

Group IV: Grant Proposal

Technology and Conflict

This proposal is building on the hypothesis that the rapidly improving technology of unmanned aerial (UAVs) and underwater vehicles (UUVs) will come to disrupt the existing military balance between major powers in the 21st century. Such vehicles acting in concert in a swarm can eliminate the ability to project power embodied in traditional military weapons platforms such as aircraft carriers and land-based anti-missile systems, as they make it much easier to engage in anti-access and area denial, by (1) improving situational awareness and making real-time collection of military intelligence cheaper, and (2) because UAVs and UUVs are able to deliver payloads and attack enemy systems whilst being difficult to shoot down.

Therefore, we assume that drone swarm technology will enable a hegemon to be overtaken or significantly challenged by a latecomer/rising power by means of investment in this technology, which will allow the latter to engage in asymmetrical warfare. We are interested in the effect that this reallocation of military prowess will have on the likelihood of the hegemon and the rising power to falling into a Thucydides trap, whereby the incumbent hegemon sees itself forced to engaged in preventative conflict, so as to avert being overtaken by a rising power which is investing in new disruptive military technology.

To that effect, we are positing a model with two players, wherein power is highly asymmetrically distributed between a hegemon and a rising power. We are adopting a “power change” model, because it reflects the fact that novel A.I.-based military systems enable a weaker power to leapfrog the established hegemon’ s military advantage by use of drone technologies which all previous generations of weapon systems to be rendered obsolete. We are choosing this model above the arms competition model because the latter only captures the linearly accretive nature of investments in *traditional* military hardware, whereas new technologies are

military technologies is not a binary choice, but should rather be represented by a range of levels of investments, which yield nonlinear returns in military improvements. For instance, the larger investments in artificial intelligence based weapons systems will yield industrial cluster network effects, and speed up the increase of technological sophistication. A more intricate model would take this non-binary investment and nonlinearity into account.

Further, we are not considering the option where the hegemon (player 1) can itself invest in new technologies, which would merit a further model of simultaneous investment.

A further fruitful avenue of research would be to compare the relative costs for developing the said disruptive military technologies between the hegemon and the rising power. For example, the size of the military-industrial complex could render costs lower for the hegemon. Further, a separate cost element could be introduced for Player 2, the rising power, whereby it could pay a large lump-sum up-front cost to perpetrate a “cyber heist” in order to steal military technology blueprints, and equalize the power differential fast in subsequent rounds.