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Technological Innovation and Diffusion: Consequences for IR

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In his *Bounding Power: Republican Security Theory from the Polis to the Global Village* Daniel Deudney rightly draws our attention to what he sees as neglected “material-contextual factors” such as “nature, geography, ecology and technology”. This may first appear odd given how much ink is spilled on questions concerning material factors in determining international outcomes in many international relations theories. Yet Deudney raises the good point that in much of “international political theory” such material-contextual factors “[are] remarkably truncated and unsystematic.” In particular, Deudney writes, “We think and act as if technologies are just our handy tools and as if nature has somehow been left behind.”[1] It is recognized insofar through its effects during periods of armed conflict or as key weapon systems such nuclear arms. However, this limited perspective on technological change neglects a much more important constitutive component that technology may have for international politics. Given the acceleration of intelligent technological innovations such as automated weaponry, artificial intelligence and automated production, understanding the place of technology will necessarily become a significant aspect of international relations theory.

Actor-Network Theory and Technological Diffusion

The emergence of Actor-Network Theory (ANT) in the social sciences is an important step in situating technological change more generally. For ANT, social relations should be understood as being part of a larger assemblage of relations including material objects. Such material objects, known more generally as actants, have a capacity to act in the world alongside human beings. ANT does not privilege the human over other material objects and the effects that such material objects may have. As Jonathan Luke Austin explains, ANT had as its goal the problematization of “scientific binaries (objective-subjective, modern-non-modern etc.)” in order to focus on the “practices, contradictions, mistakes, chaos and complexities of its practices in the local contexts (like the scientific laboratory) of its enactment.”[2] Bruno Latour, one of the founders of ANT, examines the diffusion of the laboratory setting into the social world as a material process and not primarily one rooted in scientific validity. In *The Pasteurization of France*, Latour shows how Louis Pasteur’s ideas on microbiology were carefully modulated for applicability in specific rural settings. As he writes, “on condition that you respect a limited set of laboratory practices – disinfection, cleanliness, conservation, inoculation gesture, timing and recording – you can extend to every French farm a laboratory product made at Pasteur’s lab.”[3]

In my own work *Empire Within*, I show how this understanding of the material transformation of colonial spaces had significant effect upon imperial metropolises. Colonial spaces have historically acted as technological crucibles, places to test military technologies, forms of surveillance and social control, public health and educational initiatives that would be repatriated back into metropolitan spaces.[4] Barbed wire, for example, which emerged in the American mid-West in the 19th century proved to be an enormously important space-dividing technology that would have lasting consequences for the architecture of the concentration camp during the Boer War. The historian Alfred McCoy shows how during the Philippine-American War the United States innovated a variety of technologies aimed at suppressing the Filipino insurgency. These innovations would increasingly accrue back to the United States and become part of the nascent national security state.[5] As McCoy argues, “innovative colonial policing in the Philippines influenced the formation of the American state, contributing to the development of a sophisticated internal security apparatus.”[6]

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McCoy raises an interesting parallel with our own period in that a similar process of technological innovation and diffusion has happened in Iraq and Afghanistan. Faced with insurgency in both Afghanistan and Iraq the United States experimented with technological innovations such as drones, handheld wireless fingerprinting devices, retinal scans for biometric databases and the establishment of Mobile Offender Recognition and Information Systems. Automatic license plate readers deployed in Iraq is increasingly the norm on American streets. In a recent Radiolab episode entitled "Eye in the Sky" Ross McNutt and his team at MIT developed the idea of retrofitting a small aircraft with 44-mega-pixel camera and to keep it airborne all day long. The idea was to create a round the clock aerial surveillance over an urban environment. In effect, whenever there was an IED explosion one could go back to the archival video footage and actually see someone coming to do the setup. Now, what is interesting about this story – which is what Radiolab highlights – is that McNutt's company Persistent Surveillance wants to commercialize this technology as a crime-fighting tool within the US. Technological innovations occur within these imperial and neo-imperial crucibles but they have consequences that are transnational in scope. Technology cannot be seen as simply having an instrumental function; rather, within the framework of ANT, we can better understand how technological innovation and diffusion happen in ways that international relations theories neglect.

Disruptive Technologies

Not privileging a human-centric notion of technological effects called for by ANT is even more important today. Contemporary and future technological innovations may radically call into question the international political environment. One gets a sense of the disruptive potentiality of technology with respect to the proliferation of social media. The capacity to organize social transnational movements has been amply demonstrated from the Arab Spring to the Ukraine. However, forthcoming technological innovations may have much more significant effects.

There is an increasing concern with the advent of automated weaponry often called 'killer robots'. The US military, for example, developed a fully automated ship defense system called Phalanx. There are also discussions concerning automating drone strikes with little human oversight. So called signature drone strikes which target groups based on a matrix of variables accumulated in American databases could become increasingly routine. The demilitarized zone in between North and South Korea is increasingly patrolled by automated sentry guns (though it still requires human permission to fire). All of which raises the specter of an increasingly roboticization of warfare with all its political and ethical disruptive effects. What are the ethical consequences for employing automated weapons on the battlefield? What changes to international humanitarian law should take place to respond to this technological development? Would the increasing use of robotic technology make more common, make it appear less "costly" than otherwise imagined? Indeed, diplomats have been discussing these issues in Geneva for the past two years under the auspices of the Geneva Conventions.

The emergence of artificial intelligence doesn't just have consequences for the military and military operations. There is an increasing recognition that automation and advances in artificial intelligence will have profound consequences for the international economy. The expansion of automation will necessarily diminish the demand for labor. In a study entitled 'The Future of Employment: How Susceptible are Jobs to Computerization' Carl Benedikt Frey and Michael A. Osborne examine the consequences of the proliferation of automation and conclude that about 47% of current employment is subject to disruption.

John Maynard Keynes famously recognized in the 1930s that "technological unemployment" was the result of technical innovations. However, the difference with the advent of "smart" technologies is that the human element of cognition no longer appears to be a bulwark against obsolescence. For Noah Smith, "Once human cognition is replaced, what else have we got? For the ultimate extreme example, imagine a robot that costs \$5 to manufacture and can do everything you do, only better. You would be as obsolete as a horse." Paul Krugman argues that we are already seeing the effects of roboticization in the economy in that the wage gains of college-educated people in the US have been largely stagnant.

In part, automation becomes a significant factor in exacerbating economic inequalities and the cementing of a rentier economy. At the international level, one can imagine how this may have much more profound consequences. It could significantly decrease the demand for labor across the world resulting in a significant loss of purchasing power and

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aggregate demand. Offshore production was at the forefront of globalization over the past two decades and yet automation may make it much more economically feasible to maintain production domestically. Such inequalities may fuel political instabilities across the global South and may increase the number of economic migration.

Conceptually, we increasingly need to think about how such technological innovations may precipitate crises that percolate across the globe. What do these innovative technologies mean for capitalistic crises? How do they impact the manner in which capitalism reproduces itself? And what are its implications for an emancipatory politics? These are questions that are at the theoretical forefront of what Nick Srnicek and Alex Williams refer to as the #accelerate manifesto.

Conclusion

The importance of focusing on technological innovations and diffusion is thus two-fold. First, we need to be able to trace such processes of diffusion as reflecting instances of historical and contemporary international hierarchies that impact our daily lives. The technologies developed to combat insurgencies in Iraq or Afghanistan have a way of migrating home and contributing, for example, to the militarization of policing. Second, humanity is increasingly going to be faced with technological changes that call into question the international legal order – with respect to the emergence of automated weapons –as well as long-standing capitalistic modes of production. It is increasingly unclear whether our global political-economic institutions will be able to meet the challenges posed by these disruptive technologies. Nonetheless, we do need to develop the theoretical apparatus that can help us understand the effects that these technologies will have down the road.

Notes

[1] Daniel Deudney, *Bounding Power: Republican Security Theory from the Polis to the Global Village* (Princeton, NJ: Princeton University Press, 2007), p. xii.

[2] Jonathan Luke Austin, “We have never been civilized: Torture and the Materiality of World Political Binaries”, *European Journal of International Relations*, OnlineFirst November 25, 2015.

[3] Bruno Latour, *The Pasteurization of France* (Cambridge: Harvard University Press, 1993), p. 152.

[4] Alexander D. Barder, *Empire Within: International Hierarchy and Its Laboratories of Governance* (New York: Routledge, 2015).

[5] Alfred McCoy, *Policing America's Empire: The United States, the Philippines, and the rise of the Surveillance State* (Madison, WI: University of Wisconsin Press, 2009)

[6] Ibid, p. 18.

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