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# **NEUROWAR IN THE NOVICHOK ERA**

## **Briefing Notes for CND Future Wars Conference**

**Steven Rose (s.p.r.rose@open.ac.uk)**

We are living in dark and uncertain times. A few years ago, it would have seemed that the most likely future wars would be asymmetric: technologically sophisticated and militarised States versus popular uprisings, insurgent movements and guerrillas of the sort that wrack the middle east. However, Trump and Putin have torn up that rulebook, revoking or ignoring arms control treaties and initiating new forms of traditional great power arms races. Meanwhile one of the oldest and hitherto sacrosanct of such treaties, that banning chemical and biological warfare, dating back to the 1920s, and in its modern forms ratified by almost all States on the planet (exceptions: Israel, Egypt, N Korea and S Sudan), has been systematically eroded. In Syria, the Assad regime, having surrendered its stock of modern agents, has reverted to one of the oldest chemical agents, chlorine. In targeted assassinations around the world, Russia and Israel – and maybe others - have used newly created chemicals, such as upgraded nerve agents, so-called novichoks. As the novichoks appear to have been first synthesized in Russia in response to classified documents leaked to them from the US as part of a convoluted false flag operation, it is a reasonable assumption that they are part of US CW preparations also. So we see CW agents used in two roles, against civilian populations in asymmetric wars and in specific covert missions. The prohibitions against BW seem still to be holding, at least in part because of the military uncertainty about the efficacy and control of disease-causing bacteria and viruses.

Meanwhile, the rapid technology-driven advances in neuroscience, in understanding and manipulating the brain, are being weaponised. It is noteworthy that the 4.5 billion dollar BRAIN program (Brain Research through Advancing Innovative Technologies) launched by President Obama in 2014 included a substantial sum allocated to DARPA (Defense Advanced Research Project Agency), whose military interest extends beyond just novel chemical and psychopharmacological agents to cognitive, behavioural and social neuroscience.

Beyond the novichoks research is active into both lethal and non-lethal psychochemicals. Potential lethal agents include not only natural toxins (like the ricin used against the dissident Bulgarian writer Georgi Markov) but also genetically engineered variants and the often rumoured but still probably fantasy ethnic weapons. The non-lethals (sometimes called riot control agents and



available not just to the military but to police forces) include not only traditional and enhanced tear gasses like the British invented CS but newly synthesized substances. Amongst those which have been or are being researched are both ‘on the floor’ and ‘off the rocker’ agents, incapacitating or calmatives like thiopental, sedatives and hypnotics, anxiolytics and convulsants, disorienting (hallucinogens), paralysing and anaesthetic agents like the opioids. In addition there is research into ‘memory erasers’ and ‘trust inducers.’ There are also drugs such Ritalin and Modafinil widely used by the military to enhance cognition, attention and wakefulness among so-called ‘war fighters’ particularly pilots.

The rapid advances in IT and robotics are also leading to physical means of both enhancing and degrading brain processes in the interests of the military. DARPA funds research into direct brain-computer interfaces to assist and speed decision-making and intelligence gathering for flyers and drone pilots, as well of course as techniques to degrade the enemy. Long-standing interest in the use of microwave radiation at a distance to disorient an enemy and disrupt communication systems remains, reinforced by the potential more powerful laser and magnetic technologies. Closer at hand are the uses of these technologies as interrogation/surveillance and control techniques – ‘mind reading’ through EEG, MRI and MEG signals (so called ‘brain fingerprinting’) and disorientation/mind modification through transcranial magnetic stimulation and low frequency microwaves.

It is important to recognise that many of these developments are dual-use technologies, with civil and medical uses, often pioneered by the military in the effort to treat the frequent mental and physical scars of the past decades of imperial and neo-colonial wars amongst the veterans. These include both immediate and slowly manifesting brain damage from IEDs and the like, and PTSD from the horrors of fighting as an occupying power in other people’s countries. Such multiple actual and potential uses make the possibility of effective arms control measures, even were the international environment for such treaties, particularly problematic.