



International Relations Perspectives on Technology

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Abstract

This paper addresses the literature of International Relations approaches to technology as a form of power in international politics in two stages: First, the current IR approaches to technological power in international politics which includes instrumentalism, essentialism and Social Construction of Technology (SCOT). Second, the historical materialist approaches to technological power in IR which includes instrumentalism, essentialism and critical theory of technology.

Keywords: Power, International Relations, Technology.

Introduction

International Relations (IR) discipline emerged to prevent war. The aftermath of the First World War was its inception when the technological development of destructive modern military weaponry materialized (McCarthy 2015).

Alfred Zimmern, a central figure of the early development of International Relations, stressed the centrality of industrialization and modern communication technologies as the leading process of international integration. For Zimmern, international integration was a “result of technological innovation, more specifically the increasing speed and ease and hence volume of global communications” (Zimmern 1928:154). Human technological capabilities, marked by the ability to acquire or produce atomic bombs, has been the drive of states’ interests at this period. On the other hand, Hans Morgenthau, also the central figure of the early development of IR, stressed that technological development not only was destructive but also productive. Reinhold Niebhur, like Morgenthau, asserted that technological development had made a “universal community imperative”. The irony is that the new idea of a universal community driven by technological development is also threatened by such development as it provided the ability to demolish the new community by the conflict of interest among its components (McCarthy 2015).

In the 1970s the focus on power maximization in IR receded and the interdependence among states become intense because of the spread of communication technologies that enabled the trans-nationalization of production (Keohane and Nye 1989). In the Post-Cold War era, the race of nuclear armament receded, and IR became more engaged with information and communications technologies (ICTs), such as the Internet, biotechnology, robotics, and big data. Over the past decade, the IR discipline increasingly focused on the relationship between politics and information technologies and also power and technology (McCarthy 2015).

The literature review below will discuss the International Relations approaches to technology as a form of power in international politics. The discussion will be organized into two segments: First, the current IR approaches to technological power in international politics, which includes instrumentalism, essentialism and social construction of technology (SCOT); second, the historical materialist approach, which includes instrumentalism, essentialism and critical theory of technology.

Information and Communications Technologies (ICTs) and IR Theory

Information and communications technologies (ICTs) have been conceptualized differently by the various perspectives of International Relations Theory. New media, empowering different political actors by opening new spaces, possibilities, and other enablers, made ICTs to occupy a peculiar place in IR Theory. Whether strengthening,

undermining or altering the power distribution, ICTs affect international power politics. Daniel R. McCarthy, a lecturer in International Relations at the University of Melbourne introduced a novel approach in his “Power, Information Technology, and International Relations Theory”. As this work is both pioneering and sophisticated, it will be fully adopted in this study and will form the backbone of the literature section. His argument asserts that, despite the obvious weight that ICTs have on theories in general, the design, development, and diffusion of what “Technological Artefacts”¹ has remained relatively understudied within the field. IR Theory has a propensity to discuss technological objects as a given, rather than questioning the construction of these technological objects. The deterministic approach in treating technological objects has been influential in the IR discipline, whether these technological objects were considered as neutral tools or having intrinsic properties that affect political outcomes or cause social change (McCarthy 2015).

Technological Instrumentalism

The conceptualization of technology for instrumentalists is that technological objects do not cause social change because they do not inherent properties. Instead, it is the human agency that has the ability to use these neutral objects for certain purposes. Therefore, weapons are neutral, neither offensive nor defensive, actors only have the ability to decide their nature according to actors’ intentions.

There are three central figures in the field who adopted this orientation: Rosenau, Keohane, and Nye. For Rosenau, considering technological objects to have an essential value is an inappropriate deterministic view. In clear words he states:

It is more permissive than dismissive to argue that information technologies are essentially neutral. They do not in themselves tilt in the direction of any particular values neither good or bad, nor left or right, nor open or closed systems. They are, rather, neutral, in the sense that their tilt is provided by people. It is people and their collectivities that infuse values into information. For better or worse, it is individuals and organizations that introduce information into political arenas and thereby render it good or bad. Accordingly, the neutrality of information technologies is permissive because it enables the democrat as well as the authoritarian to use information in whatever way he or she sees fit.

There is, in other words, some utility in starting with the premise that information and the technologies that generate and circulate it are neutral. It enables us to avoid deterministic modes of thought in which people are seen as being deprived of choice by the dictates of information technologies. Put more positively, the neutrality premise compels us to focus on human agency and how it does or does not make use of information technologies (Rosenau 2002a: 275).

For Rosenau, considering information and technology neutral has the advantage of avoiding the trap of deterministic thinking that robs people from the ability to make choices. It also drives us toward focusing on the decision making of human agency in regard with information technologies (Rosenau 2002a: 275).

It is clear for Rosenau that exercising power through ICTs is the political actors’ choice, and it is isolated from any intrinsic value of the technological objects themselves. In the same way, Robert Keohane and Joseph Nye treat information technology from an instrumentalist orientation, despite their claim that information technology has been central in altering the nature of the international systems (McCarthy 2015).

The focus of these authors is the increasing role of “soft power” rather than coercive “hard power” because of the complex interdependence of the international system. Interdependence among states in the international system is augmented by the increases of transnational politics that affect how governments shape their policies and behavior. Information technologies are at the heart of these dynamics throughout two processes: First, information technologies make an abundance of information, which lead to transparency. Transparency, in turn, drives states to cooperative action. The abundance of information for two players make the decision making easier for both of them and mutually beneficial, and it lays the ground for more compatible interests. Second, is the consequence of transparency. Information technologies are shifting the nature of power in the world order by decreasing the

¹ Technological Artefacts: the actual physical development of these technologies

significance of “hard power” and increasing the role of “soft power”, distributed power to many actors in the world order (McCarthy 2015).

The ability to set political agenda is also shaping the context by which the actors buttress the dominance of their ideas and values, leading to what Keohane and Nye called the “attractiveness” of soft power; attractiveness means to get others to want what you want. ICTs set the context in which soft power becomes more important, but it does not create “attractiveness”. ICTs do not cause any specific outcome by itself. Rather, ICTs can be used by political players to realize their capacity to change other players’ choices (McCarthy 2015).

McCarthy pinpoints two major criticism in reference to the instrumentalist treatment of technology and related treatment of power conceptualization. First, instrumentalist treatment of technology omits the role of human agency in designing and developing technological objects to fit specific social aims as a deliberate exercise of power capabilities. For example, if we trying to create swords or plowshares as a cutting tool, their design and development will be determined by the purpose of usage at the end either fighting or farming. Second, Despite the apparent neutrality of technology, it is the different abilities of players that create a context in which “soft power” unfold. (McCarthy 2015).

Technological Essentialism

Contrary to the instrumentalists’ position, technological artefacts for the essentialists possess inherent value and cause social changes. To them, technology is always biased towards a certain purpose. There are two camps within the technological essentialist perspective: the optimistic and the pessimistic.

Techno-optimists

Information and communication technologies for techno-optimists leads to freedom and democracy. The techno-optimist view emerged during the 1990s when the Internet started to spread out in the public sector (Abbate 2000). It argues that the spread of freedom and democracy by technology itself is inevitable. However, that does not occur through the mere use of technology, rather, by internal dynamics that users cannot change.

These arguments are inconsistent and amorphous. Internet filtering and state surveillance regimes like Internet cutting in 25 January revolution make these arguments have an ideological tendency more than theoretical and empirical grounds.

The deficit of such views is obvious. Moreover, those arguments are inconsistent and amorphous. Regimes have tremendous power in shaping the position of technology within a given social context. Also, they have the sheer power to block or interfere with the assumingly free float of information. In other words, such a claim is not supported by empirical evidence.

Techno-pessimists

For Techno-pessimists, information and communication technologies lead to new forms of oppression due to its own logic. ICTs created what is called “the politics of speed and acceleration”, a new phenomenon discussed by many IR scholars. The recent engagement with this phenomenon was James Der Derian in his work “Virtuous War: Mapping the military-industrial-media-entertainment network”. Der Derian argued that ICTs has changed the behavior of global politics. ICTs boosted the speed, virtuality, and simulation, undermining our ability to understand and explain events. The quality of virtuality and simulation have tremendously increased by ICTs with major consequences on politics. Specifically, it became increasingly difficult for politics to differentiate between the true and the false, and the ICT influences became out of the control of human beings.

Der Derian treated ICTs as an agent, and it is causing social outcomes: “technology has taken us into grave new worlds where the other is virtually disappeared”; “The global networking of multi-media has become unstoppable, and I believe that its effects may have well accelerated beyond our political as well as our theoretical grasp” (Der Derian 1992: 2; 2003: 445).

McCarthy has been critical of these arguments. Der Derians’ argument assumes that state sovereignty is under threat due to ICTs effects. But the classical view of “Westphalian” sovereignty was not completely achieved even in

the most powerful states during the history of nation-state so far (McCarthy 2015).

For McCarthy, the essentialist approaches are closer to the structuralist perspective in which ICTs are treated as a stand-alone agent.

Despite the limitations of the essentialist perspective, it does highlight the importance of the complexity of technological objects. Simple technological objects like hammers, screwdrivers, and knives do not cause social outcomes in any specific direction, but complex technological objects do produce structural social outcomes in specific directions. This central point is the base for another perspective, namely the Social Construction of Technology (SCOT) perspectives (McCarthy 2015).

The Social Construction of Information Technology

Social Construction of Technology (SCOT) is a new perspective in IR, and it notes that the conceptualization of technology should be part of the world political system. SCOT tries to carve a middle-course between instrumentalists and essentialists by arguing that technology and society are mutually constructed. Therefore, the recognition of technological development should consider the particular social and historical context in which technological development takes places. Consequently, the understanding of technological development is considered a nonlinear process. For instance, in the development of technological artefacts, there are multiple design choices to solve a problem. The question is that which choice is optimal to solve this problem. The choice of which path is taken is not the product of any intrinsic technical rationale; rather, it is the product of political and social contexts (McCarthy 2015).

In the international political system actors, due to conflict of interests, struggle over the creation of technological artefacts. Herrera and Williams emphasize this vision by stressing the structure of ICTs generally and the Internet in particular. Their significance lies in strengthening or undermining specific types of social action (McCarthy 2015). McCarthy clarifies his viewpoint saying:

In relation to the Internet, and information communication technologies generally, these authors [Herrera and Williams] stress the crucial point that the structure of the technology itself is of central importance in enabling or constraining specific types of social action. This shifts our focus beyond the level of content beyond examining the impact of Facebook or Twitter on political events towards the underlying technological conditions that allow these applications to have an impact at all (McCarthy 2011a).

For SCOT, this legibility of the relationship between technology and society support the need to create a middle ground between determinist and social constructivist accounts. Herrera states:

No technology is truly autonomous; they are all partly social. Yet neither are the political meanings of technology infinitely malleable. The two do, however, complement each other nicely. Technology as used here is simultaneously a social and a technical product. (Herrera 2006: 34).

Technology, for SCOT, does not only affect society but also society affects technology. This mutual interaction has created a sharp distinction between technology and society and bestowed intrinsic rationality to the technology itself. This distinction is unsustainable because there are no technical free choices even if we consider the effects of the social context on the structure of the world (McCarthy 2015).

McCarthy discussed the concept of “momentum” in which SCOT trying to solve this distinction between technology and society. The “momentum” concept was developed by Thomas P. Hughes, a historian of technology, and is used by Herrera and DeNardis. It has carved to clarify what McCarthy called “Path-dependency dynamics of information technology”. It means that the technical decisions during the technological development process get affected by political and social interests. The technological development would be sustainable if it attracted enough investment, therefore push “leading groups” to create and expand technological institutions. That causes path-dependency in which these decisions will structure the future of technological developments.

McCarthy criticized using the concept of momentum by asserting that this concept is a descriptive not an analytical. McCarthy states:

It describes how technologies endure over time but do not explain why technologies endure over time. That is, Hughes does not outline why sunk costs or reputation matter to individuals or groups, or what generates these social dynamics. Similarly, Herrera notes the pursuit of profit as an important driving factor in the development of railways, but never why the cost savings introduced by the railway are important. Capitalist social relations are never theoretically integrated into the concept of momentum, even as capitalism is empirically central to his (and Hughes') narrative (McCarthy 2015).

A Historical Materialist Approaches to Technological Power in IR

Historical materialist approaches regarding technology are centered on the concept of power. Within this approach, we can also recognize two strands: Marxist technological instrumentalism and optimist technological optimism.

Marxist Technological Instrumentalism

Like the current approach in IR, McCarthy asserts that Marxist instrumentalism has treated technology as a neutral tool and does not account for the causes of social outcomes. This approach fails to fill the gap between material conditions of social organization and ideology. McCarthy makes it clear that this argument that considers technological artefacts as instruments that can be used in any direction miss accounting for the agency. McCarthy states:

While capitalist social relations use technological objects to meet the goals and desires of capital by increasing control over labor and the production of surplus value, socialism will use technology to increase human development (McCarthy 2015).

For McCarthy, Marxist instrumentalism fails to clarify the centrality of material structures in undermining the social organization.

Optimistic Marxist Technological Essentialism

Optimistic Marxist essentialists consider that technological artefacts are produced by labours who are the productive force. These technological artefacts help to produce different forms of social organization. Consequently, this would lead directly to class struggle, and this struggle would evolve towards socialism (McCarthy 2015).

McCarthy supports his perspective by Alex Callinicos' two-pronged processes:

Historical materialism explains the outcome of social transformations as the outcome of two mechanisms: first, the structural contradictions that arise between the development of the productive forces and the prevailing productive relations; and, secondly, and only in the context of the socio-economic crises generated by these contradictions, the class struggle (McCarthy 2015: 47).

Pessimistic Technological Essentialism

As discussed above, technology for pessimistic essentialism leads to oppression by its own logic. McCarthy discusses the contribution of Frankfurt School Critical Theory, the foremost Marxist stand, by addressing its two generations. The first-generation led by Horkheimer, Adorno, and Peoples. This generation conceptualizes technology like an "Iron Cage" that generates conditions for deeper oppression (McCarthy 2015). Peoples stresses the institutional dimension in the assessment of technology where he says: "At the risk of oversimplification, the School essentially fused Weber's "Iron Cage" of bureaucratic rationality with the instrumental rationality they perceived as inherent in modern technology" (Peoples 2009: 32; Feenberg 2002: 111).

The second generation was led by Jurgen Habermas who has a more optimistic view than the first generation. Habermas sees that there is more space for human agency in the interaction between people and technology, bestowing on it a degree of emancipatory effect. In evaluating Habermas's position, McCarthy asserts that: "Habermas thereby endorses the essentialism of the Frankfurt School, but suggests that this can be quarantined to the "system", carving out a sphere of freedom within our "life-worlds" (Habermas 1987, 1989 [1962]; quoted in McCarthy 2015).

Toward a Critical Theory of Technology

Philosopher of technology, Andrew Feenberg, provides a thorough critical theory of technology, which stands opposite to both instrumentalists and essentialists perspectives, however, he retains elements of the SCOT perspectives in IR. McCarthy describes this in saying that “Feenberg argues for an understanding of technology as a historical process which reflects the biases of the particular social context of its creation” (McCarthy 2015: 50).

Feenberg proposes a conceptual reconstruction of deterministic understanding of technology in each of historical materialism and Frankfurt school views. This critical proposition has three elements:

1. Technical design is not determined by a general criterion such as efficiency, but by a social process which differentiates between technical alternatives according to a variety of case-specific criteria;
2. That social process is not about fulfilling “natural” human needs, but concerns the cultural definition of needs and therefore of the problems to which technology is addressed; and
3. Competing definitions reflect conflicting visions of modern society realized in different technical choices (Feenberg 1999: 84).

The first element in this criticism describes that technological development has occurred due to the social struggle. Within a given historical context, actors use their capabilities and influences to direct technological development in order to fulfil their needs and values. McCarthy summarizes that “This ability the power to direct the design process is the product of a historically enduring social structure” (McCarthy 2015).

McCarthy criticizes SCOT approaches by arguing that despite the availability of the treatment of SCOT and Actor-Network approaches, they focus upon the micro-political, and consequently, they fail at two accounts. First, they fail to deal with actors who are privileged by the dominant structure in the development process. In other words, they do not give adequate account for the social processes that stimulate innovation (McCarthy 2015). For McCarthy:

This leads to an understanding of social power in which only the exercise of power is recognized. This is important, but we must also account for the prior designation of actors as legitimate directors of material reproduction, and also outline what drives them to create technologies of one kind rather than another (McCarthy 2015: 51).

The second element in McCarthy’s criticism is the actual physical construction of technology. The decision to make one kind of technology over another does not simply get directed by cultural context. Instead, there are still questions to answer before the final decision. McCarthy gives a clarifying example. If the actor decided to produce guns over butter, there are still questions on “what type of guns, why those particular types of guns, and for what purpose”. Choosing guns over butter is the direct reflection of cultural context, but these questions refute functionalist explanations that the development or design process is about “fulfilling natural human needs but concerns the culture definition of needs” (McCarthy 2015).

The third and final element in this criticism is “closure”, which is achieved through two distinct paths. McCarthy defined technological closure as “the process by which design ends” (McCarthy 2015:52). The first path to achieve closure is when designers and the majority of society accept the technological product and the process of innovation stops. The second path to closure is when the social problem is redefined, thereby the design process has to end (McCarthy 2015).

The closure is the crucial element through which the technological artefacts become natural and taken for granted in society. McCarthy stresses that after closure, society uses the technological artefacts without asking about the design background, and at that point, technological artefacts become elements to influence the reproduction of the society (McCarthy 2015). McCarthy says:

Technology thereby forms a largely forgotten background in which we move. It’s taken-for-grantedness is a significant source of its power as a part of the historical structures of social relations (McCarthy 2015: 53).

These elements describe the bias of technology and create what McCarthy, borrowing from Hughes, calls: “path dependency.” But path dependency is not completely deterministic, because the following technological

artefact that is built upon the previous one could take another path. McCarthy asserted the explanation of Feenberg's concept "ambivalence":

[t]he lowers we descend towards the foundations of rational institutions, the more ambiguous are the elements from which they are constructed, and the more these are compatible with a variety of hegemonic orders. This is the source of the ambivalence of technology (Feenberg 1991; Quoted in McCarthy 2015: 54).

In short, the critical theory of technology, in short, is that, within a historical context, the technology is biased towards the actor who has the resources and the capacity to direct the design process to create technological artefacts that in favor his interests. But the technology is also ambivalent in which the following technological artefacts built upon the previous one could take another path.

Conclusion

From its inception, the dominated approach in IR discipline, which treated the technology and power, was determinism. Whether instrumental or essential treatment. However, Social Construction of Technology has broken this domination by evoking the context of the phenomenon. Moreover, the critical theory of technology has taken another step forward. In addition to evoking the historical context, the critical theory of technology emphasizes the ambivalence nature of technology that make the treatment of technology completely goes through indeterministic way.

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