

Incorporating Ethics in Defense M & S: New Frontiers in Standards

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ABSTRACT: *The Defense Modeling and Simulation (M&S) Standards community is well-positioned to use technology to further the analysis of military ethical behaviors. The explosively rapid evolution of technical adjuncts to contemporary combat has impacted all three of the traditional applications of M&S: Training, Analysis and Evaluation. This includes addressing emerging issues, hitherto not faced, i.e. the ethics of the proper use of AI controlled weapons. This rapid expansion has left little time to consider the need to recognize the potential role for M&S, e.g. ethical implications of AI culpability. This paper is a call for a more reasoned and grounded consideration of these issues. A survey is laid out of the concepts of interest, the existing ethical guidance, the theological/philosophical underpinnings and the novel issues of concern. Also covered are the historical and parallel issues as addressed by the medical, legal, police, and research communities. Some of the questions addressed are: Should simulations contain ethicality components of battlespace modeling? Should ethical quandaries be included in combat training exercises? Should human inputs during training be assessed for ethical behavior? Where does culpability lie if AI makes a morally important decision on the application of deadly force? Later sections of the paper include discussions of current practices and potential improvements in all these areas. A brief discussion is advanced for the possible results from various approaches considered on a spectrum of defense issues ranging from recruitment efficiency through combat efficacy and on to long-term psycho-pathological effects such as Veterans' Post Traumatic Stress Disorder.*

Law of War
Ethics
Defense M & S
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Author Biographies

DAN M. DAVIS is a Research Associate Professor at Catholic Polytechnic University (CPU) and is also active as a consultant at the Institute for Creative Technologies, University of Southern California (USC). He is currently focusing on large-scale DoD simulations and virtual human implementations. Prior to retirement, he was the Director of the JESPP project at USC for more than a decade. As the Assistant Director of Advanced Computing Research at Caltech, he ran Synthetic Forces Express, bringing HPC to DoD simulations. He has also served as a Director at the Maui High Performance

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JENNIFER H. NOLAN, PH.D. is the President of Catholic Polytechnic University and Professor of Psychology in their College of Arts and Sciences. Her earlier work specialized in memory, dementias, stroke and insulin resistance. She is a brain plasticity specialist and certified Cogmed provider. Previously, she was the C.O.O. and co-founder of a stroke and brain injury rehabilitation center. Dr. Nolan has taught university courses at the University of California Irvine, Loyola Marymount University, and Glendale Community College. She has conducted local and nationwide clinical trials, and published in both scientific journals and popular magazines. She received a BA in Psychology from Loyola Marymount University, Los Angeles and a Ph.D. in Neuro-Psychology from the Dept. of Cognitive Science at the University of California, Irvine.

MARK C. DAVIS, PH.D. is the Chief Technical Officer at Wood Duck Research, Inc, and is semi retired after careers in the US Navy and as a computer design engineer for both IBM and Lenovo. Rising to the level of Distinguished Engineer at Lenovo, he was responsible for the design of laptop computer cross-disciplinary technology, including PC architecture, embedded systems, open source and virtualization. Previous work was with IBM in the areas of software development and architecture involving security, storage and virtualization. Dr. Davis has been granted well over fifty patents that were filed during his service at both companies. He is a graduate of the Duke University NROTC program and was commissioned as an Ensign, attended nuclear power school, and served as a Submarine Officer for twelve years, including one duty tour as a classroom instructor. He left the active duty as a Lieutenant Commander to pursue a PhD. Mark holds a BSEE degree from Duke University and a PhD in Computer Science from the University of North Carolina, Chapel Hill, where his advisor was Professor Fredrick P. Books.

ROBIN G. BITTERLIN is retired from surgical nursing. She is associated with Wood Duck Research, Inc as a Research Ethics Advisor and Consultant. Her research interests focus on Medical Ethics as shaped by theological precepts and daily professional practices. She has management experience in the field of commercial real estate development. Her professional life experience includes serving as a Registered Nurse (RN) Supervisor for operating rooms and school nursing. Robin earned a B. S. Degree in Health Sciences from the University of California Davis and then earned an additional B.S.N. degree from Mount St. Mary's College in Newburgh, New York state.

JUDITH L. JACOBUS is retired from conducting speech therapy as a Speech and Language Specialist for more than two decades. Her experiences were in public schools settings in Orange County, California. She also previously taught for 12 years as a classroom teacher in multi-cultural communities there. Judith currently volunteers her professional skills for a local police department, so has extensive experience with dysfunctional adults and children in a variety of both every-day and traumatic situations. Her participation in amateur theatrics has more fully familiarized her with the characteristics of human behavior as they are projected via verbal, facial and body-language cues. This experience has also exposed her to the skill and art of the selection of appropriate persons for specific on-screen roles. Judith holds a lifetime Special Education Credential in Speech and Hearing Therapy, K-12 from the State of California. She earned a B. A. Degree in Speech Communications from the California State University Long Beach and an M. A. Degree in Teaching and Teacher Leadership from the Grand Canyon University in Glendale, Arizona.