

FIGURE 10: COPES AS A "NEURO-COMPASS", AND OTHER KEY VARIABLES

The key variables in this neuro-compass may further be summarized and remembered using the acronyms MADFAST (for emotional parameters), SCARF (for social parameters), CAPEX (for cognitive parameters) and DEFT IP (for procedural considerations). The ability to detect, diagnose and influence each of these variables is likely to enhance a party's or their counsel's ability to reach an optimal outcome.

It is beyond the scope of this paper to go into the details of each of these variables or mnemonics. That which tends to be most neglected, however, is the social drivers involved in any ADR context. Mediation has often been described as a facilitated negotiation. This, however, misses an important part of the picture. Mediation is not only a facilitated negotiation, but also a social process, where the mere presence of one or more neutrals will disrupt traditional patterns of social interaction (e.g., as between two negotiators or opponents), and create a new opportunity of developing a new sense of shared community dynamics for the purposes of allowing the parties to resolve their differences collaboratively. David Rock, a leader in the field of leadership and motivational management, has coined the word "SCARF" as a useful mnemonic by which to remember five key social drivers that may influence a mediation that are often overlooked. Rock's hypothesis is that human behavior can be simply monitored and affected (including all ten "neuro-commandments") by focusing on these five key drivers of social behavior: *S*tatus, *C*ertainty, *A*utonomy, *R*elatedness and *F*airness. He explains this convincingly in a 2008 article that the reader is recommended to read.[45]

Although Rock's model is mainly framed to help managers to lead teams of people in the workplace (and has indeed been used to create his NeuroLeadership Institute[46]), it can be applied to the field of conflict resolution and can help neutrals and lawyers to think about suitable ADR processes and interventions to prevent and resolve disputes, prepare for them, prepare their opening statements, and determine how and when to make certain interventions. It can be used to create a sense of belong to the same group, enabling natural empathy and creative cooperation to exist as more resources are freed up in the brain in the absence of any "away reflex" being activated. SCARF can help to think not only

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45 David Rock, *SCARF: A Brain-based Model for Collaborating with and Influencing Others*, NEUROLEADERSHIP J., 1–9 (2008), *available at* http://www.your-brain-at-work.com/files/NLJ_SCARFUS.pdf.

46 *See* NEUROLEADERSHIP INSTITUTE, http://www.neuroleadership.org/.

in terms of reaching settlements, but in in terms of what process will correspond best to the parties' needs and interests, and will result in outcomes that will have a greater chance of being complied with. The acronym Scan also be used as an effective tool to immediately diagnose what might be activating "away reflexes" and be used to generate "toward reflexes", as set out below at Figure 11.

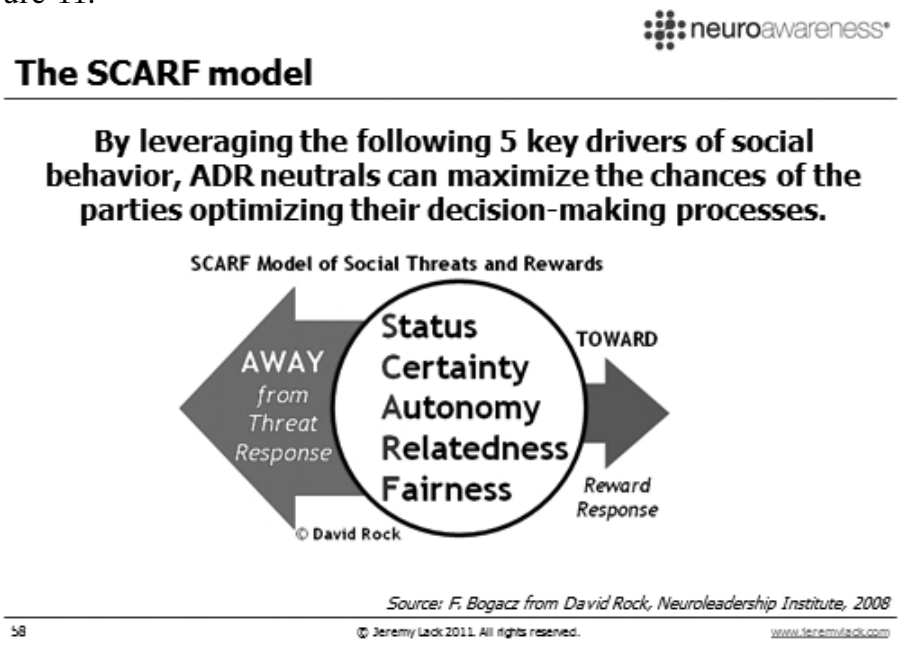

FIGURE 11: D. ROCK'S SCARF MNEMONIC AS A POSSIBLE "NEURO-COMPASS" IN ADR PROCESSES

COPES and SCARF are acronyms that are easy to remember and can be useful lenses through which to re-assess ADR processes. They can also help parties and their counsel tend to understand why part discussions have failed, and the consequences of automatically entering into litigation or arbitration proceedings merely because past attempts to negotiate directly between the parties have failed.

In negotiations, each party seeks to have a heightened sense of status and autonomy. Where these are positional, the parties may feel under stress due to their inability to control or accurately predict the other party's behavior with any sense of certainty, and any sense of relationship or what is fair, is likely to be highly conditioned by the parties' emotions. Nor are the parties able to construct a sense of shared group identity that would allow their

cooperative and creative patterns of behavior and reflection to be activated. The separation of roles between the parties and their lawyers may also be unclear in negotiations. In arbitration or litigation, however, the parties have a clear status and the role of the arbitrator or the judge is clear. The parties are either the plaintiff/claimant or defendant/respondent, and their lawyers have a clear understanding of what their role is and what is expected of them. Although the parties are deprived of a certain sense of autonomy, they may feel they gain greater certainty (e.g., that there will be an ultimate outcome), and that they are no longer interested in any relationship with the other side in view of the level at which the conflict has already escalated. By providing the judge with the status to decide everything in the name of the rule of law, and by allowing the lawyers to act as their advocates, the parties have a sense of reduced status, which also promotes as sense of fairness and balance of power. All of the participants know their roles and functions, and the increased formality of the process allows the parties to suppress their emotions and try to focus instead on applying a legal syllogism whereby "facts + law(s) = outcomes." Each side has a sense of belonging to a group (the group that is "right" as opposed to the other group that is "wrong"). This explains why parties and their counsel will readily default bringing in third parties as an arbitrator or resort to judicial proceedings.

The difficulty that many parties and counsel have in accepting mediation or conciliation as an ADR process may also be understood in terms of SCARF. The parties and their counsel often are confused by their sense of status. The delineations of the roles between a party and counsel are less clear, and many lawyers openly express a sense of discomfort or a lack of understanding of their role in mediation, which explains their tendency to often try and advocate to a mediator as though (s)he were a judge, and seek to create coalitions with them. Parties will also often hesitate to speak, feeling that they do not have appropriate status to do so in opening statements in mediations or conciliations. The parties and there counsel may also start off with a heightened sense of uncertainty. They may think: "What if no outcome is reached?" "What if the other side will drag the mediation or conciliation on interminably?" These thoughts may give rise to patterns of fear or "away reflexes," causing the parties and their counsel to instinctively avoid such ADR processes. Although autonomy and relatedness may be optimized in such ADR proceedings, this may not be readily understood or appreciated by the parties of their counsel. In

many cultures, the display of emotion may be viewed as a loss of face or as something to be avoided in joint session. As such, the counsel or the neutrals may push the parties to work primarily in caucuses as opposed to in joint sessions. This may have the effect, however, of depriving the parties of reconnecting at a social level, working cooperatively, or developing a sense of relatedness. If the parties are pushed into caucuses, it is difficult to see how confidence building steps can be taken, how a sense of belonging to the same "in-group" may be created, or how the parties may develop trust, generate the release of oxytocin, empathize, have a shared experience, or allow their mirror neurons to be activated by the other party's signs of distress or discomfort.

It is thus incumbent on neutrals, especially when working as mediators or conciliators, to be particularly sensitive to the five social drivers that are encapsulated in the acronym SCARF and to consider each of the variables in COPES and how to prime the parties to be able to reach the best possible outcome, using their own "towards reflexes." The neutral should ensure that his/her presence and sense of status is understood (being higher as an expert in the case of conciliation than as a process facilitator in mediation). It is also useful to remind the parties that they are the protagonists in interest-based ADR processes, as they are they are the only people in the room having expertise with respect to interests. Lawyers should also be encouraged to participate and their sense of status acknowledged as the valued advisors of the parties, who normally will have greater expertise when it comes to understanding the parties' alternatives to a negotiated process (at least in terms of what the law may have to provide as a benchmark). It is also important for mediators and conciliators to recognize the lack of certainty that may be affecting the parties' willingness to try these proceedings, as well as that of their counsel. This can be done by placing greater emphasis on prior preparations with the parties and their counsel before having a first joint session, helping the parties to understand their roles, what may happen, and by setting an agenda for the mediation process early on. It is important to underline the parties' autonomy, in terms of the voluntary nature of both mediation and conciliation, and how neither party may compel the other to do anything. Relatedness may be built by optimal use of breaks, joint sessions and even a social program or setting that is conducive to generating positive relations (e.g., by sharing meals together, or having "in-group"-building exercises). Finally, fairness is a key aspect of all ADR processes, whereby

there should be fairness not only procedurally, but also substantively. This sense of substantive fairness is likely to happen, however, where both sides see one-another as working cooperatively and as genuinely seeking options for mutual gain. It is for this reason that the settlement awards that are produced in mediation are often preferred to arbitral decisions or conciliators proposals, and are normally complied with automatically in the vast majority of cases.

Understanding COPES and SCARF can also be used as a neutral as a rapid diagnostic test as to what may have gone wrong in a discussion or negotiation, and to diagnose obstacles or impediments that might have surfaced. Often the process may not be optimal as it does not allow new cognitive appreciation of the dispute, or allow the parties to empathize or free cognitive resources to think creatively or do perspective-taking. An impasse is often the result of an uncomfortable sense of status or an inability to empathize (e.g., each side's unwillingness to allow the other to vent as a "victim"), a lack of certainty as to what might happen next or what may be another party's intentions, a perceived lack of autonomy (hence the recommendation to use another mnemonic: ACBD–Always Consult Before Deciding), a breakdown in a sense of relatedness (e.g., the perception of two separate groups) and a perceived lack of fairness of process, in offers that were made, or of substantive outcome when a conciliator formulates his/her proposal. These may be alleviated by highlighting the parties' autonomy, and refocusing on their shared values or interests. It may also be useful to structure the negotiation process by ensuring similar preparations and priming the parties to use their C-systems by having a cognitive appraisal of their emotions and tasking them to fill out charts or decision trees when shaping their analyses or their offers.[47] Ultimately, COPES and SCARF are reminders that can be used to help all participants feel valued, safe, autonomous, inter-related, and capable of working collaboratively to generate the best outcomes they can using their "C-systems."

COPES and its variables (including SCARF) may thus be used as a tool to plan for ADR processes, to advocate, make opening statements and interventions, deal with impasses or close an ADR process. Many problems can also be prevented or resolved by ap-

[47] A good example of a preparation tool, which builds on all five dimensions of SCARF when preparing for an ADR process or designing one is the Online Evaluation Form "Ole" developed by the International Mediation Institute (IMI), *available at* http://imimediation.org/ole.

plying this simple mnemonic and its variables to adversarial situations and using them as a compass, to diagnose what may be driving a dispute, what patterns of human behavior may be blocking it, and what may be an appropriate process for resolving it.[48]

VI. The Ethics Of "Neuro-Adr": A New Concern?

ADR and process design raise many new issues when considered from a neurobiological perspective. Understanding the human brain and the impact of the "ten neuro-commandments" may give rise to all sorts of strategies whereby the parties, counsel and/or the neutrals may try to manipulate one-another or where the process itself may become a tool for manipulation. This raises many new and serious ethical concerns concerning party autonomy (in terms of self-determination and informed consent), procedural fairness (in terms of power balance and the difficulty of the human brain not to act emotionally or with a certain sense of unconscious bias), and substantive fairness (especially with respect to vulnerable stakeholders or where parties are induced into voluntarily accepting outcomes that may be far worse than their Probable Alternative to a Negotiated Agreement (PATNAs)). Can any human being really act independently, impartially and neutrally? Neurobiology would suggest that we are all highly inter-dependent, that we automatically seek status, expect recognition of our perception of self-deemed status, and require positive relations with others. It also suggests that we act "multi-partially" (by automatically empathizing and mirroring) as opposed to "impartially," and that neutrality is a myth, in view of our emotional hardwiring.

This has serious implications for arbitration and litigation as well as all ADR processes. The International Code of Ethics of the International Bar Association and the IBA Guidelines on Conflicts of Interest in International Arbitration (2004) may need to be reviewed in view of what neurobiology suggests, especially with regards to general standards regarding such terms as "impartiality," "independence" and due process. It is also possible that the "ten neuro-commandments" described in this paper will prove to be wrong, or to reflect on the author's own cultural biases. Mankind has a terrible track record when it comes to pseudo-scientific as-

[48] It is interesting to see how the principles of SCARF also overlap with the contents of Douglas Stone et al., Difficult Conversations: How to Discuss What Matters Most (Viking Penguin 1999, rev. 2010).

sessments of human and behavioral intelligence, resulting in what can only be called with hindsight "scientific racism."[49]

It may conversely be that if this article proves to be accurate, and that parties may indeed be "hypnotized" or manipulated into using certain mental assemblies to behave a certain way, and that a neutral may use his/her understanding of neurobiology to influence an outcome. If so, it is all the more important for ADR neutrals to be transparent in their conduct and to explain procedural from a neurobiological perspective so that the parties may have a cognitive appreciation of the potential implications of a neutral's suggestions. Although the Model Standards of Conduct for Mediators adopted by the American Arbitration Association, the American Bar Association, and the Association for Conflict Resolution in 2005 set clear criteria for mediators, neurobiology raises new tensions between some of the standards contained in this document (e.g., Self-Determination, Impartiality, Competence and Quality of Process). Moreover, there is little or no discussion about how ethical obligations may vary in accordance with the type of ADR process chosen. JAMS' Mediators Ethics Guidelines contain a first rule of conduct, which applies to all ADR cases and should possibly be considered as a new starting point for all ADR processes. It reads: "*I. A mediator should ensure that all parties are informed about the mediator's role and nature of the mediation process, and that all parties understand the terms of settlement.*"[50] This could be

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[49] *See, e.g.,* STEPHEN JAY GOULD, THE MISMEASURE OF MAN (W. Norton & Co 1981, rev. 1996).

[50] *See* JAMS Mediators Ethics Guidelines, *available at* http://www.jamsadr.com/mediators-ethics/. The comment to this rule reads as follows:

> A mediator should ensure that all parties understand and agree to mediation as a process, the mediator's role in that process and all parties' relationship to the mediator. The parties should also understand the particular procedures the mediator intends to employ, including whether and in what manner the mediator may help the parties evaluate the likely outcome of the dispute in court or arbitration if they cannot reach settlement through mediation. In addition, a mediator should be satisfied that the parties have considered and understood the terms of any settlement, and should, if appropriate, advise the parties to seek legal or other specialized advice. If the mediator perceives that a party is unable to give informed consent to participation in the process or to the terms of settlement due to, for example, the impact of a physical or mental impairment, the process should not continue until the mediator is satisfied that such informed consent has been obtained from the party or the party's duly authorized representative. In the event that, prior to or during a mediation session, it becomes appropriate to discuss the possibility of combining mediation with binding arbitration, the mediator should explain how a mediator's role and relationship to the parties may be altered, as well as the impact such a shift may have on the disclosure of information to the mediator. The parties should be given the opportunity to select another neutral to conduct the arbitration procedure.

Id.

interpreted with respect to an understanding of the neurobiological impact of processes as well.

This article runs the risk of falling into the trap of creating confusion or issues where there are none, or raising issues far before we are equipped to handle them. When reviewing an early draft of this paper, Ken Cloke issued the following warning:

> For me, the difficulty is what to do with the research, and how to translate it into technique without slipping into the worst sort of opportunistic manipulation. I think this warning needs to be stated very clearly. I'm not convinced that any of us have got the approach right yet, and would want to leave the issues open for discussion while at the same time examining everything we know about conflict resolution from the point of view of brain research. I am not sure we have either the right answers or the right attitude toward finding them. I think it would be helpful to invite mediators to join in a systematic examination of what has been learned and how to use it.[51]

This is a sensible and prudent way of stating the issue. At the same time, we may all be manipulating or being manipulated constantly, as it is, unconsciously. In that case it is probably useful for people to become "neuro-aware," and appreciate the ways in which they might be manipulated without realizing it. There is also somewhere a fine line between "manipulating" and "positively influencing." Hopefully we will find the right balance as our understanding of this field progresses. In the meantime, ADR neutrals are encouraged to send in their comments to this paper. The creation of a group of ADR practitioners and neuroscientists willing to work together in this field, compile systematic feedback and discuss and develop a set of "best practices" would be useful.[52]

VII. Conclusion

Assuming that humans are indeed conditioned or hardwired to approach conflict in certain ways, and that the "ten neuro-commandments" contained in this paper have any substance or degree of accuracy to them, it is important to try to understand conflicts in terms of what might be going on in the human brain and in terms of possible ways in which we may be evolutionarily conditioned to behave as animals. Lawyers and ADR practitioners should be en-

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51 E-mail from K. Cloke to J. Lack (Sept. 14, 2011) (on file with authors).

52 E-mail from H. Leifhebber to J. Lack (Sept. 14, 2011) (on file with authors).

couraged to learn about the impact of process on outcome, and how decision-making processes or memories may be shaped or influenced. Even if much of what has been presented in this paper turns out to be overstated or incorrect, it is the processes of reflection (and not reflexion) of lawyers that matter, with respect to both procedural options and outcomes. We may be in the dark ages when it comes to understanding the neurobiology of conflict. Scientists may only have very primitive, large, costly and cumbersome devices at their disposal today, providing rudimentary insights into the brain in situations of conflict. Yet new discoveries are already being made every day that can help lawyers and ADR neutrals to rethink their personal practices and preferences, and reassess techniques or interventions they have used in the past and think through possible interventions in difficult cases.

Whether it is a matter of changing a process from a competitive to a cooperative framework, or designing hybrid processes, an awareness of neurobiology can help us think anew about our preconceived notions of traditional justice models or dispute resolution systems. There is a broad spectrum of possibilities availabilities to the parties in all cases. Negotiation, mediation, conciliation and arbitration all clearly have their own individual advantages and disadvantages. Each can bring distinctive benefits depending on when and how it is used. Until now, the focus has been on which type of process or neutral to use and when. In the future we can imagine scenarios where more than one neutral will be used at a time, using creative combinations of ADR processes to allow the parties to operate and think through their conflict at many levels, while building constructively on human tendencies to generate positive social relations, optimizing high-order cortical thought pathways, and using the vast and creative talent that remains untapped in the human brain by moving away from predominant positional and competitive dispute resolution patterns. In so doing, we should remember the two opening quotations by which this paper was started: we need to consider the process itself as part of the problem and we need to remember that we do not perceive things as they are, but as we are.

