

Development and Employment of Neurocognitive Science in Intelligence Operations.

James Giordano^{1,2}

William Casebeer³

Diane DiEuliis⁴

Jason Spitaletta⁵

Nicholas Wright⁶

Rachel Wurzman⁷

1. Department of Neurology and Neuroethics Studies Program, Georgetown University Medical Center, Washington, DC, USA
2. European Union Human Brain Project Neuroethics and Philosophy Group, Centre for Research Ethics and Bioethics, Uppsala University, Uppsala, SE
3. Human Systems and Autonomy Research Area, Lockheed-Martin Advanced Technology Laboratories, Arlington, VA, USA
4. Center for the Study of Weapons of Mass Destruction, National Defense University, Washington DC, USA.
5. Johns Hopkins University Applied Physics Laboratory, Laurel, MD, USA
6. Institute for Conflict, Cooperation and Security, University of Birmingham, Birmingham, UK
7. Laboratory for Cognition and Neural Stimulation, Center for Cognitive Neuroscience, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, USA

Introduction

Cognitive and social neuroscience may afford insights and tools that could be operationalized to: (1) gain understanding of, and (2) potentially affect the psychological foundations and types of narratives and interactions necessary to engage radical groups, such as ISIS. The challenge, opportunity, and task at hand is to attempt bridge the biological, psychological and social variables operative in radical groups' activities, so as to create an enhanced understanding of - and perhaps interventions to affect - factors contributing to these activities. Recent whitepapers of the Office of the Secretary of Defense- Strategic Multi-Layer Assessments (OSD-SMA) provide scientific perspectives on how bio-psychosocial approaches to cognitive engagement may be operationalized to collect, analyze, and/or apply information to meet tactical and/or strategic ends.¹⁻⁴

Ongoing neuroscientific studies have elucidated how the cognitive neurobiology of an individual can be important and embellished to affect the neuropsychology of multi-individual in- and out- group behaviors.⁵ Such studies reveal that when individuals ally themselves with a social group that manifests similar cognitive styles and beliefs, their actions, which are consistent with group beliefs, can be facilitated by strong socially corroborative and promotional effects. By understanding neurobiological processes of response(s) to these factors, we may be able to develop improved psychological and/or sociological interventions that more precisely affect specific brain and behavioral functions. In these ways, we might more effectively tailor the ways that individuals and groups are operationally engaged on informational (i.e. - via various media) and socio-political levels in order to diffuse and divert the escalation of aggressive and violent events. We believe that this is useful and of value to: (1) developing a variety of approaches on number of different levels, in order to (2) employ appropriate narratives and behaviors to engage particular responses within the radical individuals and groups, so as

to (3) exert influence on their ideas and beliefs, and mitigate – if not extinguish - the generation, sustainability and propagation of those beliefs and their resulting hostile actions.⁶⁻¹²

NEURINT -Neural Intelligence: Engagement of Neurocognitive Techniques and Technologies.

In this light, we view increasing opportunities for neurocognitive science and technologies (neuroS/T) to be employed to enhance understanding of cognitive processing of behavioral and semantic cues that may be present in narratives, and other forms of social engagement (e.g.- open and social media) that influence and motivate behaviors. We posit the importance of using such information to assess and define underlying neurobiological and cognitive patterns that are representative – if not predictive – of aggression and violence. We have called this approach “NEURINT”- neurocognitive intelligence: the application of neuroS/T to gain insights to human intelligence (HUMINT), signals and communications intelligence (SIGINT/COMINT), and human factors analyses (HFA).¹³⁻¹⁵ We have proposed that:

- NEURINT may be collected as narratives from electronic sources or as human biometric observations during social interaction or surveillance.
- NEURINT can provide an additional layer of context to HUMINT and SIGINT/COMINT by suggesting which neuro-cognitive systems and processes are engaged at the time of the observed behavior.
- NEURINT might specifically guide interpretation, filtering, and analysis of information.
- NEURINT may be of value to optimize communication with individuals or groups by catering to cognitive styles and/or perceptual sensitivities that have been shown to affect and/or evoke particular neurobiological processes and effects (on thought, emotion and behaviors).

Thus, we propose that NEURINT could be used to (1) provide insights for development of narratives that exert maximal effect upon target individuals’ and groups’ neuro-cognitive processes; (2) develop information and/or cyber-based approaches to influencing content and effect(s) of various forms of messaging (e.g. - social media, etc.) used by target individuals and groups; and/or (3) enable tactical and/or strategic engagement with, or manipulation of individuals’ or groups’ psychological state(s) to achieve best advantage in non-kinetic and kinetic deployments. The viability and potential value of neuro-cognitive approaches, particularly if used in a military information support operations (MISO) framework, are in the fortified ability to: (1) define substrates and mechanisms related to culturally-relevant cognitions and behaviors; and (2) target these substrates to affect perceptions, emotions, and behaviors that are essential to decision-making, affiliation, volatility, aggressiveness and violence.

These neuro-cognitive tools and applications should not be viewed or regarded as stand-alone measures. To the contrary, we propose that these techniques and technologies are best used as “force multipliers” in intelligence operations and military and political interventions. In this way, it will be important to mobilize and utilize different types of information and capabilities to develop optimal tactical and strategic approaches to diffuse, mitigate and prevent recruitment, engagement and growth of aggressive and violent actions on a variety of levels. In sum, NEURINT may afford tools, strategies, and/or direct interventions for improving identification, communication, and rapport, which enhance collection and nuance the analyses of HUMINT and SIGINT/COMINT, and increase the effectiveness of human terrain teams and programs of cultural and diplomatic engagement.

At present, specific NEURINT methods are yet to be fully developed, although incipient uses of NEURINT-like approaches have been engaged. For example, the Intelligence Advanced Research Projects

Activities' (IARPA) *Tools for Recognizing Useful Signs of Trustworthiness* (TRUST) program leverages inter-subject variability and dynamic interaction between a sensor and its target to validate a subjective perceptual process for assessing a behavioral trait or tendency in a target. As well, the Defense Advanced Research Projects Agency's (DARPA) *Narrative Networks* program was designed to employ deepened understanding of neuro-cognitive processes so as to develop improved methods of psycho-social interpretation and intervention that could be employed to guide socio-political and military engagement of extremist groups. While such projects have been important to the use of neuroS/T and NEURINT-like methods within intelligence and deterrence initiatives, further research into the development and applications of NEURINT for both assessment and influence are also required.

Ethico-legal and Social Concerns.

Of course, it is equally important to consider ethico-legal and social issues that can (and are likely to) be fostered by both such research and the operational employment of neuro-cognitive approaches. Specific guidelines exist for dual use research of concern (DURC).¹⁶ However, in light of ongoing and diverse developments in neuro-cognitive science, there are current efforts to more precisely define both what constitutes DURC, and how neurocognitive research that is directly for military/intelligence use should be categorized and conducted.¹⁷⁻¹⁹ It may be that extant guidelines are inadequate, and that any research that is intended to develop or evaluate tools and techniques for military and warfare applications should be (more) explicitly characterized and more stringently regulated. At the same time, it is important to recognize that neuro-cognitive science is an international enterprise, and other nations, which may not be consonant with the United States' and its allies' intent and regulations, are also engaged in both research efforts, as well as the iterative employment of brain science in military, intelligence and security operations.²⁰⁻²³

We, and others, have noted the real and present potential to weaponize tools and techniques of brain science.²⁴⁻²⁷ Thus, it will be necessary to query if and how any neuroS/T could – and/or should - be operationally employed, and to assess what ethical considerations – and direction - would be important to such use or non-use. To address these questions, we have proposed methods of risk-assessment and mitigation, and criteria that sought to establish:

1. That emphasis should be upon using neuroS/T to prevent warfare (i.e.- *jus contra bellum*)
2. That if utilized, only the least harmful neuroS/T should be employed toward mitigating realistically identified threat(s).
3. That the use of neuroS/T must be admissible under the most stringent, current international legal standards.^{28,29}

Nevertheless, even justifiable use of neuroS/T to prevent warfare raises ethical issues and concerns, and we believe that any new development or application of neuroscience demands dedication to neuroethico-legal and social issues and guidance. Moreover, given the novelty – and potential power – of these techniques, existing ethical and legal concepts might need to be revisited and revised to more aptly address challenges posed by the potential use and/or mis-use of neuro-cognitive science in national security and intelligence operations.³⁰⁻³⁵ Clearly, any such attempt will necessitate ongoing commitment of multi-disciplinary teams of professionals, as well as public engagement. Our group remains dedicated to such efforts and outcomes.

Disclaimer: The opinions expressed in this whitepaper are those of the authors, and do not necessarily reflect those of the European Union Human Brain Project, and/or United States Department of Defense.

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