Cultural neuroscience. The Next Big Thing in military training?

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1. Brain develops and functions slightly differently due to cultural influences which results in cognitive, affective and behavioral differences among individuals.

2. The military can apply findings from cultural and social neuroscience and neuroanthropology to improve its effectiveness in the domains of training, conduct of non-kinetic tasks during military operations and post-operational force sustainment.

3. Although the field is controversial, scientific ethical standards do not have to be violated during the application of cultural and social neuroscience for security and defense purposes.
Contemporary security environment and the "scientific way of warfare"

Premodern
- Failed and failing states
- Hybrid and asymmetrical threats
  - Complex, adaptive, unpredictable
- COIN (significance of the human domain)
  - Terrorism
- Return to ritual warfare

Postmodern
- Info & cyber domains
- Stand-off warfare
  - Biotechnological Revolution in Military Affairs:
    1. Cognitive, affective and physical enhancement (drugs, mindapps)
    2. Neuroscience
    3. Genetics and genetic engineering
    4. Cyborgs (or at least human-machine interfaces)
    5. Robots built according to live organisms schemata
- Future anthropomorphous systems, AI, transhumanism?
Cultural variation in the brain

• Cultural, social neuroscience v. neuroanthro
• Culture-nervous system-behavior-genetic expression
• Biosociality: CGC theory
• Brain plasticity and cognitive retooling
Military in the neurobio wonderland

• Opportunities in Neuroscience for Future Army Applications, 2009
• DARPA: Aug-Cog, CT2WS, N4IA (P300), SyNAPSE, NN, BRAIN
• IARPA: ICArUS (AI and sensemaking), KRNS (HFA linguistics), MICrONS (neural architecture), SHARP
• Pharmacologization: modafinil, propanol, oxytocin
Neuroenhanced training 101

• Visual perception – holistic v. analytical, 3D in 2D (learning materials, serious games, training environments)

• Attention - focal v. contextual

• Memory: context v. object, literacy, reminiscence bump, affective domain (mnemonic reinforcements)

• Motivation (group or individual, non-western andragogy: holistic, lifelong and communal)
Decoding mental states (Chiao 2008)

Culturally-informed education systems, serious games and VR, HUMINT
### Other applications

<table>
<thead>
<tr>
<th>CULTURALLY AFFECTED DOMAINS</th>
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<tbody>
<tr>
<td>Emotional antecedents, Conditioning, Moral reasoning, Perception — situational awareness, Cognitive processes, Approach to death, Somatic health, Aggression, Group relations, Situational awareness, ...</td>
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<thead>
<tr>
<th>Cultural diversity of military learners in CAP domains.</th>
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<td>Virtual training tools and immersive environments.</td>
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<td>Neuroergonomics and neurofeedback.</td>
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<td>Improved leadership and management of multicultural groups and units.</td>
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<td>Better incorporation of cultural factors in operational planning and conduct.</td>
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<td>Support to PSYOPS and other non-kinetic operations.</td>
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<td>Projecting military mindapps.</td>
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<td>Pharmacologization of warfare.</td>
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<td>Treatment and prevention of PTSD.</td>
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<td>Projecting perceptions, decoding the role of narratives and measuring responses to PTSD treatment.</td>
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Controversies

- Samples (computational and population-scale)
- Some of the cross-cultural brain research is deemed politically incorrect
- Ethical issues, return to eugenics
- Social and human sciences ethics – working with the military
- Warrior ethos, dehumanization
- MK-ULTRA revisited?
- P300 wave - the next step is ... mind-hacking?

Limitations: explains only an aspect of the MIND/BODY SYNERGY that creates humans.
Future

- Antropomorphic systems
- Artificial Intelligence?
- Implications of H+ v. Chomsky?
- Anthropological revolution?
- Cyberspace?
  - ....?
Thank You