Book Review

Neuroscience and the Problem of Dual-Use

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Neuroscience and the Problem of Dual Use

Neuroethics in the New Brain Research Projects

Springer

Professor Malcolm Dando, a biologist by training, Professor of national security in the University of Bradford, UK, who has long been involved in research and educating on nonproliferation of chemical and biological weapons, has contributed an essential book titled "Neuroscience and the Problem of Dual Use" in the domain of advancing life sciences, research ethics, its societal impact and disarmament regime.

Generally, the discussion developed around the dual use and misuse of modern sciences is somewhat broadbased, where the scientific community is considered as a single point source of originating and advancing problems. The scientific community can contribute their expertise in both making sure that responsible science is conducted in laboratories and also contribute their expertise to the discussion in developing codes of conduct or oversight systems or developments in international negotiations where their expertise is appropriate. The book could have also highlighted the role of publishers, funding agencies, national policy makers, international diplomats in shaping the way modern science progresses. Nonetheless, This book is classic in this broad approach and it introduces and presents the scientific community to be part of the modern solution and not the problem.

From the beginning, the author has widened the discussion of dual use, providing an accessible, thorough examination of current neurotechnology projects and developments. Alongside every discussion on concerns of scientific advances in brain sciences, the author has bought his scientist's point of view for solutions and best practices for both going forward to cure mental illness and also effective disarmament regimes. The book is divided into three sections, first part discusses the concurrent rapid advancement, evolving dual-use concerns and related non-proliferation regime. Second part reviews and presents a descriptive analysis of various brain research projects being conducted in the European Union (EU), the United States (USA), Japan, and China. Concerns with various state's chemical and biological non-proliferation regime have been precisely discussed. What are different organizations, their aims, objectives and achievements that might instigate hostile concerns are investigated and alongside measures and procedures to deal with the problem of dual-use have been suggested. The third part assesses the implications of the civil-neuroscience research, the dark side of neurotechnology, which can facilitate the manipulation of human brains and become the source of development of novel biological and chemical weapons.

The book illustrates the rapid translational advances in brain science research and capabilities that neuroscientists had evolved and gained to investigate, study and manipulate the operations of the central nervous system. The questions and dilemmas of neuroscientists, of what they should do guard their nascent benignlyintended work from misuse is explained by referring to a similar ethical question faced by computer scientists after their work was scrutinized by Cambridge Analytica to analyze the 'likes' of Facebook users and the reaction that produced in democratic societies.

There are serious questions that need to be asked about how the new brain projects are going to go about protecting their results from misuse. The book raises questions as to what extent it is possible to forecast the consequences of technological changes? Quoting various research conducted the author argues that while it is generally difficult to forecast, a significant paradigm change has been noted in relation to chemical and biological weapons development. The advances in the life sciences have empowered weaponeers to shift their traditional focus from the external agents to the effective targets within the living system for the biological attack. Technological capabilities to manipulate living systems are illustrated by reference to the work on Parkinson's disease and the work on bioregulators and neuropeptides- orexin and oxytocin that could be misused for hostile purposes.

For our society, what kinds of problems are advancing with advances in the understanding of the central nervous system, how neuroethicists can deal with the future civil neuroscience problems and the development of novel chemical and biological weapons, how the debate on dual-use with regard to the Chemical Weapon Convention (CWC) and Biological Toxin and Weapon Convention (BTWC) has developed in past and recently, to all these concerns the book offers pointers about in the near-to mediumterm future.

Life scientists need to develop a culture of responsibility, a code of conduct, especially around the ethical implications of neuroscience. The fragmentary nature of the disarmament systems need to be fixed and a well structured and comprehensive nonproliferation regime of chemical and biological weapons with international and national treaties for regulations that together provide a resilient web of prevention against biothreats and misuse of the life sciences.

The author answers how neurosciences could be protected against future hostile applications in the development of lethal chemical and biological weapons and concludes clearly that a lot more has to be done to improve the governance of dual use research in the Neurosciences. Strengthening the biological and toxin weapons convention is vital, the author emphasizes the importance of a web of prevention for effective biosafety and biosecurity in the current time. The author expresses hope with the upcoming Review Conference in 2021, expecting progress in strengthening the BTWC, particularly in regard to codes of conduct and education is for CNS related toxins and neuro-weapons.

This book is a compelling wake-up call to all those who care about and have an interest in research on the workings of the human brain, nervous system and its dual-use potential for exploring the prohibitions of chemical and biological weapons. With dual use awareness, raising questions and recommendations for educating life scientists, military professionals, governments, and citizens, this is a concise well-illustrated foreknowledge that will tinker the ability to perceive, think and realize the dark reality of dual use research.