1-1-2017

The Social Brain

Alexandra Crampton
Marquette University, alexandra.crampton@marquette.edu

Published version. "The Social Brain." in *The Negotiator's Desk Reference* / Christopher Honeyman, Andrea Kupfer Schneider, editors. Saint Paul, Minn. : DRI Press, [2017]: 115-125. Publisher link.

9

The Social Brain

Alexandra Crampton

Editors' Note: The economists' traditional and convenient concept of human beings as rational actors who pursue self-interest has by now been thoroughly amended, if not debunked. But how the complicating factors, including gender, culture, emotion, and cognitive distortions, actually work in our brains has been elusive until more recently. Lately, however, neuroscience has begun to make inroads toward a better understanding of many of these factors. This chapter describes one large piece of the puzzle: the evolution of human beings' brains as those of a highly interdependent, social species.

Introduction

Negotiators often presume that the best negotiators are rational actors who can accurately assess a given situation, identify all possible options, and select the best options. As previous scholarship has shown, however, we rarely negotiate in such a simple and straightforward way—emotions, cognitive distortions, gender, and culture are among the many factors that complicate both how we negotiate and the range of potential outcomes. More recently, neuroscience has offered insight into how this may be due to the evolution of our brains. We evolved as a highly interdependent, social species. How our brains negotiate in a social species can be described as the workings of a social brain.

Most of our brain development happens after birth, such that we are *created by* our environments more than any other creature (Wexler 2008). This developmental process is what separates us from our biolog-

Alexandra Crampton is an Associate Professor in Social and Cultural Sciences at Marquette University. She received her B.A. from Stanford and a Master's in Social Work and Joint Ph.D. (Anthropology and Social Work) from the University of Michigan. She received negotiation training through the Program on Negotiation as a PON research fellow, which was followed by writing on negotiation pedagogy for NP@PON. She delivered the keynote for the 2015 Wisconsin Bar Association training on culture in dispute resolution, providing integration of neuroscience and culture concepts. Her mediation research and practice focus is on elder and family court mediation.

ical forebears as well as our human contemporaries, because no two brains evolve in the same way. In other words, we begin life with shared genetic traits that allow us to socialize and to learn socially. And, in the process of growing up, we also respond variably to our environments, developing both individual and social selves. This degree of local adaptation has given humans an evolutionary advantage; unlike other animals, we can thrive on any part of the planet, and now, even seek new territory beyond (Wexler 2008). This has yielded tremendous variation in how we humans perceive, interact, and make changes in the world. Humans have also uniquely evolved the ability to shape our environment based on the inner sense of reality that matures through brain development, both socially and individually. We become "live wired" (Eagleman 2015) as *socioindividuals*. As a species, the good news is our creative ability to both adapt to and eventually craft our physical and social environments. Our ability to improve outcomes through successful negotiation theory and practice is one example of this.

While we might then want to end on a congratulatory note, neuroscientist Bruce Wexler (2008) raises a dilemma. The problem is how we give up adaptability as we mature, which neuroscientists study as loss of brain plasticity. When coupled with adult capacity to exert control over environments, this can lead to conflicts between adults trying to change each other rather than mutually determine co-existence. He argues that this was a strength back when people stayed in relatively isolated contexts. Variability was thus contained within simpler challenges of how to best adapt to a *slowly* changing context. When younger generations matured and challenged the ways of the old, this was to bridge manageable differences. The results were relatively stable yet locally adaptable cultures. Today, however, in a fast-paced and globalized world, the challenge of human variability has far outpaced that of our evolutionary ability to adapt. Wexler proposes that an inner biological need for consonance between internalized, individual sense of reality and external environments is an underlying cause of interpersonal and intergroup conflict. He thus offers a biological explanation (at least in part) for wars and protracted conflict (Wexler 2008). In reflecting on demographic trends, greater longevity may also exacerbate this challenge as generations stick around longer, and attempt to dominate or maintain the status quo rather than adaptively co-exist.

In this chapter, I use neurobiology and developmental psychology to help explain how negotiation happens through a *social brain*. We know this social brain through a unique creation within each of us, our own individual brain. Rather than a tension between choosing between social needs and individual self-interest, we negotiate as social individuals—or socioindividuals. The inspiration and most of the neuroscience data for this chapter comes from work by neuroscientists David Eagleman and

Bruce Wexler that integrates evolving knowledge of how the brain works with developmental and cognitive psychology (Eagleman 2011; Eagleman 2015; Wexler 2008). The first section presents the ways our brains develop socially. The second explains how brains also develop individually. The third brings these together to present Wexler's dilemma of how mature brains may clash in negotiation and other social contexts. I conclude by proposing a solution through recognizing in this dilemma a familiar challenge of negotiating effectively. Negotiation theory, in fact, offers lessons for our Paleolithic brains as we navigate an increasingly complex and interdependent global village.

Human Development and the Primacy of the Social

As Bruce Wexler explains, "the relationship between the individual and the environment is so extensive that it almost overstates the distinction between the two to speak of a relationship at all" (Wexler 2008: 39). In particular, this environment is a social (and culturally mediated) environment. This concept has been expressed in more collectivist cultures, such as the term "Ubuntu"—*I am because we are*. This is the theme of human development beginning with infant attachment and utter dependence upon caregivers, and continues through our individual and social needs to affiliate and identify with each other. Although those of us in more individualistic cultures may think of negotiation as a problem first of individuals and then of social interaction, our brains are wired for interconnection into what can be called a social brain. This allows us a greater range of adaptation, by sharing the advantage of variable traits rather than relying on individual insight and capability for survival.

In describing the social brain, scientists turn to mirror neurons first discovered in Macaque monkeys (Arbib 2012). These neurons are so named because they will automatically fire when the monkey observes another *as if* the observing monkey were performing the same (e.g.) arm movement. Mirror neurons are also what make watching movies so enjoyable, such that we internally experience events in our brains as if we were the actors (Wexler 2008). Mirror neurons are also thought to be the basis for developing empathy (Wexler 2008; Eagleman 2015). [See also NDR: O'Shea, *Compassion*] We are "hard wired" biologically to recognize basic emotional states through bodily expression. The universality of this trait is seen in how people from all cultures can recognize the same facial expressions for such emotions as happy, sad, and angry. These observations then lead to a mirrored emotional response in which we feel happy when another smiles.

The developing brain needs stimuli in order to grow. Many of those stimuli for infants come through interaction with caregivers, coupled with imitation of their sounds and gestures (Wexler 2008). Within these interactions is socioemotional development that helps infants to quickly

bond and attach to the caregivers in their environment (Hutchinson 2015). Imitative and affiliative responses that emerge and develop soon after birth allow infants and young children to know the outer world before developing the rational cognition and reflection that adults rely on to have a sense of self. This socioemotional self is not simply replaced by later cognitive development, but becomes the foundation for our understanding of the world through which that rational self later makes decisions and interacts. It thus remains an important part of how we know the world, even if it remains largely unconscious to the rational self. And we can observe this in ourselves and others during experiences in which our awareness transcends that self. For example, sports fans are well known for getting so caught up as they observe players that they physiologically react as if they are also playing. They are also physiologically altered in response to whether "their" team wins (Eagleman 2015).

These innate, affiliative traits have been explored in negotiation scholarship as sociobiological reasons for prosocial behavior in negotiation. Yarn and Jones (2006) have summarized these traits as trust and bonding with others, motivation to uphold notions of fairness, desire to seek revenge on those who violate such notions, and desire to seek forgiveness after social transgressions.

From an evolutionary biology perspective, the negotiation advice to find options for mutual gain and to seek shared interests is something we first experience through infant attachment as a survival strategy. It is part of the prosocial behavior that has allowed us greater range in adaptation by creating a "we" out of individual insight and capability. And this social brain manifests itself through inner biological responses to social engagement. Perhaps future research on the physiological responses of successful negotiation would provide biological markers of how we do not simply *think* of best outcomes but we *become* our negotiation outcomes as the inner brain is potentially altered through social engagement. [See NDR: Jendresen, *Creativity*]

At the same time, prosocial behavior can lead to worse negotiation outcomes if people agree with each other too quickly without pushing to identify all options. Intragroup harmony could also lead people to accept distorted views, or insufficiently maintain their self-interest. In this way, individual differences are also a necessary part of successful negotiation. How we become so uniquely individual is explored next.

Brains as "Livewired" Navigation Tools

Although we live as social animals, we also develop individually. And yet, we are not passive observers of an objective world (Eagleman 2011; 2015). Our eyes are not cameras and our brains are not computers that input information to then be processed through rational cognition. The eyes, for example, have to learn how to see (Eagleman 2015). Infants

grab and manipulate objects as part of this learning. When deprived of such interaction, as was done in experiments with kittens, proper eyesight never develops (Eagleman 2015). Our ability to perceive, interpret, and respond to external stimuli *requires* ongoing interaction. Eagleman (2015) refers to this as "live wiring." The importance of this has been found in children raised with sensory deprivation and in adults punished through solitary confinement (Wexler 2008). Moreover, adult brain development takes many years, which allows the larger environment even more time to impact and essentially become part of the brain.

The building blocks of the brain are cells called neurons, which connect to each other through firing and inhibition of electrical impulses. They are activated through response to external stimuli (from within the body as well as the external environment). In general, repeated stimuli will result in a patterned response of neural firing that becomes an internal representation of the experience of those stimuli. Through countless interactions in local environments, an internalized representation of outer reality called a "schema of neural networks" is spun out of 100 billion neurons. Scientists estimate that brains develop such high levels of connection that individual neurons are connected through no more than six intermediary cells (Wexler 2008). Moreover, the number of neurons and neural connections is not fixed. Instead, there are periods of intense growth, known as "blooming" that lead to greater patterning and "pruning" that results in greater reinforcement of some patterns and the loss of others. Pruning is a key part of how we refine and individualize ourselves (Eagleman 2015). A simple example is language. Although infants are born with capacity to recognize any language, the neural pathways for a native language are strengthened while those necessary for learning others are pruned (Eagleman 2015; Hutchinson 2015). Over time, pruning leads to both language expertise and language loss.

Since brain development is a process that takes many years, the world as experienced and initially represented within a young child is different from that of an adolescent and then an adult. For example, an infant may be merely able to experience the feel and taste of applesauce, while the toddler learns to recognize the object and say "applesauce," the older child eventually learns to make the apple-sauce, and the adolescent can reminisce about the good ol' days of applesauce without a physical prompt.

These memories are important because they not only inform our reality, but, as brain scientists tell us, that they *are* our reality (Eagleman 2015). What we presume to be the outer, objective world is in fact our brain's *interpretation* of outer stimuli, as brought to it through the body. Moreover, our rational mind and conscious memory form after multiple experiences have allowed our brains to develop an ability to interpret environments using available *cultural* tools of language and social habit.

[NDR: Miller, *Codes of Culture*] In fact, when we see an object as an adult, there is typically more activity coming from the brain based on past experience than there is activity stimulated directly by that object, because the brain "sees" the object by comparing it to what has been previously experienced (Eagleman 2015). As Eagleman (2015) states, we live in the past, constantly comparing what we have known with what is now present. Yet we eventually experience the cognitive ability to identify and interpret objects as natural rather than developmental. What we take as reality is a creation of neural firing in the brain.

> If you could perceive reality as it really is, you would be shocked by its colorless, odorless, tasteless silence. Outside your brain, there is just energy and matter. Over millions of years of evolution the human brain has become adept at turning this energy into a rich sensory experience of being in the world (Eagleman 2015: 36).

Moreover, this ability to create an inner reality based on outer experience is a complicated process of competing neural firings. Rather than passively considering objective data, the brain actively engages in "brain chatter" (Eagleman 2011) as different parts of the brain react with different patterns of neural firing. Eventually, there is a resolution to the potential competition called "convergence" (Eagleman 2011). This can be as simple as the convergence from seeing lines and shading that creates an image. The brain's ability to converge in different ways is experienced through viewing optical illusions, such as the famous drawing of a woman who can be seen as an old woman or a young woman (Eagleman 2015).[1] When using that exercise next time in negotiation training, note how your brain can toggle between one convergence of the image to the other using the same input of ink and blank space. Yet we cannot form two clear images at the same time, such that the clear image of the woman is always old *or* young, even as she remains both.

Convergence also happens in decision-making. In *The Brain: The Story of You*, Eagleman (2015) provides several examples of how the brain may struggle to make decisions. For example, emotional responses may compete with rational thought in deciding over whether to eat ice cream or go to the gym. He also reviews the famous trolley car dilemma in which the decision on how to save the most people, when a trolley car is about to crash, is experienced primarily as an emotional *or* rational dilemma--depending upon whether the brain is given an option to passively or actively cause a bystander's death.[2] In discussing the outcome of competing brain chatter, Eagleman suggests that the brain is less like a computer than "like a neural parliament, composed of rival political parties which fight it out to steer the ship of state" (Eagleman 2015: 100).

The consciously evaluative part of the brain develops last (well into the third decade), and is the part we may identify in negotiation to be the ship's navigator.

Thus, reality is not an objective world out there to be discovered. Instead, the reality each of us learns is the *internalized result* of brain adaptation to local environments while immersed in social relationships, particularly during the formative stages of childhood. These brains are what we then use to navigate—and negotiate—in these environments. While generalizations can be made based on how people raised in one environment can be expected to integrate aspects of that shared environment, each individual also develops our own ways of interacting with these environments as we develop a unique inner schema of ongoing social reality. Also, each of our individualized brains is continually engaged in internal negotiation amongst the inputs of brain chatter triggered by stimuli within the body and outer environment. This is what Eagleman means when he writes that the brain is "livewired" (Eagleman 2015: 6) rather than simply hard wired.

Wexler's Dilemma

From an evolutionary biology perspective, variation may cause short-term problems but it is the long-term solution. The highly variable results from prolonged periods of maturation under the influence of social (and physical) environments allows our species greater adaptation, which can then be passed to offspring through caregiving and socialization (Wexler 2008).

The problem, as Wexler (2008) explains in *Brain and Culture*, is in a biological imperative to resolve dissonance between internal and external environments, coupled with loss of brain adaptability (or "plasticity") as people mature into adults. Wexler is careful to distinguish between a biological reductionism, in which we *are* our genes, and epigenetics, which refers to gene expression. That is, epigenetics is the study of how genes interact within environments to develop higher order states, such as a mature brain. For example, a gene may not determine that a particular disease later develops, and yet provide the base from which gene expression then follows into an unfolding disease.

What we share as biological organisms is a "hard wired" need for internal coherence. The process of convergence can be an example. Wexler describes different responses in people to this biological imperative depending upon age. Young children have the neural plasticity to adapt to changing or dissonant external environments. They also lack the capability that adults learn to assert control over external environments. Adults lose neural plasticity as they develop a stable, internal schema for navigating environments—such as a native language or social habits. Simultaneously, we gain ability to resolve internal-external conflict by

altering external environments. The expression "My way or the highway" could come from this.

In other words, the biggest challenge to effective negotiation is adult maturity. In this sense, children make better negotiators, because they are more willing and able to socially integrate and identify with each other. This is supported through negotiation research showing the effectiveness of negotiation training for children (Johnson and Johnson 1996). In addition, the youngest are the most adaptable. For example, six year olds are better at overcoming presumptions of racial difference in learning to cooperate than are nine year olds (Bronson and Merryman 2011). By adolescence, the familiar sight in many "diverse" high schools is social segregation (Tatum 2003). [For more on the challenges of implementing these programs see NDR: McDonald & McDonald, *Peer Mediation*]

My response to Wexler's dilemma of highly differentiated adults wiring to compete is to emphasize the neural response training used in advanced negotiation. While adults have less brain plasticity to naturally alter inner neural networking in response to new social environments, and can exert more control over environments, we also have higher order thinking, the ability to imagine what is not yet there, and greater capacity to experiment, reflect, and build on experience. In particular, the basics of principled negotiation—to be soft on the people and hard on the problem—is a strategy that both leverages the benefits of social brains *and* adult capacity to think and reflect before acting and reacting (Fisher, Ury and Patton 2011). If the mind is composed more of chatter than singular and objective thought, we might strive to retain neural plasticity, as well as working to develop different options on how to respond within negotiations to arrive at a more collaborative outcome.

Wexler's Dilemma Revisited

To summarize how we reached Wexler's dilemma, the self in negotiation is a socioindividual who is more than an autonomous, rational actor. Since the higher order parts of the brain take the longest to develop, we experience the world before we have a sense of individuated self that knows it; we have a basic sense of self experiencing reality before we can linguistically and rationally identify it; and we have all of that before we are able to reflect, analyze and evaluate. In other words, we internalize past experience as reality before we develop adult capacity to decide how to bring that reality into negotiation, and how to consider the internalized schema that others also bring. If we rely solely on the rational parts of our brain, we have left most of ourselves out of negotiation. In order to move past this, the first lesson from neurobiology and developmental psychology is to get to know ourselves (as we have been discussing.) [NDR: Deutsch, *Internal Conflict*] We have been all of those previous

encounters and conclusions (about applesauce, for example.) And the second is to get to know the inner schema of others. Of course, this is challenging since much of this schema is not only livewired and subject to change, but is also unconscious. We may have to observe and reflect, rather than simply ask direct questions. For example, others may initially decline to share our applesauce and then proceed, through successive requests of "just tasting," to polish off our dessert. Thus, we want not only to learn what people think and express when asked their perspectives, but also to observe what they unconsciously express as important (or ignore as insignificant). [NDR: Heen & Stone, *Perceptions & Stories*]

In addition, we should be aware of negotiating with a social brain. Negotiation theory and practice are already well adapted to this. Translating advice from neuroscience, to be *soft on the people* (Fisher, Ury and Patton 2011) refers to allowing the internal habits of imitation and affiliation to create the bonds needed to then engage in the hard work of surfacing differences and exploring options. The evolutionary advantage of human variation generally for the creative adaptation and therefore survival of the species is also found on a smaller scale of exploring rather than avoiding differences in negotiation. Being *hard on the problem* (Fisher, Ury and Patton 2011) means staying with the dissonance caused by inner brain chatter, as well as the dissonance between one's inner sense and those of others. This competition may be about what makes sense, is fair, and what options are available to then evaluate. In this way, dissonance is not a problem, as much as it is the source of the variation and creative solution that we expect from negotiation training.

Moreover, interpersonal differences are manifested as dissonance between inner and outer selves that are to be expected, because no two people are alike. Dialogue and reflection can help surface these differences, to then weigh the merits of each perspective and arrive at a shared solution. [NDR: Gadlin, *Disagreement*] Negotiation training can help develop internal brain habits to choose more collaborative responses when confronted with brain chatter that is more impulsive, less prosocial, and/or based more on our past experience than our present options.

Conclusion

We have the capacity to develop wide-ranging ways of being through ongoing adaption to local environments and are hard-wired to do so interdependently. This occurs particularly through imitation, attachment, and identification with caregivers as infants, and with family and peers as we grow up. While we never lose the need to attach, and the ability to bond, we do lose the brain plasticity needed to adapt to unfamiliar others as we grow into adulthood. We become socioindividual with very particular livewiring. At the same time, we also develop th

cognitive ability to "step into the balcony" (Ury 1991: 31), assess situations, and *choose* how to interact, rather than merely projecting our presumed sense of reality onto a situation or trying to impose it on others. Adulthood thus both reduces the tools of childhood that make for effective negotiation and social behavior, and provides a way to overcome our internal resistance to dissonance. We draw from universal tools and traits of sociality when we are *soft on the people* and we apply our analytical ability to be *hard on the problem* when we insist on first becoming aware of the variable realities and assessments brought to the negotiation table by individual brains, and then fully exploring them before evaluating which dissonance is a problem, and which can drive us to find yet more options for mutual gain.

Notes

[1] A common version of the young/old woman image is provided through the website grand-illusions.com

[2] In the trolley dilemma first developed by Philippa Foot (1967), the decision maker is the driver of a runaway trolley. There are four people on the track ahead who will be killed if the trolley is not diverted to another track. However, there is also one person on the other possible path. An active decision to divert the trolley means actively causing one death. The alternative is to passively cause the death of four others (Eagleman 2015: 107-8).

References

Arbib, M. 2012. *How the Brain Got Language: The Mirror System Hypothesis*. New York: Oxford.

Bronson, P. and A. Merryman. 2011. *NurtureShock: New Thinking About Children*. New York: Twelve.

Eagleman, D. 2015. *The Brain: The Story of You*. New York: Pantheon.

Eagleman, D. 2011. *Incognito: The Secret Lives of the Brain*. New York: Pantheon.

Fisher, R., W. Ury and B. Patton. 2011. *Getting to Yes: Negotiating Agreement without Giving In*. New York: Viking Penguin.

Foot, P. 1967. The Problem of Abortion and the Doctrine of the Double Effect. *Oxford Review* 5: 5-15.

Hutchinson, E. 2015. *Dimensions of Human Behavior: The Changing Life Course*, 5th edn. Los Angeles: Sage Publications.

Johnson, D. W. and R. T. Johnson. 1996. Conflict Resolution and Peer Mediation Programs in Elementary and Secondary Schools: A Review of the Research. *Review of Educational Research* 66(4): 459-506.

Tatum, B. D. 2003. *Why Are All the Black Kids Sitting Together In the Cafeteria?: And Other Conversations About Race*. New York: Basic Books.

Ury, B. 1991. *Getting Past No: Negotiating In Difficult Situations*. New York: Bantam.

Wexler, B. 2008. *Brain and Culture: Neurobiology, Ideology, and Social Change*. Cambridge: MIT Press.