

ABSTRACT

The interpretation of technology as a form of power in global politics has played a crucial role in the shaping of the structure of the international system throughout history. Despite the relevance of technology in power politics, relatively little systematic attention has been given to the role of new and emerging technologies, especially in terms of the influence of their spread and effects on the dynamics of the international system and the strategic balance of power. This dissertation studies the influence of Quantum Technology (QT) in global power politics. It empirically explores and evaluates the relationship between QTs and three major global powers: China, the United States, and the European Union, in order to assess how future trajectories in this technology can influence the dynamics of the international system and the strategic balance of power.

Building on a theory on military innovation and technological change, i.e. Horowitz's Adoption-Capacity (AC) theory, the study focuses on deepening the understanding of the spread of QTs by analysing the incentives and constraints behind major global power's decision to adopt and develop such technology. Furthermore, it evaluates the implications of this technology for the balance of power, the structure of international competition, and future warfare. The study adopted a mixed methods approach and combined document and discourse analysis to investigate these issues. The analytical procedure mainly entailed finding, selecting, appraising, and coding data contained in different data sources, namely those country quantum-related strategies and initiatives, as well as speeches and press releases from top government officials.

The findings demonstrated that national pride, geostrategic competition, and dimensions of national and military power, as well as implicit assumptions of threats and quantum capabilities are influencing major global powers to adopt and develop QTs. State behaviour is

also pushing for the rapid advancements in this technology, as a result of pressure from actors to improve and translate quantum capabilities into a new form a power. In the advent of new and emerging technologies, QTs demonstrate a unique potential to influence the dynamics of the international system, the strategic balance of power, and future warfare. Not only was it revealed that QTs can transform current paradigms of military power, with significant implications for the future of military communications, encryption, and stealth technologies; but they can also reset the military and intelligence balance in China's favour. Moreover, QT's commercial applications may set some changes in the economic arena, where first movers that innovate and generate new ways of producing forms of power in QT can gain significant advantages and sustain their global leadership in this quantum revolution. Nevertheless, as this technology reaches maturity, the impacts and consequences of QTs will not be determined in months or years, but rather in the decades to come. Most importantly, it will eventually be determined by how countries themselves end up using these technologies in practice, and how they react and determine their future trajectories in QTs.