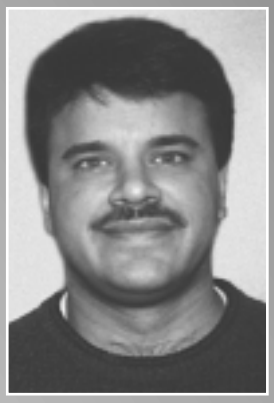
Guest Editorial

Clinton Andrews and Kevin Passino

Social Implications of Systems Concepts

System theory is one of the few areas of engineering that has been broad enough and abstract enough to be appropriated by non-technical fields ranging from economics to environmental policy. Thus, system concepts have probably had more direct interaction with society than any other branch of engineering theory. To explore the social implications of systems concepts, the IEEE Society on Social Implications of Technology and the IEEE Control Systems Society have cooperated on this special issue of *IEEE Technology and Society Magazine.*

Clinton Andrews



Kevin Passino

You will find some wonderful treats in the coming pages. The systems field attracts big thinkers who engage in spirited debates, and two such debates play out among the four articles that make up this special issue.

Brad Allenby kicks off the first debate with a call for earth system engineering and management. He presents a sobering vision of the magnitude of current environmental problems, and concludes that the scale of human activity is such that we ought to assume responsibility for managing the carbon cycle and other earth systems. David Keith responds to this provocative proposal with one of his own, claiming that we are not ready to manage the earth and instead ought to work harder at simply cleaning up our messes. The debate will not stop here, we feel sure.

Jeff Bohn brings the sensibility of a systems engineer to the messy world of policy, and he proposes a framework for thinking more systematically in such a context. By laying out a policy analysis method that emphasizes the informational links between policy and implementation decisions, he strives to increase the substantive rationality of policy-making. Clinton Andrews looks back at previous incursions of the systems approach into the world of public policy and finds serious failures of credibility and legitimacy. He offers recommendations for restoring procedural rationality to systems theory applications in the public arena. The synthesis — that rationality depends on both substance and process — in turn informs the first debate on earth system engineering and management.

We have enjoyed co-editing this special issue and, appropriately enough, we have performed the entire job, from peer review to final edits, on that system of systems, the Internet. We have yet to meet in the flesh, and so we have been minimally controllable and observable to one another, as a control system engineer might say (but most of us are stable). In fact, the only evidence either of us has that the other exists is a blizzard of email. Nevertheless, the collaboration has been successful and we hope that you enjoy its product, which is now in your hands. Write to us.

Clinton J. Andrews is Assistant Professor at the Edward J. Bloustein School of Planning & Public Policy, Rutgers University, 33 Livingston Ave, New Brunswick, NJ 08901; email: CJA1@rci.rutgers.edu. Kevin M. Passino is Professor in the Department of Electrical Engineering at The Ohio State University, 416 Dreese Laboratory, 2015 Neil Avenue, Columbus, OH 43210-1272 U.S.A.