

## Peacebuilding and the Norms of Technological Change

**Paul C. Heidebrecht**

### Abstract

After highlighting three significant factors that make the regulation of emerging technologies particularly challenging, this policy brief will focus on an alternative strategy. In short, it argues that peacebuilders need to devote more attention to engaging the private sector in order to influence the culture and ultimately the norms of the organisations and individuals closest to the development of advanced technologies. Running throughout this analysis are references to two contrasting contexts: the innovation ecosystems in Silicon Valley, California, and what has at times been referred to as “Silicon Valley North” in Waterloo, Ontario (Canada).

### Introduction

The history of warfare is intertwined with the history of technology.<sup>1</sup> At times military objectives have sparked technological innovations, and at times technological innovations have sparked shifts in military strategy and tactics. Thus, it is not surprising that the international community’s effort to minimise the harmful effects of conflict since World War II have been preoccupied with the regulation of various technologies of warfare. Indeed, this preoccupation has become a significant organising principle for the efforts of peace activists over the past seven decades. One product of these efforts has been a proliferation of international conventions or treaties to regulate nuclear, chemical, and biological weapons,

---

<sup>1</sup> In the words of philosopher Paul Virilio, “history progresses at the speed of its weapon systems.” See *Speed and Politics* (Cambridge, MA: The MIT Press, 2006), 90.

as well as missiles, landmines, cluster munitions, and the trade of conventional weapons. And yet peacebuilders and governments are struggling to respond to rapidly emerging technologies of warfare, as the weaponisation of social media, cybersecurity, and AI all appear to necessitate new kinds of activism and policy responses. The first half of this policy brief will provide a closer examination of how these advanced technologies are developed in order to underscore and help explain this challenge. Three significant factors discussed include the growing influence of the private sector, the embrace of start-ups as the key driver of technological innovation, and the nature of digital technologies themselves. The second half of this brief will then explore opportunities to influence the culture and norms of tech companies as an alternative (or additional) strategy for elevating peacebuilding priorities and objectives in the development of new technologies.

### 1.1 Who is Really in Charge?

It is commonly assumed that modern technology is subservient to modern science. New technologies are the product of new advancements in science; they depend on breakthroughs in theoretical knowledge. One example that might come to mind is the Manhattan Project, where brilliant scientists developed their theories of nuclear physics in laboratories before passing that knowledge along to engineers—the “applied scientists”—to create an operational weapon (and eventually reactors for other purposes).<sup>2</sup> Baked into this narrative of how technology is developed is the assumption that governments and universities, those who typically fund and otherwise enable theoretical research, are best positioned to understand and exert control over the direction of cutting-edge technologies. The influence of the private sector is not thought to be incidental; however, as evident in the historic dependence of aerospace, pharmaceutical, and agricultural businesses on government funding for research and development, it is assumed to be responsive. I think this narrative is out of date, and am convinced that the principal driver of technological innovation is now the private rather than the public sector.

One way of tracing this shift is to consider the history of Silicon Valley. Thanks to the efforts of both scholars and Silicon Valley icons, it is now increasingly evident that this global epicentre of technological innovation has its roots in the military-industrial complex.<sup>3</sup> The ground-breaking expertise and manufacturing capacity in integrated circuits and personal computers that led to the transformations wrought by the Internet and social media did not bloom straight from the fruit orchards of the southern San Francisco Bay Area. Rather, they emerged from Pentagon-funded research and procurement for vacuum tubes, test equipment, and microwave technology during World War II and the subsequent Cold War that built institutions like Stanford University and companies like Hewlett-Packard. Most significantly, this investment also shifted a critical mass of engineers and entrepreneurs westward from Boston and the DC area. While government support may have built the

---

<sup>2</sup> Engineers have at times resisted this characterisation, even as many North American universities continue to award Bachelor of Applied Science degrees to their engineering graduates. See, for example, Billy Vaughn Koen, “Engineering Method,” in *Encyclopedia of Science, Technology, and Ethics*, ed. Carl Mitcham (Detroit: Macmillan Reference USA/Thomson Gale, 2005), 635-37.

<sup>3</sup> See historian Margaret O’Mara’s *The Code: Silicon Valley and the Remaking of America* (New York: Penguin Press, 2019), and entrepreneur (and amateur military historian) Steve Blank’s “Secret History of Silicon Valley” slideshow and video: <https://steveblank.com/secret-history/>.

foundations of Silicon Valley, in recent decades it has been private sector investment that has come to drive its spectacular growth. In the past few years this one small region of California has attracted close to half of all the venture capital in the United States, and a significant percentage of the global total. In recent years, venture capital deployed in Silicon Valley has dwarfed the Pentagon's investment in new science and technology.<sup>4</sup> With the growing market capitalisation of big tech giants, this concentration of economic power and technological capacity is only set to increase.

## 1.2 How is Technology Actually Developed?

Apart from the growing economic power and influence of the private sector, an even more profound shift I want to underscore has to do with the way that advanced technologies are now developed and brought to market. The methodology pioneered in Silicon Valley has become ubiquitous across the globe, and can be summed up by its focus on start-ups. Rather than relying on large-scale, centralised, and carefully planned initiatives, new technologies bubble up from the grassroots as it were, from a vast number of new or start-up companies rapidly testing and deploying countless new ideas on a constant basis. The best ideas find traction with early adopters and/or attract investment so that start-ups can either 'scale' or 'exit' the market by being acquired by a larger tech company. While large tech companies do have their own research and development capacity, to a significant degree they have outsourced this work to a broader ecosystem of talent and resources that is far more dynamic and nimbler than any large corporation could ever hope to be. Start-ups, I would argue, are now the primary context where invention and innovation happens; new ventures rather than lab projects are the container within which technology advances.

This start-up methodology has matured and become increasingly formalised in recent decades.<sup>5</sup> There are now clearly defined roles for entrepreneurs, incubators and accelerators, and investors, and there is an established economy of technical and business-related jobs. There is also a variety of standardised tools and techniques that guide these actors as they seek to make an idea real. One prominent example is the "Lean" start-up process, articulated by Eric Ries as a "scientific approach to creating and managing start-ups" in order to "get a desired product to customers' hands faster."<sup>6</sup> This process builds in a bias for action, encouraging entrepreneurs to start testing their idea before they think they are ready by building a Minimum Viable Prototype (MVP) to share with prospective customers. It has proven to be an effective way of avoiding spending months or years perfecting a product before confirming that it meets a real need.

---

<sup>4</sup> In 2019, Silicon Valley companies raised over \$45.9B in venture capital; the Pentagon's R&D budget was approximately \$13.7B. See Cromwell Schubarth, "Bay Area retained venture funding dominance in 2019," *Silicon Valley Business Journal* (18 December 2019) for a summary of data tracked closely by organisations such as Crunchbase, and the U.S. Department of Defense FY 2019 Budget Request.

<sup>5</sup> Brad Feld and Ian Hathaway provide a comprehensive overview of this history in *The Startup Community Way: Evolving An Entrepreneurial Ecosystem* (Hoboken, NJ: Wiley, 2020).

<sup>6</sup> *The Startup Way: How Modern Companies Use Entrepreneurial Management to Transform Culture and Drive Long-Term Growth* (New York: Currency, 2017). Steve Blank is widely credited with inventing the lean start-up methodology.

In addition to a bias for action, the ‘start-up way’ is also preoccupied with speed. Eric Ries advises tech entrepreneurs to “fail fast,” and the mantra of Facebook founder Mark Zuckerberg used to be “move fast and break things.”<sup>7</sup> Even as many are now questioning the dangers of what Clayton Christensen called the disruption economy, this obsession with speed continues.<sup>8</sup> Moving fast is more than a corporate mantra; it has become embedded in a way of working. For example, “Design Sprints” are a time-bound process pioneered by Google to take ideas from concept to reality in a matter of days or weeks.<sup>9</sup> This way of working has proven to be incredibly responsive to customer needs, but it also squeezes out opportunities for reflection and discernment of issues that may be of concern to a broader range of stakeholders. Even more significant for the purposes of this policy brief, it also bypasses levers of control that governments have been able to exert on the development of technology in the past. Beyond funding fundamental and applied research and subsidising industrial research and development, this has included intellectual property systems and workplace or consumer-focused regulatory regimes. It is not that companies are more secretive about their technology—after all, open-source approaches to software appear to have won the day—but that their primary commercial advantage comes from being the first to market, which leaves potential competitors, as well as society, racing to catch up.

Indeed, it could be argued that the most profound technology introduced by the high tech sector is not the Internet, social media, AI, or any other particular example of a new technology, but the very process now driving the development of cutting-edge technologies.<sup>10</sup> In my view, what this rather ambitious overview is pointing to is more than a way of working, more than a set of standardised techniques, and more than a favoured organisational form. It is pointing to a culture – a set of norms, customs, intuitions, and sensibilities that have come to define a particular social group. As much as elements of this technological culture now extend beyond communities that develop technology, any efforts to direct or control the new technologies that emerge will require governments and civil society actors to understand and meaningfully engage in what is for them a new cultural context. This will require that we let go of outdated assumptions about hierarchies of knowledge, be curious about the nuances and complexities of power dynamics within this techno-culture, and keep our eyes open when it comes to the out-sized power and influence wielded by this particular community.

---

<sup>7</sup> Hemant Taneja, “The Era of ‘Move Fast and Break Things’ Is Over,” *Harvard Business Review Press* (22 January 2019).

<sup>8</sup> *The Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail* (Boston: Harvard Business Review Press, 1997). For a disturbing description of the political intervention required for tech companies to successfully disrupt an established industry, see Bradley Tusk, *The Fixer: My Adventures Saving Startups from Death by Politics* (New York: Portfolio, 2018).

<sup>9</sup> Jake Knapp, John Zeratsky, and Braden Kowitz, *Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days* (New York: Simon and Schuster, 2016).

<sup>10</sup> It has taken several years and dozens of interviews with tech entrepreneurs for this point to hit home, but I would credit the University of Waterloo alum and serial entrepreneur Joseph Fung for first articulating it to me in July 2016. Although this may be stretching the bounds of how technology is commonly defined, since Martin Heidegger’s *The Question Concerning Technology* (1954), contemporary philosophers of technology have assumed that the essence of modern technology points us toward a particular mindset or way of thinking more than a particular kind of artifact.

### 1.3 From an Analog to a Digital World

The third big shift I want to highlight concerns the nature of technology itself. The capacity to generate, store, and process electronic data has come to revolutionise the way we communicate, but has also influenced every other sphere of our society. Whether we look to agriculture, construction, education, healthcare, manufacturing, public safety, retail, social services, or any other sector, there is no occupation or pursuit that has not been meaningfully reshaped by the introduction of digital tools. These tools are not only ubiquitous, they share a common underlying architecture regardless of their application. Computer code can serve many potential customers, and the authors of algorithms might be paid by a bank one year and the military the next. We are now well past the point of simply asking whether a widget is designed to improve the efficiency of killing or communication. That is the very essence of what makes high tech so pervasive, and so profitable: it is easily adapted to new applications, and easily scaled to new markets.

We all struggle—as peacebuilders, engineers, public policy professionals, and citizens—to know what to do when the application of a technology is no longer relevant to its development. This point is worth underlining: the application or use of the hardware and software that is characteristic of the advanced technologies that have come to define our age does not seem to be defined or confined by the intentions of their inventors. Thus, the approach that lies behind the effort to restrict the proliferation of nuclear weapons—i.e., controlling the highly specialised materials and systems needed to enrich uranium and master other crucial elements of this weapon of mass destruction—is no longer useful when it comes to emerging technologies of warfare that are built around generic digital technologies. Calls for governments to establish (or revive) a regulatory regime or assessment office for new technologies face the same limitation. Considered in isolation, a close examination of breakthroughs in digitally-based hardware and software tells us precious little about their potential uses and impacts. What used to be framed as a “dual-use problem” is now exponentially more complex.<sup>11</sup>

### 2.1 Is There an Opportunity to Influence Corporate Culture and Norms?

Thus far it would seem that peacebuilders seeking to exert control over the direction and use of technologies are facing a rather steep challenge. If assumptions about the nature and development of technology are turned upside down, what recourse is left? I think the clue to an alternative approach is found in the reference above to high tech innovation ecosystems bearing the hallmarks of a distinctive culture. I would argue that peacebuilders, as well as other civil society actors, and governments, have a responsibility to take up the challenge of how to reshape this culture in ways that embed the propensity to prioritise peace and security using lenses of human rights, sustainability, and international cooperation, rather than narrowly defined economic, military, or political agendas. The

---

<sup>11</sup> *Dual-Use Technologies and Export Control in the Post-Cold War Era* (Washington, DC: National Academy Press, 1994). To be sure, this complexification is something with which governments and civil society organisations are actively grappling. See, for example, a report from Project Ploughshares on a virtual conference entitled “Capturing Technology. Rethinking Arms Control” hosted by the German Foreign Office on November 6, 2020: <https://ploughshares.ca/2020/11/rethinking-arms-control-a-canadian-perspective/>.

primary task before us is cultural formation, not policy formation; it is about norms and character more than rules and process.<sup>12</sup>

Given the mammoth scale of the world's largest technology companies, and the global dominance of Silicon Valley as an innovation ecosystem for start-ups, it would be tempting to generalise this culture project. I think the opposite impulse is called for: we need to particularise this effort, focusing efforts on particular companies and particular geographic contexts. It is clear, for example, that Microsoft has a very different corporate culture compared to Facebook, and increasingly sees this as a positive differentiator in their search for customers and talent. There are also dozens of significant innovation ecosystems around the world, and literally hundreds of emerging ones, some seeking to follow the playbook established by Silicon Valley, and others seeking to chart their own path to success.<sup>13</sup>

Indeed, innovation ecosystems, start-ups, and tech giants alike devote an unusual degree of effort toward building their organisational culture. Apart from well-known employee perks and team-building escapades, even small companies have senior leaders who have "culture" in their titles. This too is a product of the nature and development of digital technology – even more than the aerospace, pharmaceutical, or other industrial sectors, the key to innovation is found in people, not lab facilities, reservoirs of intellectual property, or other tangible assets. Tech companies openly acknowledge that they are all in a "war for talent" – recruiting and retaining the very best people is, more than anything, what will determine their success.<sup>14</sup>

Many have rightly pointed out that tech companies have often perpetuated a dysfunctional and discriminatory 'bro-culture' that has enabled, if not celebrated, the arrogant and obnoxious behavior of young men. The culture of the tech sector can also mask underlying disparities whereby start-ups get away with underpaying team members in exchange for what is often illusionary equity, and established companies foster a work-comes-first attitude.<sup>15</sup> These significant concerns notwithstanding, an almost single-minded focus on human resources as their principal asset has given the employees of tech companies an unusual degree of institutional power. Indeed, this has been evident in recent examples of employee activism at companies such as Google where organised and quite public responses led the company to reconsider its involvement in a Pentagon contract, its

---

<sup>12</sup> In the oft-quoted words of the prominent business theorist and author Peter Drucker, "culture eats strategy for breakfast." Of course, there are numerous examples where policy change drives rather than follows a change in norms and culture, although it also seems that scholars and activists are paying increasing attention to mechanisms for changing norms as a driver for social and policy change. See, for example, Cristina Bicchieri, *Norms in the Wild: How to Diagnose, Measure, and Change Social Norms* (New York: Oxford University Press, 2017).

<sup>13</sup> In addition to Feld and Hathaway's *The Startup Community Way*, see: Alexandre Lazarow, *Out-Innovate: How Global Entrepreneurs from Delhi to Detroit Are Rewriting the Rules of Silicon Valley* (Boston: Harvard Business Review Press, 2020), and Ramesh Srinivasan, *Beyond the Valley: How Innovators Around the World Are Overcoming Inequality and Creating the Technologies of Tomorrow* (Cambridge: The MIT Press, 2019).

<sup>14</sup> Ed Michaels, Helen Handfield-Jones, and Beth Axelrod, *The War for Talent* (Boston: Harvard Business Review Press, 2001); Adrian Wooldridge, "The battle for brainpower," *The Economist* (7 October 2006).

<sup>15</sup> Insightful accounts of the dark side of Silicon Valley culture include: John Carreyrou, *Bad Blood: Secrets and Lies in a Silicon Valley Startup* (New York: Alfred A. Knopf, 2018), Amy Webb, *The Big Nine: How the Tech Titans and Their Thinking Machines Could Warp Humanity* (New York: PublicAffairs, 2019), and Anna Wiener, *Uncanny Valley: A Memoir* (New York: MCD, 2020).

compensation of a leader dismissed for sexual harassment, and its tolerance for the expression of hurtful views.<sup>16</sup> The very qualities that Google prizes in its recruitment efforts—intelligence, creativity, teamwork—means that Googlers are not wanting to simply keep their heads down and follow orders, but will be quick to organise and take action to effectively achieve the outcome they are aiming for.<sup>17</sup> Furthermore, as organisations everywhere are discovering, younger generations are increasingly seeking alignment between the mission of their current (or prospective) employer with their personal values.<sup>18</sup>

## 2.2 Silicon Valley North, or True North?

Rather than dwelling further on Silicon Valley, I would like to conclude this policy brief with a deeper dive into an alternative innovation ecosystem: Waterloo region in Ontario, Canada. Apart from my own proximity to this context, the fact that this ecosystem is still emerging, and thus more malleable, makes it more relatable for other contexts.

Although relatively young, Waterloo is no small player in the global tech community having birthed landmark digital innovations and major brands such as Blackberry.<sup>19</sup> Indeed, the Waterloo-Toronto Corridor is the heartbeat of technological innovation in Canada, and stands among the top 20 communities for tech start-ups globally.<sup>20</sup> A few years ago, politicians and community leaders would sometimes refer to it as “Silicon Valley North.”<sup>21</sup> Waterloo region brings key ingredients such as the University of Waterloo, widely regarded as Canada’s most innovative university thanks to the world’s largest co-operative education programme and an inventor-owned intellectual property policy that has incentivised faculty-led spin-offs for decades.<sup>22</sup> In addition to this engineering and computer science talent pipeline that is second to none, the region’s innovation ecosystem has been anchored

---

<sup>16</sup> Scott Shane and Daisuke Wakabayashi, “Google to Quit Pentagon Work That Riled Staff,” *New York Times* (2 June 2018); Daisuke Wakabayashi et al, “Google Workers Worldwide Walk Out Over Handling of Harassment,” *New York Times* (2 November 2018); and Daisuke Wakabayashi, “Google Fires Engineer for Divisive Memo,” *New York Times* (8 August 2017).

<sup>17</sup> More recently there have been both promising and worrying signs of the power of employee activism at Google and other tech giants—see: Emma Goldberg, “The Campus ‘Techlash,’” *New York Times* (12 January 2020), and Noam Scheiber and Kate Conger, “The Great Google Revolt,” *New York Times* (23 February 2020).

<sup>18</sup> According to one widely cited study by LinkedIn, 71% of professionals say they would be willing to take a pay cut to work for a company that has a mission they believe in and shared values: <https://blog.linkedin.com/2018/june/26/workplace-culture-trends-the-key-to-hiring-and-keeping-top-talent>.

<sup>19</sup> The dramatic rise of Blackberry, which at its peak controlled 20 percent of the global smartphone market, and its subsequent descent from being the most valuable company in Canada by market capitalisation, helped fuel the dramatic rise in the number of start-ups in Waterloo. See: Chuck Howitt, *BlackBerry Town* (Toronto: Lorimer, 2019).

<sup>20</sup> Meagan Simpson, “Toronto-Waterloo named top global fintech ecosystem in Startup Genome report,” *Betakit* (24 November 2020): <https://betakit.com/toronto-waterloo-named-top-global-fintech-ecosystem-in-startup-genome-report/>.

<sup>21</sup> Adrian Lee, “What if the Toronto-Waterloo corridor really becomes the next Silicon Valley?” *MacLeans* (13 September 2018).

<sup>22</sup> Beyond being rated Canada’s most innovative university for 27 consecutive years, Waterloo ranked 22<sup>nd</sup> in the 2020 PitchBook global rankings (and 1<sup>st</sup> in Canada) for university programmes that produce the most entrepreneurs who go on to garner venture funding.

by Communitech, an organisation founded in 1997 by local tech entrepreneurs that now runs a myriad of programmes to support more than 1,400 member companies.<sup>23</sup>

In 2018, Communitech re-branded and re-launched their annual tech summit as the True North Festival, a global gathering centred on the theme of “Tech for Good.” While this expression was not coined by Communitech—indeed, references to “Tech for Good” could be found in many contexts as concerns about the negative impact of digital technology threatened to become a veritable ‘techlash’—they seized this agenda as an opportunity to distinguish their innovation ecosystem as a place for people to, as Communitech’s CEO Iain Klugman likes to say, “slow down and fix things.”<sup>24</sup> A key point of focus in 2018 was the development and launch of the “Canadian Tech for Good Declaration,”<sup>25</sup> an effort to build the commitment of companies to a set of six principles, including things like “leave no one behind” and “think inclusively at every stage” (principles that have also been elevated by the Canadian government in recent years). In 2019, the focus on diversity, equity, and inclusion in the tech sector was even stronger. Although the planned festival had to be cancelled in 2020, Communitech was still able to award a \$1M prize to the most promising effort to use AI to tackle the problem of fake news and the spread of misinformation.<sup>26</sup> As noted by a prominent tech sector media outlet, Communitech has doubled-down on an agenda that is often missed or marginal at other industry gatherings.<sup>27</sup>

While I would acknowledge that Communitech is a marketing, branding, and promotional machine, this means that it does more than reflect or convey the activities and ambitions of Waterloo’s innovation ecosystem; it also has a formative role to play. By prioritising a “Tech for Good” agenda, it is shaping the cultural norms that start-ups, investors, and established companies will be attuned to, and attracting new participants who see a similar alignment. For this culture to flourish, however, there needs to be an authentic commitment rooted in a deeper tradition of values and a history of concrete action. Examples abound in that regard, including Communitech’s long-standing appeal to the “barn-raising” spirit of Waterloo – a reflex for collaboration, if not mutual aid, attributed to the region’s Mennonite roots.<sup>28</sup> Or companies such as Clearpath Robotics, the first corporate signatory to the international campaign to ban killer robots.<sup>29</sup> The proof will lie in the extent to which “Tech for Good” becomes a magnet and a masthead for other actors in the ecosystem, particularly investors.

The question this begs is whether there is a role to play for governments and civil society organisations – and whether they are prepared to step up and match the energy already

---

<sup>23</sup> <https://www.communitech.ca/>

<sup>24</sup> Iain Klugman, “The True North Mission: Slow Down and Fix Things,” *Policy: Canadian Politics and Public Policy* (May-June 2019).

<sup>25</sup> <https://canadianinnovationspace.ca/tech-for-good/>. Of course, this is just one of literally dozens of declarations and manifestos that have appeared in recent years. There has also been a proliferation of initiatives and organisations—the “Civic Tech Field Guide” includes over 4,000 “Tech for Good” projects in 100 countries around the world: <https://civictech.guide/>.

<sup>26</sup> <https://leadersprize.truenorthwaterloo.com/en/>.

<sup>27</sup> Darrell Etherington, “Canada’s True North Conference is not your typical tech event,” *Techcrunch* (19 June 2019).

<sup>28</sup> Phil Froklage, “Homecoming: Governor General David Johnston on Why Canada Needs More Waterloo,” *Communitech News* (17 May 2016).

<sup>29</sup> Terry Pender, “Kitchener robotics company backs campaign against killer robots,” *The Record* (14 August 2014).



evident in the private sector around “Tech for Good”. It strikes me that, as evident in the rush to hire chief ethics officers, there has never been a stronger desire for ethical discernment, but there is also a lack of understanding and capacity to translate this desire into practice.<sup>30</sup> And there has never been a window of opportunity like this to reshape the culture of the tech sector in a positive direction. “Tech for Good” is better than tech for bad, but it still begs to be fleshed out. What is the good? Whatever is new and cool? Economic prosperity? Jobs? Unfortunately, despite the fact that government funding is a crucial ingredient in Waterloo’s innovation ecosystem, the government’s measures of the impact have been reductively economic rather than considering, for example, potential contributions toward Sustainable Development Goal targets, or other measures of community wellbeing. Certainly, public policies are already being driven by many other definitions of the good, including sustainability, equity, and inclusion. Without minimising the importance of regulatory considerations for emerging technologies, I think governments can be much more proactive about incentivising a “Tech for Good” culture.<sup>31</sup>

Likewise, I think there is a crucial role for civil society to play in this culture-building work, particularly in adding a peace and social justice lens to innovation ecosystems. Perhaps most crucially, there is a need to draw voices from the grassroots and the margins into the conversation – it is not only those in positions of power who should get to define the good. Thus far, I would say that Waterloo’s innovation ecosystem has made good progress in building bridges with the local community, playing an active role in supporting social service agencies, and beginning to grapple with issues such as gentrification. The bigger challenge will be to expand that sense of community to include vulnerable peoples across the country and globe. After all, the power and influence of the tech sector lies in the fact that its products and services can so easily scale to markets far beyond Waterloo.

Finally, universities and colleges are key actors in any significant innovation ecosystem, and are also frequently instrumentalised – celebrated for the extent to which they can be responsive to the private sector’s need for suitably trained talent, and new ideas that can be easily commercialised. However, they also have a crucial role to play in cultural formation through curriculum design, opportunities for students beyond the classroom, and in the priorities and measures of success for academic research. How, for example, might faculty equip engineering students to become activists?<sup>32</sup> How might administrators incentivise industry partnerships that lead to responsible and ethically informed innovations? More than ever, universities are expected to demonstrate value through community impact, and what could be more profound than helping to nurture a culture in the private sector that prioritises making a positive social and environmental impact?<sup>33</sup>

---

<sup>30</sup> Zvika Krieger, “A Practical Guide for Building Ethical Tech,” *Wired* (20 January 2020).

<sup>31</sup> Momentum is certainly building for increased regulation of large tech companies in many countries, but, despite the clear and urgent need, regulations will always be lagging behind the latest technological developments.

<sup>32</sup> Darshan M.A. Karwat, “Self-reflection for Activist Engineering,” *Science and Engineering Ethics* (28 October 2019).

<sup>33</sup> My own effort to spark and support PeaceTech start-ups through the Kindred Credit Union Centre for Peace Advancement’s incubator programme is one model for doing this. See: Kevin Crowley, “Waterloo region could lead the world in ‘PeaceTech,’” *Communitech News* (10 November 2020).

## Conclusion

As important as government policies and regulations may ultimately prove to be in minimising the potential harms and maximising the potential goods of new technologies, this policy brief has argued that new strategies are required. After all, these new technologies are increasingly driven by private rather than the public sector agendas, they emerge from dynamic and diffuse start-up ecosystems, and their digital nature has dramatically expanded the range of potential applications. Despite these challenges, this brief has aimed to demonstrate the potential opportunity that the “Tech for Good” movement presents for peacebuilders, along with governments and other civil society actors, to influence the culture of particular innovation ecosystems and companies.

## The Author

**Paul Heidebrecht** is the inaugural director of the Kindred Credit Union Centre for Peace Advancement, and an adjunct assistant professor who teaches courses in Peace and Conflict Studies at Conrad Grebel University College. His current research interests reflect a range of academic fields and professional experiences, including the intersection of peacebuilding and social innovation, technology and ethics, and political advocacy.

## Toda Peace Institute

The **Toda Peace Institute** is an independent, nonpartisan institute committed to advancing a more just and peaceful world through policy-oriented peace research and practice. The Institute commissions evidence-based research, convenes multi-track and multi-disciplinary problem-solving workshops and seminars, and promotes dialogue across ethnic, cultural, religious and political divides. It catalyses practical, policy-oriented conversations between theoretical experts, practitioners, policymakers and civil society leaders in order to discern innovative and creative solutions to the major problems confronting the world in the twenty-first century (see [www.toda.org](http://www.toda.org) for more information).

### Contact Us

Toda Peace Institute  
Samon Eleven Bldg. 5<sup>th</sup> Floor  
3-1 Samon-cho, Shinjuku-ku, Tokyo 160-0017, Japan  
Email: [contact@toda.org](mailto:contact@toda.org)

Sign up for the Toda Peace Institute mailing list:

<https://toda.org/policy-briefs-and-resources/email-newsletter.html>

Connect with us on the following media.

YouTube: @todapeaceinstitute3917

Twitter: <https://twitter.com/TodaInstitute>

Facebook: <https://www.facebook.com/TodaInstitute/>