ANNEX A: A FIRST DRAFT TAXONOMY OF COOPERATION

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Cooperation is an important topic of inquiry in many different academic disciplines. Biological lifeforms cooperate. Economic agents cooperate. Political movements and parties cooperate. States cooperate. Defense organizations cooperate. It seems that that in all of these diverse forms of cooperation we find back the entities that cooperate (who?), the purpose of their cooperation (why?), the nature of their cooperation (what?), the interfaces between them (how/through what?), and the broader system within which they cooperate (where?). Of course, the labels that are given to these elements differ from discipline to discipline. 'The who', for instance, goes by different names in different fields:

- 'agents' in economics, computer science and game theory/public choice;
- 'actors' or 'organizations' in polisci;
- 'humans' or 'groups' in anthropology, psychology and sociology;
- 'parties' in legal sciences,
- 'nodes' in network and related sciences, 'components',
- 'elements' in many natural sciences

All of these different labels refer to the same category of (deliberate or undeliberate) 'agency' which represents the active units that engage in cooperation.

For each of these broad categories, we have identified a number of 'parameters' along which types of cooperation may vary. These in essence represent a number of different 'dimensions' of the 'cooperation space'. Some of these parameters have been elaborated in terms of description, a way of operationalizing it, our assessment of where NDOs typically stand along that operationalization, and our assessment of what we see happening in the world in the non-defense sector.

The listing below is nothing but a try-out, an incomplete first exercise. We do not intend or pretend to be exhaustive. But we also do not want to limit ourselves to a few high-level abstract parameters that may still hide some meaningful difference that may matter to DSOs. We want them to be 'discrete' enough to allow us to select a few where we really observe new forms of cooperation appear and thrive 'in the wild' – where applicable and interesting also within, still but predominantly outside of the defense realm.

(NATURE OF THE) INTERACTORS – THE WHO?

- **Size**: in most systems, some elements tend to be bigger, like-sized or smaller
  Operationalization: big<->big ; big->small ; small -> big ; small <-> small
  Defense now: since DSOs tend to be big, their current forms of interaction tend to skew towards the left side of this spectrum. Examples of big-big include: with other defense organizations; with other government departments; with big defense companies. Examples of big-small include: with smaller contractors on specific issues (catering, nice capabilities); with smaller force providers (e.g. Afghan warlord forces).
  Trend in the wild: much more diversity (main driver: lower transaction costs) – e.g. 'swarms' of small ones that interact with the big ones as (near)-peers

- **Number of decision makers**: all members of an organization may be involved in interaction decisions. Alternatively, only some members fulfil this role
- **Scope**: some organizations tend to have a very broad scope (e.g. in the business world big conglomerates (keiretsu, chaebols; in networks free-scale networks; etc.), others very narrow (niche companies,
  Operationalization: broad<-> broad ; broad ->narrow ; narrow -> broad ; narrow <->narrow
  Defense now: leaning towards the right: defense is fairly delineated in what it thinks it should or should not do, and there aren't many really 'broad' cooperation partners (the UN would be the one broad example that springs to mind)
  Trend 'in the wild': again more diversity (main driver: lower transaction costs) e.g. Google constantly scanning (globally!) smaller nice players and sometimes buying them out, sometimes just working with them
- **Homo-heterogeneity**: whether the interactors are homogeneous by nature or heterogeneous
- **Structure**: hierarchical or not?; stovepiped or not?
- **Nature**: cohesive or not? status-quo or not?

(PURPOSE OF THE) INTERACTION – THE WHY?

- **Aim**: Why do agents cooperate?
  Operationalization: For operational effectiveness, for efficiency gains, for 'what-if' scenarios [for evolutionary biology the aim is ultimately an increase in inclusive fitness]
- **Equity (cui bono?)**: are benefits (and/or costs) of cooperation fairly distributed or not
  Operationalization: ? (e.g. in ecology – mutualism, commensalism, amensalism and parasitism)

(NATURE OF THE) INTERACTION – THE WHAT?

- **Purposive or non-purposive**: do they purposefully want to cooperate with others or do they just end up cooperating de facto
- **Coalitional size**
  Operationalization: dyadic/2, mini-lateral, medi-lateral, maxi-lateral
- **Freedom of choice**
  Operationalization: voluntary or non-voluntary (coerced) or unintentional
- **Symmetrical or not**: Does one need the interaction a lot more than the other one?
- **Hierarchical or not:** is there a 'stronger'/more powerful one and a weaker/less powerful one
- **Partner choice**
  Operationalization: inside-out ('we' choose), outside-in (they choose us) or mutual.
- **Temporal**
  Operationalization: acc-incidental/ad-hoc, or structural/long-term
- **Adaptivity**
  Operationalization: Rigid (fixed) or adaptive (flexible)
- **Substantive:** what is the interaction all about?
  Operationalization: value-based (Weber – gemeinschaft vs gesellschaft; e.g Karl Deutsch' security community); purpose-based (do they share similar or identical objectives/purposes)?; incentives-based (do they share some – maybe transient) incentives; purely instrumental (just about sharing resources)
- **Trustworthiness and trust**: evaluation of actions in relation to prior stated intentions.
  Operationalization: evaluation of self by the other interactant(s) and potential interactants (= trustworthiness), and vice versa (= trust) based on history and current behaviour. Reputation. Distinguishing honest from deceptive signals.

(Nature of the) Interface – the how / through what?

- **Information exchange and decision making:** is decision making preceded by information exchange and/or discussion? Are decisions made alternately by each side (or sequentially by all sides if more than two), simultaneously or something more complex where there are more than two parties? How are decisions made within a group or organization? How are negotiations between groups managed?
- **Formal/informal**
- **High-cost/low cost:** costs to all parties and symmetry/asymmetry of these costs
- **Types of cost:** the nature of costs to the parties involved. We can distinguish between 'interaction costs' (intrinsic to the interaction and unavoidable to a variable degree) and 'outcome costs' (which depend on the outcome of the interaction)
  Operationalization: Interaction costs: Cognitive (for the individual) and 'informational requirement' (for the organization) costs of the interaction. Outcome costs: money, time, energy, sharing of previously private information, loss of reputation.
- **Loose or tight:** the term 'loose coupling' comes originally from the IT sector, from whence it expanded into many other disciplines[278].
- **Enforceable or not**

(Nature of the) Interaction Context/Environment – where?

- **One- or two-way**
  Operationalization: one-way (the environment influences the interaction or the outcome of the interaction influences the environment) or two-way. The (social) environment includes other potential interactants in the environment
- **Stable vs dynamic/turbulent**
- **Rules/norms/standards-based or not**