Technology as a Source of Global Turbulence?*

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Technology is neither good, nor bad, nor is it neutral.¹

7.1 Introduction

Technology, defined as the accumulation of knowledge and artefacts for realizing human objectives in specifiable and reproducible ways,² has always played a vital, if not central, role in international relations (IR) or international political economy (IPE). The history of the human race offers countless examples of this with regard to military, economic, social and cultural developments.³ The most profound effect of technological progress, especially since the fifteenth century, has been an increased density of the international system, caused by increasing and more rapid interaction. During the twentieth century, interaction capacities culminated in two important technological inventions: (1) nuclear weapons of mass destruction and their carrier systems; and (2) electrical and, later, electronic information and communication technologies (ICTs). The development of ICTs started in the second half of the nineteenth century (telegraph and telephone). Since the 1940s ICTs have spread to areas such as microelectronics and, computer technology (hardware), as well as related software development. Processes of convergence with telecommunication technologies and optoelectronics since the 1970s, enabled by the basic technological principle of digital binary code, have formed the basis for fundamental transformations in transnational politics, communication, finance, trade, production and culture.

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These two examples not only illustrate the significant influence of technology on military, political, economic and social developments, but also represent another quality of technology – namely its potential to transcend state borders, thereby undermining territorial sovereignty and authority, which have been the basic principles of the modern international system of nation-states as it developed after the Westphalia settlement of 1648. This argument was true for nuclear weapons during the Cold War and it is true for ICTs in the era of the so-called ‘information society’. There exist a large number of scientific studies concerned with questions of specific technologies and their impact on state policies or the technologically motivated emergence of new policy issues. Despite this, IR/IPE theory to date has been unable to formulate a clear and far-reaching theory, which gives sufficient weight to science and technology and its role in international affairs. With regard to this ‘gap’ Skolnikoff concludes: ‘Even scholars concerned with theoretical issues in international relations tend to treat science and technology as static “givens”, or as emanating from impenetrable black boxes’.

The goal of this short chapter is to show how IR/IPE theorists have tried, over the course of the last few decades, to describe and analyse the growing role of technology (especially network-based ICTs) in shaping the political and economic structures and processes within the international system. Since it would be impossible to analyse a larger number of approaches, this chapter focuses on three central theoretical approaches that have had significant influence on IR/IPE theory during the last three decades: realism/neorealism, interdependent globalism and constructivism. The author generally argues that technology, in most cases, is still an undervalued (dependent) parameter of IR/IPE theory. It concludes that if the disciplines of IR and IPE want to analyse the influence of technological progress on international relations more effectively, then they will have to change some of their basic assumptions.

7.2 Realistic and neorealist approaches to technology

With its basic assumptions of an international system of states (as the only important actors), realism defines IR as a war of all against all. According to realist understanding, states are primarily concerned with the pursuit of ‘national interest’, which is the maximization of power to ensure state security and survival in an anarchical system (one which is characterized by a lack of global governance) and the maintenance of the balance of power to evade the development of stronger opponents. In these realist conceptions, technology had a ‘black box’ status. For realists technology was, and mostly still remains, a mere instrument of power to realize state goals.

Neorealism emphasizes the anarchic nature of a global society without governance rather than the traditional realist emphasis on the unceasing lust for power inherent in human nature in its explanation for why inter-state