

# NEUROMANAGEMENT

## People and Organizations

Edited by Michela Balconi



IRCCAN  
International Research Center for Cognitive Applied Neuroscience

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# Introductory issues: the milestones of neuromanagement

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The first formal paper in neuromanagement was published in 2001. The paper appeared in *Journal Neuron* (Breiter, Aharon, Kahneman, Dale, & Shizgal, 2001) and reflected collaboration between Breiter, Shizgal and Kahneman. However, since late 90s, interdisciplinary scholars have begun to combine social and natural scientific approaches to study of decision making into an emerging discipline called Neuromanagement. In 1998, less than 20 papers a year were published that included both 'brain' and 'decision-making' as keywords. Since 2008, nearly 200 articles bearing those keywords have been published.

In economics, neuroscience has been used to investigate the motives behind individual behavior in interactive decisions (Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003). In marketing, neuroscience has helped illuminate the role of emotion in consumer choice (Hedgcock & Rao, 2009). Organizational scholars have recently begun to selectively draw on findings from neuroscience. As promising research, Ashkanasy (2003) incorporated a neurological basis for affect into a model of organizational emotions, and Reynolds (2006) drew on a limited neuroscience perspective to develop a model of ethical decision making. Findings from neuroscience have also been utilized in recent theorizing regarding intuition (Dane & Pratt, 2007; Sonenshein, 2007) and organizational justice (Bergu e, 2009; Dulebohn, Conlon, Sarinopoulos, Davison, & McNamara, 2009). Emerging neuroscience evidence suggests that sound and rational neuro-economics decision making depends on prior accurate emotional processing.

Several social science fields have already embraced neuroscience (Balconi & Molteni, 2016; Camerer, Lowenstein, & Prelec, 2005; Dijksterhuis, Smith, Van Baaren, & Wigboldus, 2005). The ultimate aim of this newborn discipline is to establish an

organizational neuroscience perspective that strives to understand and incorporate the cognitive machinery behind our thoughts and actions into organizational theory (Becker & Cropanzano, 2010; Bergu , 2010).

We may find three pillars underlying the whole new domain, as key levels of comprehension of specific organizational phenomena. The issue of levels is already familiar to organizational scientists (Morgeson & Hofmann, 1999), distinguishing among (at least) three (Klein, Dansereau, & Hall, 1994). The highest or most abstract is the organizational level of analysis, which includes such topics as strategy and structure. The organization can be further reduced to a collection of small groups or work teams, which exhibit meaningful collective behaviors. Groups, in turn, can be further reduced to individual people, which have their own particular knowledge, skills, and abilities. Researchers often specialize, targeting their scholarly efforts at one particular level or another, but there is a general recognition that each of these levels is important. Organizational neuroscience adds an additional level of analysis. A potential benefit, which is also not without risk, is that this forces researchers to consider additional levels of reduction that deconstruct individuals to discrete brain processes (Ashkanasy, 2003; Barsade, Ramarajan, & Westen, 2009). The ultimate promise of these lower levels of analysis is that the neural mechanisms are quite homogenous across all individuals and are recruited to respond to numerous different organizational situations.

By suggesting that all that matters is the molecular level of analysis, such an approach implicitly (or perhaps even explicitly) ignores the different processes that occur at higher or more abstract levels of analysis (Morgeson & Hofmann, 1999). This perspective, which prioritizes neurobiological explanations above social scientific ones, has recently been termed neuroessentialism (Huettel et al., 2009). Neuroessentialism reflects the belief that all identity and behavior can be reduced to individual neurons. For example, the computational approach to neuroscience relies heavily on reconstructionism. Reconstructionism is the process by which realistic models of individual neurons are incorporated into multilevel networks that recreate higher level emergent phenomena (O'Reilly & Munakata, 2000). It is becoming increasingly clear that in the future understanding, predicting, and altering cognition and behavior will require assimilating bottom-up as well as top-down mechanisms (Craver, 2002). As Pinker (2002) observes, this means that neuroscience theories and existing theories from organizational research can inform one another. Extending our inquiry to lower levels of analysis will not detract from more familiar higher levels of analysis but rather will undoubtedly illuminate and tighten the linkages between levels.

An organizational neuroscience (or neuromanagement) paradigm would bring three essential benefits, which exist in the backstage of this Introduction.

First, organizational neuroscience would help extend existing theories. Specifically, we observed that neuroscientific approach promises a new, deeper level of analysis. Consequently, neuroscientific investigations will add detail to our accounts of human behavior, while further linking our field more closely to other scientific disciplines. In so



doing, organizational neuroscience will promote “consilience”.

Second, organizational neuroscience will encourage new research directions, by using specific and focused tools able to discover heterogeneous components of our behavior. Third, perspectives from organizational neuroscience could help scholars resolve existing conceptual disagreements. Issues that are difficult to differentiate at one level of analysis may become more distinctive at the level of neural processing.

As an example of the first type of benefit furnished by organizational neuroscience is the issue of the social environment, in order to explain how the neuroscientific approach can “inform” the organizational theories. Indeed, as a first milestone we can underline that organizational scientists recognize the importance of the social setting. Phenomena such as work climates (Kuenzi & Schminke, 2009), organizational cultures (Schein, 1991), and other aspects of the social setting exert well-documented effects on employee attitudes and behaviors. In the face of so much evidence, what room is left for biological influences? Indeed, some scholars have found the evidence for situational effects so compelling that they have questioned whether any individual attribute - be it biological or otherwise - can appreciably affect workplace behavior.

Organizational neuroscience proffers a unique perspective, suggesting that a neuroscientific analysis complements rather than supplants a social scientific one. Human beings are heavily influenced by their social setting because of their biology. People are wired to live and work in social groups (Cacioppo & Patrick, 2008; Goleman, 2006; Haidt, 2006). In addition to explaining individual differences, our biology also helps to explain why and how we are influenced by social stimuli. An animal of a more solitary disposition would be less influenced by conspecifics. For example, *Homo sapiens* exhibit a fuller range of mimicry than do members of other species (Gazzaniga, 2008). Seen from this vantage point, there is no contradiction between the coexistence of both social and biological influences. Indeed, the latter helps to generate the former.

A second milestones of the neuroscientific approach is that what people learn during socialization is processed nonconsciously within the brain. With this in mind, both organizational scientists and neuroscientists have begun to stress the importance of differentiating between implicit and explicit attitudes (Balconi & Venturella, 2017; Balconi, Venturella, Fronda, & Vanutelli, 2020; Cunningham, Zelazo, Packer, & Van Bavel, 2007). While both perspectives offer unique theoretical insights, an important advantage of neuroscience is that it also provides a range of methods for operationalizing and tracing implicit attitudes (Camerer et al., 2005).

Studies that rely on self-report measures may inadvertently neglect implicit attitudes and thereby fail to capture and consider their important influences. Incorporating implicit attitudes into organizational research may help to improve the sometimes disappointingly weak relationship between measured attitudes and outcomes in the extant literature. To this end, neuroscience provides a promising window into the link between attitudes and behavior because it can discern whether a response is associated with activity in brain regions that perform implicit or explicit processing.

This is not to accuse individuals of intentional deceit. Rather, they could very well believe their rationalization to be factual even when it is not the true cause of their feeling or behavior. Implicit attitudes arise primarily in the phylogenetically older (developed earlier in our evolutionary history) deep-brain structures of the limbic system. These attitudes derive from relative neural weights within long-term memory that map current environmental stimuli onto past experiences and outcomes. In this way, implicit attitudes are essentially primed by the current environment, based on past experiences, and emerge without consideration of future consequences.

Thus, one challenge faced by organizations is to change and adapt in constructive ways in order to innovate and respond to circumstances. Many firms are unsuccessful in accomplishing this, and observers agree that dramatic change often requires long-term sustained effort and risk taking. One of the reasons change efforts fail is because managers focus on explicit attitudes and fail to appreciate or target implicit attitudes. As a result, organizational researchers and managers who do not consider the influence of implicit attitudes will tend to overestimate the ease with which individuals can adapt to change.

In addition, implicit and explicit attitudes are fundamentally different in terms of when and how they are produced in the brain. Implicit attitudes arise first, are affectively loaded, and remain largely outside of consciousness. Because they arise first, they can short-circuit other beneficial nonconscious and conscious processing. This occurs because explicit attitudes arise in the evolutionarily newer executive control structures of the frontal lobes.

The book explores some of these important key points of the organizational domain.

Specifically, the first section focuses on the neuroscientific mindset for changing. The first chapter describes how leadership can be discovered and empowered by a neuroscientific approach. The second contribution discusses the neurophysiological components of motivation involved in the pleasure of working and committing for social rewards, positive reinforces, and learning. In the third chapter practical applications to promote change in the company will be proposed. The fourth chapter describes how neuromanagement allows us to evaluate and enhance individuals' executive functions through neuroassessment protocols. The second section, with the specific chapters included, suggests well-being and safety as economic leverages, dealing with the issues of promoting trust, managing stress, and applying novel neuroscientific techniques for neuroenhancement. The third section is entitled technology and innovative *homo sapiens* and describes two main themes: big data application in the company and their possible intersection with the neuroscientific field; moral decision-making processes, able to have an impact on the whole organization and its single members.

Or, in other words, this book explores how to discover human beings in organizations through their brains.

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