These definitions force us to take a more human perspective of C2. At the same time, they allow us to generalize C2 to a broad range of IOCS. Within IOCS one still needs creative thinkers and leaders, structures and processes for supporting Command and managing risk (this is probably the closest to having rules and regulations and an architecture), and Common Intent in order to achieve action consistency across the meta-organization. I would start with this point of discussion on whether the Pigeau-Mc Cann model of Command, Control, and C2 can be applied to IOCS.

By identifying the necessary CAR for the system, the designer begins to build C2. I often refer to this design process as Process, Organization, and Technology or POT.

For example, (Farrell, 2007) suggest that there are five primary functions or processes for an operations that employ effects-based thinking: Planning, Execution, Assessment, Decision-Making, and Analysis. Thus, one would expect to have Planners, Executors, Assessors, Decision-Makers and Analysts as the key staffs within the organization (or meta-organization) who would be responsible for their respective areas of expertise. The custom design becomes formidable when one needs to consider the potential depth (e.g., strategic, operational, and tactical) and breath (e.g., Defence, Diplomacy, Development, and Commerce or Trade in the Canadian context) of the meta-organization. However, theoretically, this is how one would find a C2 solution for IOCS.

**How should C2 structures and mechanisms be described?**

I don’t have a strong opinion on how to codify an organization into a model that can ultimately be used for simulation. There are many computer applications that can do one or multiple aspects of the job: IPME, G2, ReTHINK, CREWCU, etc. to name a few. For me the one that I would choose are those that focus on the human tasks such as decision-making, acquiring situational awareness, and developing and disseminating intent. These views on the C2 organization will be vital to capture for IOCS.

**How should power be divided among hierarchy, autonomy, and community?**

It depends. I have been thinking about this question for about 4 years in the context of military only operations, and only know have the opportunity write down my thoughts. It depends on the context. In peacetime, the time pressure and workload may be low enough to be able to explore autonomous and community relationships both within a team and between teams. In crisis when the time pressure and workload is high, a hierarchical structure may yield optimal performance. At the same time, in crisis at the tactical level, a platoon must work autonomously to a large degree once in the field. So perhaps the question should be “When should power be divided hierarchically, autonomously, or communally?”

**Is a C2 structure another way to refer to software or to rules and regulations?**

Pigeau and McCann take a human approach to understanding C2. They do not think of it as software, rules and regulations, or even architecture. The following are the three definitions for Command, Control, and C2 that force the analyst to take a more human perspective of C2.

- **Command** is the creative expression of human will necessary to accomplish the mission.
- We define **Control** as those structures and processes devised by Command both to support it and to manage risk.
- **C²** is the establishment of common intent to achieve co-ordinated action.
A position on Innovative Organizations and Complex Systems (IOCS) framing questions

Philip S. E. Farrell, Ph.D.

How do we want to define the term C2?

Command and Control (C2) has been defined by a number authors and institutions (Alberts & Hayes, 2006; Pigeau & McCann, 2000). For example, Pigeau and McCann define Command, Control, and then C2 from a very human perspective, and introduce the notions of having the right competencies, authorities, and responsibilities (CAR) in order to be within the Balanced Command Envelop. They also emphasize the need for Common Intent. I would suggest that Common Intent (CI) becomes even more important in Innovative Organizations and Complex Systems (IOCS). CI becomes the glue that keeps these potentially diverse organizations together and moving towards a common goal.

So I would rephrase the question and ask, “can traditional definitions of C2 be used for IOCS or is it necessary to come up with another construct or set of terms?” In the first volume of the new C2 Journal, (Alberts, 2007) talks about Agility, Focus, and Convergence as the replacement to C2 in the context of these meta-organizations. He and Dr. Jimmy McEver presented these new ideas at the recent 12th ICCRTS meeting in Newport, Rhode Island.

The notion of Agility, Focus, and Convergence makes sense in the situation where disparate groups come together and “self-synchronize” to a large degree without the constraints of policy. The example that they use to illustrate this notion is in the computer gaming industry.

My first thought is that the new C2 would have to be some combination of hierarchical and policy-driven organizations along with teams that have affinity for each other and may tend to “self-synchronize”. The extent to which one type of C2 is in place verses another will depend on the situation and on the individual teams as well.

What are the requirements for which a C2 structure provides the solution?

This is an interesting question. It presupposes that a designer has in their tool box a number of C2 structures, and depending on the requirements for the system, he pulls one out and applies it. Conversely, the C2 structure would have to be customized for the system’s particular requirements.

The customization begins with a full understanding of the functions, procedures, and processes required to realize some strategic objective. Once the processes are fully understood then one can determine the capabilities (both human and technological) required to perform the tasks. On the human side, this can be further decomposed into the required competencies (knowledge and skills), authorities, roles, and responsibilities.