Symbiosis of Real and Simulated Worlds under Spatial Grasp Paradigm

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We are witnessing rapidly growing world dynamics in the 21st century caused by climate change, numerous military, religious and ethnic conflicts, terrorism, refugee flows, weapons proliferation, etc., with problems emerging in both terrestrial and celestial spaces. The world also undergoes restructuring, with countries grouping into territorial and administrative blocks and unions, or on the opposite, withdrawing from them with unexpected political and economic consequences. Proper understanding and managing such changes and processes may need their detailed simulation at runtime or even ahead of it, and often on a global scale. First of all, this needs parallel simulation due to large amounts of processing power required, also distributed rather than centralized one, for providing constant proximity of multiple simulation processes to corresponding local data sources, which may be changing rapidly. It may even need frequent intrusions and certain experiments in the real world for getting urgent data and proper orientation of the simulation, also intelligent interaction with human personnel. One of complex problems, actually not covered by the existing simulation systems, is dealing with multiple entities (technical and/or human) communicating with each other and physically moving in different spaces, often with high speed. Their virtual copies may need migrating in physical environment too, to have timely observation with freshest data.

The book will be presenting the extended and updated version of Spatial Grasp Technology (SGT) described in previous books with numerous applications in most diverse areas, with its latest orientation on very large distributed simulation systems. The offered version of SGT will be capable of using the whole human society with all its powerful resources (including advanced infrastructures and communications, internet as well) as an almighty spatial simulation engine. SGT directly operating with physical, virtual and executing worlds can effectively integrate distributed simulation with advanced distributed control, with watershed between simulated and real worlds changing at runtime. For example, virtual models can also access and indirectly impact physical environment during simulation, or even acquire physical bodies (i.e. dynamically substituted in the control model by their physical origins) if direct impact is needed, with any opposite transformations readily available too.

And all this can be entirely described by very simple high-level Spatial Grasp Language (SGL) with only a few strings of recursive syntax and grammar. The compact scenarios of SGL (up to hundred times shorter and proportionally simpler than in traditional languages) directly covering and matching distributed spaces, with scenario code self-modification, self-replication and unrestricted movement, can be effectively interpreted by thousands to millions to billions of its communicating interpreters distributed worldwide and integrated with existing systems and infrastructures. The book will be considering global applications of the described ideology and technology including economy, ecology, space research and conquest, and security. In military too, where enormous attempts are conducted to integrate different simulation concepts and interaction protocols into large distributed multipurpose simulations, with SGT offering global and unified solution with a single universal language, and especially for most recent organizational and doctrinal concepts like mosaic warfare and multi-domain operations.

The deep integration, actually symbiosis, of real and distributed worlds up to the whole human societies may have positive if not breakthrough impact on the development of human civilization, so the book may appear to be timely. It may be oriented on philosophers, psychologists, managers, system programmers, military and security personnel, also graduate and postgraduate university students, especially those interested in MSc and PhD projects on advanced simulation and system management topics. SGL can be implemented even within standard university environments by a small group of system programmers, similar to its previous versions, with the author always ready to help, with scientific sponsorship too. The technology can be installed as separate bodies in numerous copies worldwide but also be deeply integrated with other systems (like widely used popular media systems, emails too) via which it may get unlimited power and influence throughout the world. Of course, certain international negotiations and adjustments may be needed for its global application, possibly, via UN with its Security Council and other existing and new international bodies, which can definitely be organized, but this is so far beyond the scope of this book, which describes the concept, its applicability, and very realistic implementation.