

Zapping the brain to bestow upon individuals phenomenal skills and superhuman capabilities, such as operating devices with thoughts or techno-telepathic communication between people, is well known from the science fiction genre. And it is one of the main themes recurring in several episodes of *Black Mirror*, the stirring television anthology created by Charlie Brooker. The episode entitled *Men Against Fire* (2016) depicts the vision of the redesigned, neuro-tech future soldier. The pivotal breakthrough technology it features is an advanced neural interface. It plays several cutting-edge functions: it augments military training, boosts performance, eases killing the enemy by changing the perception of them in such a way to dehumanize them, improves communication, augments situational awareness and prevents war trauma. It is, of course, a story of the imagination, but how do the rapid, breakthrough, ongoing and emergent advances in neuroscience relate to this view of popular science fiction? Over the last two decades, remarkable progress in brain sciences, along with equally rapid and astonishing developments in artificial intelligence (AI) and robotics, have been turning science-fictionesque fantasies into fantastic science. From their very beginning these new neuro discoveries, techniques and technologies have attracted the interest of the US military, which reminds us of who one of the pivotal catalysts and keenest funders of innovative brain research has been. The prospects of neuroscience and neurotechnologies offer great opportunities as their applications for national security and defense can be truly transformative.

Neuro technologies could and will be used for various tasks at different stages of military activity: from recruitment and duty assignment to combat and combat-related activities (like intelligence and communication), from professional training to rehabilitation; from brain imagining allowing the identification of particularly desirable traits, dispositions and behaviours to brain stimulation aimed at enhancing performance, improving learning skills, boosting cognition, alleviating fatigue and increasing wakefulness; and from monitoring and optimizing brain activity in real time for remodelling moods and preventing anxieties to operating weapons systems with thoughts via neural interfaces.

This project is about such breakthrough advances and, overall, about the role neuroscience and neurotechnologies will play in the 21st century military and international relations. It looks at the implications of these developments in warfare and national security at the three levels of analysis. The approach is borrowed from the famous three images for interpreting the causes of war that were offered in the late 1950s by Kenneth Waltz, and is today a classic taxonomy in the discipline of International Relations. The first or *micro* level concerns the individual human being and human nature, so it is the soldier. The second or the *meso* relates to the state, so it is the government, armed forces and society. And the third, the *macro*, is the level of international system. The project will address and seek answers to the question of what changes will the remarkable march of neuroscience and neuroengineering have at all these three levels.

The project sets out a number of aims. One is to diagnose and investigate the new development which is referred to as *the neuroscience of war*. Another is to thoroughly explore this new landscape – of the *neuroscience in war*. And, most importantly of all, is the analysis of the transformative consequences of these advances for the soldier, armed forces, military tactics and strategy, the character of war and international relations. Inevitably, big ethical questions also loom large.

It is hypothesized that the military neuro revolution is already on the rise and along with the great progress in robotics and AI it will not only transform combatants and warfare by trans- and, later, post-humanizing them, but will also affect international relations by fostering a neuro-arms race between the United States and China. Neurotechnologies will be developed for both offensive tactics and strategies (enhancing the capabilities of troops to make them into better “tools” of war and designing neuroweapons against enemy combatants and their civilian population) and defensive purposes (preventing hostile neuro-attacks against one’s military personnel and non-combatants).

The pace, scope and intensity of the neuro revolution in warfare and security will draw humanity into new realities: of neurosecurity and neuropolitics, neuroweapons and neurodefense, neurostrategy and neuroethics, and perhaps even more such actualities.

Thus what used to be science fiction is becoming reality and the military has played a prominent role in that transition. How much will the neuro-techno-scientific innovations resemble the visions we know from fiction? And to what effect? These questions call for a careful, systematic, comprehensive and multidisciplinary social-scientific study, which is precisely what this project is designed to deliver.