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Thinking Outside Our Brains: Interpersonal Neurobiology and Organizational Change

Linda J. Page, Ph.D., ACPC
Adler School of Professional Coaching

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Thinking Outside Our Brains: Interpersonal Neurobiology and Organizational Change

BY LINDA J. PAGE, PH.D., ACPC
ADLER SCHOOL OF PROFESSIONAL COACHING

Abstract: Organizational coaching and coaching in general draw on a number of different fields and academic disciplines. There is another field of study that integrates several disciplines. Stimulated by the past decade of intense brain research, this field is called “interpersonal neurobiology” (Siegel, 1999). By showing that our brain processes are profoundly social, interpersonal neurobiology bridges the human paradox of being both inhabitants of our own private phenomenological reality and necessarily embedded in social systems and dependent on others. This leads to understanding what it is about coaching that literally makes our brains grow and how that growth creates “supersystems,” as people make enduring connections outside their brains. A cyclical process is outlined to illustrate the distribution of “collaborative, contingent conversations” as leadership skills throughout an organization.

There is a growing consensus that the field of coaching studies should be cross-disciplinary, multi-disciplinary, or interdisciplinary—that is, a hyphenated field rather than one that is “owned” by any one existing academic discipline. As coaching theory, research, and practice inform and shape one another, the hope is that an integrated field uniquely identified as coaching will emerge. Over the past two decades, advances in brain research have also stimulated cross-disciplinary integration. Examining this growing trend not only supports coaching in maintaining its cross-disciplinary emphasis, but also puts some of the key elements of coaching, such as the coaching conversation and its capacity to stimulate individual and organizational development, on a firm footing in cognitive neuroscience research.

THE PARADOX

The psychiatrist and life philosopher, Alfred Adler, (1870-1937) pointed out that every human infant is dependent on others for survival, and this makes us subject to social norms and the priorities of others. At the same time, in the process of development, human beings create an inner world, a narrative of a universe that revolves around our own perceptions and desires that, as we soon find out, may be quite different from what others want. Adler found the answer to this paradox in a concept that (in English) he called “social interest.” The English terminology has its limits as a translation of the German term “Gemeinschaftsgefühl,” but in essence it indicates the human potential to transcend the paradox of individual uniqueness and social embeddedness by “using our unique selves to make a contribution to others.” That is, we resolve the apparent paradox by developing the capacity to connect our own interests to the advancement of the interests of others and, indeed, of humanity as a whole.

The concept of social interest may appear to be far too idealistic for the competitive organizational and business environment. Yet organizational theorists such as Margaret Wheatley and coaches like Timothy Gallwey claim that the extent and pace of change require replacing hierarchical, command-and-control functions with leadership that is distributed throughout the organization. That is, individuals in whatever position they occupy have a unique view that may impact that organization’s capacity to adapt, and thus each individual has a leadership role to play. This is true even for organizations that are presumed to be strictly hierarchical (such as the military). In their research on

organizations that require high reliability, where a small error can lead to disastrous consequences, Weick and Sutcliffe found that nuclear-powered aircraft carriers have developed a model of distributing leadership throughout the ranks in order to ensure that everyone takes responsibility for reliability.

In more general terms, the paradox of individual uniqueness and social embeddedness, and its resolution through social interest, relate to ongoing debates that juxtapose nature and nurture, heredity and environment, freedom and determinism. These juxtapositions are being questioned by modern philosophers of science in ways that shed the light of cognitive neuroscience research on the ideas of Adler and his students. Current thinking indicates that each is inextricably dependent on the other in a dynamic, dialectic process that is necessary for complex systems to survive and develop. From this perspective, distributed leadership becomes an expression of social interest and a crucial capacity for an organization to develop.

As fascinating and promising as these concepts, models, and theories are, there still remains the question of how organizations arrange for leadership to be distributed and how potential leaders throughout the organization take up that challenge.

INTERPERSONAL NEUROBIOLOGY

Daniel Siegel suggested the term “interpersonal neurobiology” to describe the current intersection of developmental and cognitive psychology, neuroscience, anthropology, sociology, linguistics, biology, and psychiatry. When I first read “interpersonal neurobiology,” I was taken aback. Having a background in sociology, social psychology, and anthropology, I had no problem with the “interpersonal” part; indeed, it relates to the “social embeddedness” assumption of Adlerian psychology. Likewise, I had taught linguistics and cognitive psychology and had the opportunity to connect modern trends in neurobiology with the Adlerian assumption of body-mind holism. But surely it was an oxymoron to put the two together. How could our internal, individual neurobiological processes be interpersonal? How could we think outside our brains? The answer helps us understand more precisely how leadership can be distributed and social interest developed in an organization.

From this perspective, distributed leadership becomes an expression of social interest and a crucial capacity for an organization to develop.

Interpersonal neurobiology incorporates brain research to further explain the complex and reciprocal relationship between organizational and individual change and development. It does this by incorporating an understanding of:

- Σ The differing effects of implicit and explicit memory.
- Σ Where our state of mind comes from.
- Σ How certain types of human interaction stimulate brain growth.
- Σ How healthy complex systems must strike a balance between differentiation and integration.

As a result, the concept of “thinking outside our brains” is shown to be not only possible but necessary to the distribution of leadership.

IMPLICIT AND EXPLICIT MEMORY

It is commonly accepted that the mental function of memory is carried out in our brains, and modern science has added that the brain is distributed throughout the body. Thus, the mind arises from an integrated brain/body, the study of which may help us learn more about how we think. The pursuit of cognitive neuroscience has shown that the common view of human memory as made up of isolated bits of information, like photographs in an album, is quite wrong. The brain is made up of interconnected neurons, groups of which are activated in patterns. A memory is the likelihood of certain patterns firing again and again. From a neuroscience perspec-

tive, memories are the way these patterns, having been triggered by a past event, affect the future function of a person's brain and therefore their mind and behavior. Memories relate to learning and development in that new patterns may change how the person functions in the future. Memories can be categorized in different ways based on where the memory's neurons reside in the brain, what kinds of functions they affect, and when they develop.

Newborn infants (and, even fetuses in utero) can develop implicit memories and thus can learn. The capacity for this kind of memory lasts throughout our lives. Implicit memories do not require conscious attention to be remembered, so our brains can store a memory without our deciding to do so and without our being aware of it. Implicit memories are laid down without going through the hippocampus, which sorts and sequences conscious memories. As a result, we have no sensation of "remembering" or of the pattern being associated with a prior experience. We may find ourselves at any point having thoughts, feelings, images, desires, or bodily sensations as here-and-now realities rather than as memories from the past. Groups of similar memories may become associated (in keeping with the hypothesis attributed to Donald Hebb: "Neurons that fire together, wire together") so that we form generalizations that cognitive psychologists call "mental models" or "schemas." These also remain in the background of implicit assumptions, and we remain unaware of them until they are made explicit through coaching, psychotherapy, meditation, or other self-awareness activities.

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The capacity for explicit memory does not develop until a child is around two years of age, about the time verbal language begins. At this point, the hippocampus is normally developed enough so that we can engage it by paying conscious attention to something. The hippocampus takes events from a momentary "sensory store." It processes and sequences these events in short-term memory before they are forwarded to possible long-term memory. As a result, we develop an inner sense of remembering so that we come to "know that we know" something. What we recognize as remembering may be factual, true-or-false, known as semantic knowledge, or it may be knowledge of things that have happened to us, known as autobiographical knowledge. The capacity for such memories allows us to engage in "mental time travel" or to picture ourselves in the past, present, and future.

Memory is not just something that happens to us—the triggering of a pattern in a brain that is sitting around waiting for a stimulus. Autobiographical knowledge is the result of an active, complex process by which we construct a self as we develop the capacity to become aware of that self. But our experience may better fit the concept of multiple selves. That is, our moods may shift so that we have very different experiences of ourselves from one time or circumstance to another. How does this happen?

STATES OF MIND

Privileging rationality over emotionality was an ideal of Enlightenment and early scientific inquiry that has been superseded by theories based on modern brain research. Rather than a separate mental process, emotion is now seen as a kind of summary or headline indicating the current state of the mind as it takes stock of present circumstances and resources, marshals learning and values from the past, and anticipates what will be in the future. "Emotions," says Siegel, "are what create meaning in our lives...whether we are aware of them or not." Our emotional experience at any one moment is an indicator of our state of mind.

A state of mind is a relatively cohesive combination of particular emotions (both their tone and intensity), perceptual biases, memories, mental models, and behavioral response patterns. For example, I work with a coaching client who writes music. When she is beginning a new work, she reports feeling excitement, anticipation, and confidence in her abilities and being full of energy, almost like an electrical charge in her body (emotional tone and intensity); hearing some sounds as potential music and not hearing others or ignoring other senses (perceptual bias); remembering times when her music has been well received (explicit memories); having an out-of-awareness sense of the positive effects that music can have on listeners (implicit mental model); and taking every opportunity to sit at the piano, pen and staff paper at hand, getting her ideas on paper (behavioral response pattern). On the other hand, a time often comes when she is about three-quarters through a new piece that she reports “losing steam.” She feels discouraged and even hopeless, like napping rather than working (emotional tone and intensity). The same notes that had so delighted her now sound wooden and trite (perceptual bias). She remembers (explicitly) the concert two years ago that got panned by critics, and she dwells (implicitly) in a world of failure. She has trouble talking herself into even sitting at the piano, much less writing music (behavioral response patterns). Because of the implicit elements of these states, when she is “in” either of them, she may have trouble recognizing it as a transient state, as one that she can move away from. It may rather seem to her that the state is her self.

Our emotional experience at any one moment is an indicator of our state of mind.

While I have contrasted these two states of mind in order to emphasize their differences, we should not think that this kind of alternation is limited to someone with a so-called artistic temperament. Indeed, much of coaching consists of helping clients shift from a state where they perceive few possibilities and feel blocked to one where they see many options and are able to move forward. The question here is how brain research helps us understand how these shifts happen.

COLLABORATIVE, CONTINGENT CONVERSATIONS

Cohesiveness comes from the fact that when one element of a state of mind is activated, say a particular emotion or mental model, previously associated other elements also become activated, based on Hebb’s hypothesis mentioned above that “neurons that fire together wire together.” Thus, even though any one of us can engage a number of different states of mind, we tend to alternate among a set that we and others come to identify as our “selves.” The familiarity of these patterns lends continuity to our sense of self. We have an experience of being the same self despite being “in” a series of states that may have very different characteristics.

Although development of a sense of self is a whole body/brain process within embedded social systems, a particular part of the brain is important to this process: the right orbitofrontal cortex. This is a structure that is located behind the socket or orbit (thus, “orbito”) of the right eye, in the front of the brain. It has connections from and to the sensory cortex (perception), the somatosensory cortex and brainstem (somatic sensation), autonomic nervous system (bodily functions), the dorsolateral prefrontal cortex (attention), medial temporal lobe (explicit memory), and the associational cortex (abstract thought). The right orbitofrontal cortex plays a central role in integrating memory, attachment, emotion, bodily representation and regulation, and social cognition. Gabor Maté suggests that the dysregulation of emotional and bodily states and the difficulty in reading social cues displayed by those with attentional deficit disorder may be related to a lack of development of the right orbitofrontal cortex.

How might the brain in general, and the right orbitofrontal cortex specifically, develop in such a way as to cause problems such as ADD? A view that sees human development solely as the unfolding of genetic potential would explain faulty development as the result of faulty genes. But brain research has left such simplistic explanations far behind. Current understanding is that development results from the effects of experience on the unfolding genetic potential, a complex and recursive interaction between genetics (nature) and experience (nurture). According to Quartz and Sejnowski, “Your experience with the world literally helps build your brain, which in turn gives rise to your mind.” What experiences affect a child’s nascent cortex so that she or he develops integrated memories, the capacity to regulate bodily functions and emotions, and the ability to relate to others—all functions of a healthy right orbitofrontal cortex?

The answer to this question is a central theme of Interpersonal Neurobiology that has profound implications for coaching and other human service professions. Attachment research has proven the importance of a certain kind of relationship to the healthy development of children. Siegel draws on this research to describe human babies as “hard wired” to connect with others. “[A]ttachment relationships may serve to create the central foundation from which the mind develops.” Attachment occurs when a baby’s capacity for connection is engaged by an adult who allows her or his own state to resonate with that of the baby. That is, the adult “feels” what the baby is feeling and communicates such that the baby “feels felt.” Most of this communication is nonverbal and thus connects with implicit memories and mental models. It depends on the adult’s capacity for “mindsight,” or the understanding that another has a mental life in some important respects like one’s own.

Adults resonate emotionally with children, letting them know that they feel what the child feels.

Infants display the extreme of being “in” a state. If they are hungry, every part of their being is caught up in hunger expression. If they are in pain, they express pain from the top of their crinkled foreheads to the tip of their curled-up toes. There is no part of them that has differentiated from this unitary here-and-now experiencing self, no part that can stand aside and recognize “this, too, shall pass.” They develop that capacity by “borrowing” from their adult attachment figure. Adults resonate emotionally with children, letting them know that they feel what the child feels. At the same time, or soon thereafter, they moderate negative all-encompassing feelings by soothing or distracting. Remember that much of this communication is nonverbal, engaging all the senses. Thankfully, it does not depend on verbal skill, especially before the child can use verbal language. As children’s brains develop, they differentiate and become capable of seeing/feeling themselves reflected in their caregiver’s eyes and thus begin to have a sense of self outside their here-and-now subjective experience. They can then talk to themselves and engage the same emotional regulation techniques that they experienced from their caregivers. Over time, they develop a more complex “meta-identity” that encompasses both the hunger or pain experience and the capacity to move beyond it.

Utilizing one’s mindsight to engage a child’s potential for attachment literally nourishes the child’s brain, yielding “...emotional competence, a sense of well-being, and interpersonal skills.” A secure attachment relationship is based on a series of interactions or “conversations” that are collaborative and contingent. That is, both participants open themselves to “mindsight” with regard to the other. Both “feel felt.” What happens in the conversation is not according to a pre-set script but is contingent upon what has gone before. Collaborative, contingent conversations yield secure attachment, shape the unfolding genetic potential and help babies’

brains, especially their right orbitofrontal cortex, grow in healthy ways.

At one point it was thought that when children miss out on a healthy attachment experience, fed by collaborative, contingent conversations with caregivers, they are doomed to lifelong dysfunction. However, the research conducted with adults by Main and associates has shown that people can “earn” a secure attachment system. Further, Ramachandran found that the adult brain exhibits much greater plasticity and potential for growth than had previously been assumed. Siegel concluded that collaborative, contingent conversations in adult psychotherapy make it possible to heal psychological trauma.

It seems reasonable to surmise that some part of the positive outcome of coaching may be traced to the effects of collaborative, contingent conversations on the adult brain. That is, coaching makes our brains grow. But both the cause and the effect of this growth is not just an internal process for the client. When my musician client and I “connect,” she borrows my external (to her) perspective and sees herself through my mind’s eye (mindsight). To the extent that boundaries of her discouraged state of mind are permeable, she allows my memories of her previously energetic, encouraged state to activate her memories, my feelings of confidence in her to activate her emotions, my nonverbal messages based on an implicit faith in her potential to activate her sense of mastery. This is not my doing; it is the result of a mutually reinforcing interaction we create together and that reflects back on both of us. We both create new neural connections through the kind of communication—collaborative, contingent conversations—that Siegel calls “experiential food” for our brains.

... the positive outcome of coaching may be traced to the effects of collaborative conversations on the adult brain. We create “experiential food” for our brains.

COMPLEXITY

Siegel draws on complexity theory to conclude, “We are all nonlinear dynamical systems.” Our minds, like our coaching and other relationships and the organizations in which we interact, are complex systems. All have emergent properties such that small initial changes can result in large and unpredictable outcomes. All engage in self-organizational processes that move toward greater complexity. Complexity is achieved by balancing basic tendencies toward integration and continuity on the one hand and differentiation and flexibility on the other. Healthy systems are ones that maximize complexity.

On the individual level, complexity is enhanced when repeated experiences of collaborative, contingent conversation stimulate mental structures that allow us to reflect on our states of mind and to develop the capacity to shift them consciously. The alternation or dialectic between having new experiences (differentiation) and assimilating them into one’s fund of knowledge (integration) is another perspective on what I have called a process (rather than a product) of “expertising.” This process is the objective expression of Csikszentmihalyi’s subjective “flow” state. Experts in whatever field or domain they have mastered have the capacity to process huge amounts of data quickly, and they seem to do it by enrolling implicit as well as explicit brain capacity. I have compared Adler’s concept of social interest with that of expertise in the broad domain of life: social interest resolves the differentiated paradox of individual uniqueness and social embeddedness through a higher-level integration. It was also Adler’s answer to the question “What makes people truly healthy?” much as Siegel considers healthy systems as ones that maximize complexity. The health and well-being of each unique individual can be seen as dependent upon his or her capacity to “see with the eyes of another, hear with the ears of another, feel with the heart of another” —the essence of “mindsight,” a

major feature of collaborative, contingent conversations, and a crucial ingredient in Adler's definition of social interest.

The practical consequence for organizations is that increased opportunity for collaborative, contingent, that is, coaching, conversations is likely to increase domain expertise as well as mental health among individuals.

On the social level, collaborative, contingent conversations over time can shape the states for participants such that two (or more) individuals come to function as a state shifting "supersystem." Out-of-awareness, rich sensory messages trigger one another's implicit models and states, and we "borrow" from others whom we have learned to trust the capacity to observe ourselves and to access memories or other techniques to shift to new states. Siegel describes these supersystems as irreducible new and more complex systems that express and support the increasing integration and differentiation of the organization as a whole.

Thus, contributing one's unique understanding of another maximizes the health and functioning of both—an example of social interest.

A practical outcome of operating as positive supersystems is this: if you ask participants to estimate what percent they contribute and what percent others contribute to outcome, the tendency is to attribute a greater percentage to others. For example, a two-person work team emerges from an assignment:

"Thanks," says Gus.

"What for?" asks Alice.

"Hey, you really carried the ball in there. I hardly had to lift a finger. And what a great result!"

"Are you kidding? You're the one who carried the load, Gus. I just sat back and relaxed."

If asked to estimate their own contribution to the result, both Gus and Alice might say 30%. But the result was 150% of what they expected. Supersystem team members feel that others must be working harder because so much is being accomplished without their having to exhaust and sacrifice themselves. This is the reward of synergy, where diverse elements of a system are integrated such that the whole becomes more than the subjectively experienced sum of its parts. Moore and her colleagues describe this as "relational flow" in a coaching conversation.

Supersystems are often maintained by narrative processes—stories that reveal the shadow of shared but not directly observable cultural models that form and inform how people behave in an organization. Engaging with others in collaborative, contingent conversations to create a common narrative feeds our own brain development and mental complexity as it creates higher-level complex systems that draw on our diverse potential, made all the more potent because of the uniqueness of each individual.

SUMMARY

In response to the pace of change and new ways of conceiving organizational dynamics, organizations are being challenged to distribute leadership throughout, rather than reserving all decision making for the top of a hierarchy. For distributed leadership to be effective, the individuals involved must be able to transcend the apparent paradox between one's unique perspective and the demands of operating within a larger social system:

1. External and internal cues, often nonverbal and outside of a person's awareness, can trigger implicit memories that are not accompanied by any sense of remembering. Rather, they are experienced as what is going on now. These unrecognized memories may further trigger a cluster of associated mental models, emotions, per-

ceptual biases, and behavioral response patterns to form a negative state of mind that may be distressingly difficult for the individual (Person A) to shift out of.

2. One way to approach this is for another (Person B) to take on the leadership task of engaging in a “collaborative, contingent conversation” to the point that Person A “feels felt.” Person A then may “borrow” from Person B the capacity to “think outside his or her own brain” so that Person A shifts to a different, hopefully more useful, state of mind. Siegel claims that such conversations and resulting shifts of states are the “experiential food” that nurtures ongoing development of complexity in the adult brain and mind. He sees the maximization of complexity as a defining characteristic of the health of a system, whether an individual or an organization.

3. Engaging in state shifting conversations nurtures the brain and therefore also the mental complexity of Person B. Thus, contributing one’s unique understanding of another maximizes the health and functioning of both—an example of social interest.

4. Over time—especially when participants are encouraged to consciously reflect on the state shifting effects of collaborative, contingent conversations—neural, mental, and behavioral patterns become engrained such that irreducible “super-systems” are established among and between people. Narratives that convey underlying values spread throughout the organization and encourage people to take on the challenge of distributed leadership, thus further enhancing individual and organizational complexity.

5. Internal and external changes will bring new people into the organization, as well as new stimuli for existing personnel. (Cycle back to #1....)

Coaches will recognize that ideal coaching conversations are in fact “collaborative, contingent conversations.”

Coaches will recognize that ideal coaching conversations are in fact “collaborative, contingent conversations.” Those who have a background in Ken Wilbur’s spiral dynamics, Chris Argyris’s Action Design, Robert Kegan’s developmental perspective, David Cooperrider’s Appreciative Inquiry, or Martin Seligman’s Positive Psychology will recognize connections with, similarities to, and differences from Siegel’s Interpersonal Neurobiology. This description is intended to further the integration and differentiation of concepts such as these in order to enhance the complexity of the emerging field of coaching studies.

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Linda J. Page, Ph.D., ACPC

Phone: 416-923-4419 ext. 214

Email: ljpage@adler.ca

Website: www.adler.ca

Linda Page founded the Adler School of Professional Coaching in 1998 and has served as its President since that date. She completed the Adler Professional Coaching Certificate Program in 2002. She holds a Ph.D. from Princeton University and an M.A. in Counseling Psychology from the Adler School of Professional Psychology in Chicago, Illinois, where she is a Licensed Clinical Professional Counselor. She is Founder and President of the Adler School of Graduate Studies in Toronto, Canada. She serves on the Boards of the Association of Coach Training Organizations, the International Consortium for Coaching in Organizations, and the Graduate School Alliance for Executive Coaching. She is a member of the Research and Development Committee of the International Coach Federation, served on the organizing committee of the 2004 and 2005 ICF Research Symposia, and is part of the Adler Research Consultancy.

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