Peace and Beyond
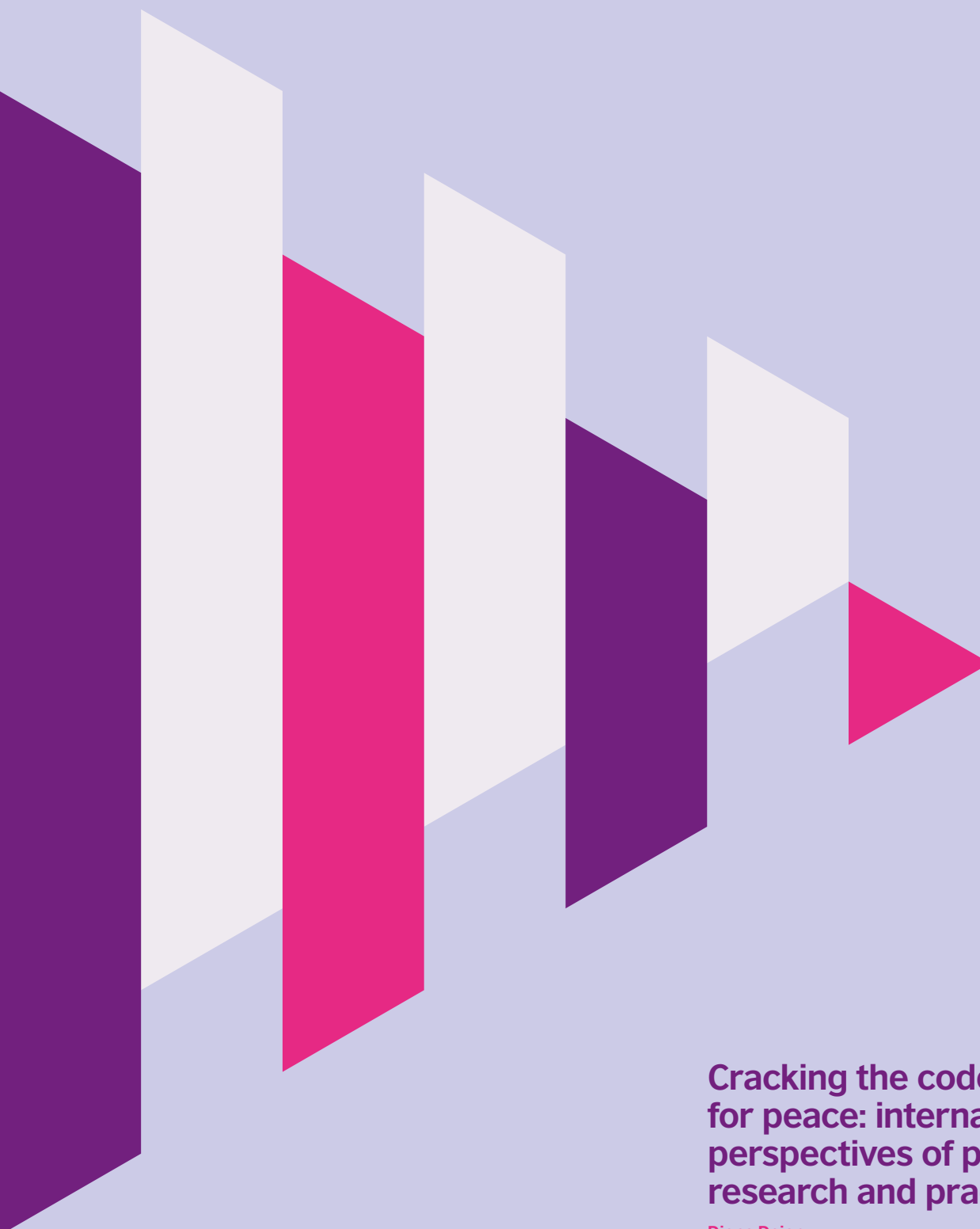
Cracking the code of tech for peace: international perspectives of peacetech research and practice

Diana Dajer

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Technology evolves rapidly. While both Google and Apple launched their applications' stores in 2008, in 2017 the typical UK smartphone user had more than 80 applications on their phone, and used close to 40 per month, spending an average of slightly more than two hours in apps each day (App Annie, 2018).

In the meantime, in 2016 the robot Sophia, developed by Hanson Robotics, became both a Saudi Arabian citizen and the first Innovation Champion of the United Nations Development Programme (Risse, 2018).

In the last decade, this rapid technological growth worldwide has triggered a parallel rising body of projects, literature and conversations around peacetech, a compound of peacebuilding and technology that refers to the strategic use of information and communication technologies (ICTs) to build peace (Build Up, 2016a). Scholars, practitioners, researchers and policymakers alike, in places of the world as diverse as Pakistan, Burundi, Colombia and the USA, are engaging in global efforts to use technologies such as geographic information systems, artificial intelligence, Facebook, Twitter, Skype, the internet and radio to support peacebuilding efforts (Build Up and Policéntrico, 2018).

In the celebration of the 20th anniversary of the Good Friday/Belfast Agreement, the Peace and Beyond conference hosted a session entitled 'Peace, technology and innovation', to examine some technological tools that could be used strategically to build peace in different contexts, the process of design, implementation and evaluation of these tools, and the possibilities and risks that the employment of digital tools for peacebuilding could present.

The panel featured a keynote address by Sinéad McSweeney, Vice President, Policy and Communications of Twitter EMEA, and two case studies on tech for peace by Henry Joseph-Grant, Founder of PeaceTech Northern Ireland, and Michaela Ledesma, Programs Director of Build Up. Likewise, it also included an in-depth conversation on the challenges and opportunities around the use of technological tools in conflict transformation in Northern Ireland and around the globe.

This essay provides a background on the state of the art of peacetech research and practice worldwide, and reviews and discusses the main messages from the session, while highlighting connections with relevant research and practice.

1. Technology for peacebuilding: a double-edged sword in constant transformation

Although peacetech interventions and studies have started to bloom in the last decade, it is still in its infant stage and far from being mainstream (Banks, 2013; Gaskell, 2016). Many questions and puzzles around its categorisation (Gaskell et al., 2016) and conceptualisation remain (Welch et al., 2015a), despite the increasing interest of donors, practitioners and scholars (Welch et al., 2015b). In fact, academics such as Firchow and Martin-Shields (2017) have observed that the peacetech field can be categorised as in a state of liminality and ambiguity, with many of its roles and boundaries being established and negotiated.

Hence, one of the most recurrent questions around peacetech is *what exactly is peacetech* (Gaskell, 2015)? Peacetech – a combination of peacebuilding and technology (Gaskell et al., 2016; Puig and Jung, 2017) – explores how technology could be used strategically to build peace (Gaskell, 2016). As Build Up notes, the differentiation 'between non-strategic and strategic uses of technology in the peacebuilding context' is at the core of peacetech's definition, since it intends to 'distinguish peacebuilding actors and activities that use technology as part of their general organisational management […] from those that use technology with the strategic aim to build peace' (Build Up, 2016a: 6).

Even though there is a scarcity of conceptualisation about what exactly technology for peacebuilding is (Welch et al., 2015a; Firchow and Martin-Shields, 2017), there are at least five identifiable strands of peacetech research and practice, which are useful starting points to shape the conversation around this field, and provide a better understanding of its definition. These areas, often intersecting, are shaping peacetech development and expansion: (i) peacetech terminology; (ii) the technology's categorisation and functions to strategically assist peacebuilding aims; (ii) the technological tools used strategically to build peace; (iv) the methodology, processes and actors involved in the design, implementation and evaluation of peacetech projects; and (v) the sustainability and scalability of technologies for peacebuilding.

1.1 Defining peace and technology in the peacetech compound

A useful way to set the foundations for a dialogue around peacetech is to clarify what peace and tech mean in common peacetech practice. For instance, Gaskell et al. (2016) define technology as 'the different types of hardware, software or systems that enable people to access, generate and share information' (Gaskell et al., 2016: 4). Likewise, it is also useful to clarify, along with Welch et al. (2015b), that the field of peacebuilding has a preference for referring to information and communication technologies, including the web, when referring to peacetech. Correspondingly, ICTs can be defined as 'a diverse set of tools used to create, disseminate, and manage information. These technologies include the Internet, intranets, wireless networks, and cell phones, as well as such services as videoconferencing and distance learning' (USIP 2011: 19).

One of the main challenges presented in the conceptualisation of peace, as Galtung (1967) points out, is that this word is commonly used as an umbrella expression that encompasses global goals and concerns. Nonetheless, three useful notions to elucidate the concept of peace from a sociological perspective are the categories of negative peace, positive peace and imperfect peace (de Vera 2016).

While negative peace refers to the absence of violence or fear of violence, positive peace examines the conditions that allow for social justice, restore social relations and tackle situations of structural violence (Galtung 1996). Furthermore, an imperfect peace refers to those dynamic and unfinished states in which peaceful actions are presented in the midst of conflicts (Muñoz, 2006).

As Paffenholz and Spurk (2006) note, 'Peacebuilding is understood as an overarching term to describe a long-term process covering all activities with the overall objective to prevent violent outbreaks of conflict or to sustainably transform armed conflicts into constructive peaceful ways of managing conflict. This definition, however, is only partial because it is not entirely clear on the scope and time frame of peacebuilding' (Paffenholz and Spurk, 2006: 15).

1.2 Using tech for peace

The strategic functions of the tech tools employed in peacetech interventions are as important as the actual tech tools employed to build peace in a peacetech scenario. Still, a recurrent theoretical challenge in peacetech literature is the difficulty in categorising its practices due to their evolving nature (Gaskell, 2015). Nevertheless, there are many efforts in peacetech literature to identify the different programme areas and functions of peacetech.

For instance, noting the overwhelming options for practitioners to use tech for peace, Puig and Kahl (2013) propose four main functions that ICTs can have in peacebuilding: (i) data processing, which involves improving data collection, organisation, and analysis processes; (ii) communications, by providing new avenues for sharing information and stories; (iii) gaming, to introduce elements of gamification that can provide alternative incentives for action; and (iv) engagement, in terms of creating new ways for people to influence, participate or take action in their communities.

Likewise, given that practitioners might find it easier to employ new technologies if they can fit them into existing programme areas, Puig and Kahl (2013) also suggest four main categories of programs for ICT applications: (i) early-warning and early-response programmes; (ii) programmes fostering contact and collaboration between groups in conflict settings; (iii) programmes aiming to promote peaceful attitudes; and (iv) programmes supporting communities to influence pro-peace policies.

Also, observing the need of more theoretical work on the use of ICTs for peacebuilding, Welch et al. (2015b) suggest a possible framework of five affordances of ICTs to support governance in post-conflict contexts: (i) to generate big data, (ii) to promote mobilisation, (iii) for information sharing, (iv) as an alternative 'space' to the physical, and (v) to empower citizens. In this vein, Welch et al. (2015b) use the word *affordance to* discuss the functions of technology, given that this word entail the possibilities that technology offer for action. Furthermore, more recently, Gaskell et al. (2016) proposed a socio-technical conceptual framework of four affordances or functions of technology in peacetech: (i) data, (ii) communication, (iii) networking and (iv) mobilisation.

As the sector evolves, new affordances of technology for peacebuilding that have not been categorised in previous literature are starting to emerge. For instance, one area of increasing attention is the use of technology to support transitional justice efforts (Dajer, 2017). This topic is explored in a forthcoming issue of the *International Journal of Transitional Justice*, which is expected to be published in 2019.

Likewise, another emerging function is the employment of technology to foster the creation of economic opportunities in conflict and post-conflict scenarios, tackling inequality and deprivation issues that often trigger wars worldwide. Accordingly, researchers and practitioners alike are beginning to discuss the challenges and prospects of the use of different technologies and the digital economy to promote economic development in peacebuilding scenarios.

To provide an example, Clemmons et al. (2017) have noted that blockchain technologies might have a positive role to play in a blended finance strategy in post-conflict Colombia. Moreover, observing the nascent emergence of this area, the Build Peace 2018 Conference, which will take place in Belfast in October, will explore the possibilities and limitations of the creative and digital economies to provide alternative economic models that tackle inequality, reduce social exclusion and make communities more resilient to conflict.

1.3 The ever-evolving technologies used for peacebuilding

Contrasting with the challenge of contextualising and categorising peacetech, it is simpler to discuss examples of the tech tools that could be used to strategically foster peace, and the different uses and effects they have had in both research and practice. These technologies vary, and there is a diverse set of tools that have been employed in peacetech over the past decade, from SMS messages to Facebook and drones (Build Up, 2016b).

A way of contrasting how examples of peacetech tools vary year to year, and the different uses they have had, is by exploring the range of projects featured annually in Build Up's Build Peace Conference since 2014 (Build Up and Policéntrico, 2018). This event and community, which has been hosted in Boston, Nicosia, Zurich and Bogotá, and which will take place in Belfast in 2018, brings together 'practitioners, activists, academics, policymakers, artists and technologists from around the world to share experience and ideas on using technology, arts and other innovations for peacebuilding and conflict transformation' (Build Up, 2018a).

For instance, some of the tools that have been showcased over the years involve the use of virtual reality to foster empathy, participatory video and photography to bring new voices to peace processes, platforms to tackle fake news, applications to create and share narratives about conflict and peace, SMS to fight extremist violence, and games to promote social cohesion between different groups (Build Up, 2018a).

Similarly, there is a growing set of case studies portrayed in the academic literature and practice, examining a broad range of tools that have been used to build peace, and analysing critically the effects they have had in different parts of the world. Some examples involve the use of computer-mediated communication to reduce prejudice between different religious groups (Cao and Lin, 2017; Walther et al., 2015), satellite technology as a tool to monitor and document mass atrocities (Wang et al., 2013), education and awareness-raising platforms to prevent and mitigate violence against women in elections (Bardall, 2013), participatory video in post-election Kenya to re-establish relationships and create a shared understanding of the conflict (Baú, 2014), and drones to deliver medicine, food and other aid into hard-to-access areas in Syria (Mooberry, 2015).

1.4 Designing, implementing and evaluating peacetech interventions

A recurrent insight in the peacetech literature is that the process of designing and implementing technologies for peacebuilding is a crucial determinant of its results (Mancini and O'Reilly, 2013; Gaskell et al., 2016; Puig and Jung, 2017). Hence, an area increasingly relevant in peacetech research and practice is the process and methodology used to design, implement and evaluate interventions. Peacebuilding is a highly delicate process, full of risks and challenges. As Build Up and Policéntrico (2018) highlight, 'Peacebuilding is a series of individual and collective transformations that require carefully designed engagement. Bringing new actors and methods into the process enriches the potential for discovering common values, developing inclusive memory and finding new modes of expression' (Build Up and Policéntrico, 2018: 58).

In this context, Puig and Kahl (2013) note that, since technology can be both a connector and a divider in conflict contexts, the employment of a do-no-harm framework is a rule of thumb in tech for peace interventions. In this vein, in addition to a context-based do-no-harm assessment, the authors suggest that, when designing the methodology of projects, there are three issues particular to the introduction of technology. First, the bias of connectivity, addressing issues such as equal access to the tech used and the risk of manipulation by external actors. Second, the relevance of designing for empowerment, avoiding dynamics that might deceive user expectations. Last, the ethical principles, risk and security issues that the intervention might trigger for the participants involved.

These ethical concerns, recurrent in the design and implementation of ICTs (Rogerson, 2009) often call for practitioners to consider the effects of the tech tools employed in the power dynamics, security, privacy and the likelihood for them to increase existing inequalities or violence (Mancini and O'Reilly, 2013; Tellidis and Kappler, 2016).

Accordingly, in a report of a session at the 2017 Stockholm Forum on Peace and Development, entitled 'Reimagining Peacebuilding Through Innovation', Puig and Jung (2017) emphasised the need of ensuring compliance with ethical principles and local ownership of technology to deepen participation. In fact, the authors note that 'Peacetech does not by definition increase engagement in peace processes. In fact, it can be extractive and top down. Session discussions emphasised the importance of locally owned and locally driven technologies in ensuring that technology development is driven by local problems rather than external solutions' (Puig and Jung, 2017: 40).

Furthermore, at the Build Peace 2017 Conference on the relationship between peace, technology and participation, Build Up and Policéntrico highlighted the need of using a participatory design, implementation and evaluation of peacetech projects, 'as technology without participation can exclude rather than empower communities most in need' (Build Up and Policéntrico, 2018: 58). Similarly, Bocanegra et al. (2016) suggest that at least seven actors should be included in a peacetech participatory processes using a context-based approach: (i) the victims directly affected by the conflict, (ii) civil society, (iii) conflict combatants; (iv) the government; (v) relevant non-governmental organisations; (vi) academic researchers; and (vii) enterprises.

Mancini and O'Reilly (2013) in a how-to guide of peacetech interventions, also highlight the relevance of analysing the context before engaging in projects that involve the use of tech for peace, considering issues such as the socioeconomic setting, technology penetration and the demographics. Furthermore, similar to Puig and Kahl (2013), they also suggest that a do-no-harm approach is a crucial duty to avoid knock-on effects that could lead to fatal outcomes.

Additionally, a relevant question around the methodology implemented to design and implement peacetech projects is how to monitor and evaluate their results, given how difficult it is to measure the outcomes and producing a relevant change in terms of peacebuilding in a short period of time. In this vein, Banks (2013) notes that 'technology races ahead at a breathtaking pace, but behaviour change chugs along in a much lower gear' (Banks, 2013: 4). To address this challenge, Firchow and Mac Ginty (2017) recommend using participatory indicators to assess peacebuilding projects, and accessible tech tools for hard-to-access populations, such as mobile phone surveys to evaluate their impact. Moreover, Dafoe and Lyall (2015) warn about a causal attribution of peace results to technological use without a careful consideration of alternative explanations.

A useful guideline to design, implement and evaluate peacetech projects according with the different methodological recommendations discussed above, are the Principles for Digital Development. For instance, they suggest the employment of user-centred design, understanding the existing ecosystem, using open standards, data and sources, adopting a data-driven approach, reusing and improving existing initiatives, addressing private and security concerns, and the application of collaborative processes.

1.5 Sustaining and scaling up peacetech interventions

One of the biggest constraints of peacetech interventions are the challenges and risks for the sustainability and scalability of successful interventions. More often than not, peacetech projects are funded by external donors, and sustaining the use of the technology after the funds run out is a challenge that may have a significant effect on the users' expectations. Hence, a final relevant area of analysis in peacetech research and practice involves the discussion, debates and solutions around designing for sustainability.

Two rules of thumb to follow around the sustainability and scalability of peacetech projects are the guidelines on *Design for Scale* and *Build for Sustainability*, included in the Principles for Digital Development previously mentioned. On the one hand, the *Design for Scale* principle highlights the difficulty of many initiatives to move beyond the piloting scale, and advise the evaluation of the 'trade-offs among processes that would lead to rapid start-up and implementation of a short-term pilot versus those pilots that require more time and planning but lay the foundation for scaling by reducing future work and investment' (Principles for Digital Development, 2018: 1).

On the other hand, the *Build for Sustainability* principle notes that, even though sustainability could mean different things for different interventions, such as institutionalisation of a programme or the self-sustainability of the project through its own revenues, sustainability should be defined and planned from the start, but leaving a space for adaptation in case the needs of the users and the context change (Principles for Digital Development, 2018).

As a result, authors such as Puig and Jung (2017) recommend increasing funds in exploratory work on innovation, whereas Dajer et al. (2018) suggest designing a sustainability strategy at early stages of the project, scaling up with level-headed thinking and attention to detail, and adding dynamics in the design process that secure collective ownership in the mid- and long term. Likewise, Himelfarb and Pope (2015) support a model of social franchising to scale up peacetech interventions.

2. Case studies on the use of technology for peacebuilding

Due to the complexities of both peacebuilding practice and the use of ICTs for social change (Hattotuwa 2004), the code for the use of digital tools to foster reconciliation, social inclusion, and economic prosperity in conflict and post-conflict scenarios is not yet cracked; there are many doubts and uncertainties about how to add tech strategically in peacebuilding interventions to achieve the desired positive outcomes and avoid negative effects.

Still, perhaps one of the few conclusions that scholars and practitioners alike agree on about peacetech, is the fact that information and communication technologies can have both benefits and challenges; they are double-edged swords that can be used both for the most noble causes or the upmost damaging purposes when used strategically for peacebuilding purposes (Bardall 2013; Mancini and O'Reilly, 2013; Shapiro and Siegel, 2015). Hence, the case studies discussed in this section, which were presented during the session on 'Peace, technology and innovation' at the Peace and Beyond conference, address with more detail both challenges and opportunities of the strategic use of technologies to foster peace, and discuss different aspects of the five areas of peacetech research and practice identified above.

In particular, the conversation started with context-setting opening remarks by Sinéad McSweeney, Vice President, Policy and Communications of Twitter EMEA, which portrayed a frame of the conversation and a case study about the use of social media technologies, such as Twitter, as alternative spaces to foster social inclusion, trust in state institutions, and tolerance.

Subsequently, two complementary case studies on using technology for peacebuilding were featured. On the one hand, Henry Joseph Grant, Founder of PeaceTech Northern Ireland, provided an overview on how the digital economy could foster economic prosperity for excluded groups. On the other, Michaela Ledesma, Programs Director of Build Up, presented the results of the project *The Commons*, an intervention to tackle online polarisation with the use of bots, i.e. automation programmes, and discussed the role of technology to both deepen and mitigate social divisions. Furthermore, the seminar hosted a dialogue incorporating perspectives and questions from the speakers and the audience around the nuances, complexities and perspectives of the use of technology for peacebuilding in the past, present, and future.

2.1 Peacebuilding in 280 characters: the role of Twitter to foster social cohesion in Northern Ireland

The role of social media as a connector or a divider in different conflict and post-conflict settings has been a topic of rising interest in peacetech studies (Lynch et al., 2017; Reilly 2016; Young and Reilly, 2015). This issue has become increasingly relevant, as questions emerge around the influence of social media to shape people's political preferences, such as the ones triggered by the case involving Cambridge Analytica (Doward and Gibbs, 2017). Henceforth, as Vice President, Policy and Communications of Twitter EMEA, Sinéad McSweeney's opening remarks on the opportunities and challenges of tech to build peace, provided timely and insightful views about how, despite the difficulties, social media could act as an alternative space to the physical, providing an opportunity for state institutions to foster trust with citizens.

When the Good Friday/Belfast Agreement was signed there was no Twitter. Yet, McSweeney shared that a need present at the time, still applicable, was the necessity of fostering trust between the police and the citizens. In this vein, she explained that when Twitter emerged and the police opened a Twitter account, a unique opportunity arose for that institution to have a direct positive connection with the citizens, providing a platform to share heart-warming events – part and parcel of day-to-day policing. This is increasingly relevant for the police since, as McSweeney highlighted by referring a study of Ferrara and Yang (2015), positive content is more likely to be shared than negative content.

Additionally, McSweeney noted that social media appeals to a profoundly human element: storytelling. By providing spaces for new voices to narrate their stories, an avenue for citizens to interact with opposing views in spaces alternative to the physical and share their stories, and providing a platform for social activism, this technology provides a wide range of opportunities to build social cohesion and empower neglected communities, despite the risks of amplification of hate speech and negative content. This showcases an interesting example of some of the functions of technology for peacebuilding identified above.

Addressing the challenges of social media, McSweeney highlighted the relevance of education, teaching the citizens about the positive and negative effects that might come out of its use. Likewise, she stressed that, as a private company, Twitter is engaging in efforts to work with both citizens and state institutions to find the best ways of addressing the challenges inherent to the openness of Twitter as a platform, without affecting the freedom of expression of the users.

Another effect of social media platforms such as Twitter, highlighted by McSweeney discussing a study by Young and Reilly (2015), is the possibility of these platforms to diffuse sectarian tensions throughout contentious marches. The study showed that during parades and protests, social media sites facilitated the empowerment of individuals and groups, by allowing them to communicate their perspectives on many issues. In this vein, stressing that future generations are at the heart of policymaking and their wellbeing is a key concern, McSweeney encouraged the audience to harness tech tools to engage with younger populations, since technology is where they play, work, and plan.

2.2 Creative and digital economies for peace in Northern Ireland

As explained above, a recent emerging use of technology for peacebuilding is the possibility of technological innovation and the digital economy to act as an avenue to foster economic opportunities to tackle inequality, economic divisions and exclusion in conflict and post-conflict scenarios. As connections are being traced in practice around the use of tools such as blockchain and agritech to provide prosperity to deprived communities, and the role of creative economies to boost the economy and foster cohesion and reconciliation, the literature has also warned about the challenges of these tools to deepen inequalities, if not designed bearing in mind the populations in most need and their constraints (Unwin, 2013; Graham, 2014).

In this context, Henry Joseph Grant, Founder of PeaceTech Northern Ireland, a company that supports start-ups in Northern Ireland to provide economic opportunities for marginalised populations, assessed the conditions of Northern Ireland to act as a hub for start-ups in Europe, and concluded that it is in a strong position to provide an ecosystem that supports new companies to scale up. Yet, Grant asserted that a key aspect for the digital economy and the opportunities that it creates to foster prosperity for all in Northern Ireland, is to particularly target the communities that have been left behind from the Good Friday/Belfast Agreement and have not benefited from it, supporting the creation of sustainable and scalable businesses that create prosperity for these populations.

The dialogue around the relationship and interactions between peace, economy and tech is at an early stage, and needs to evolve and mature. Nevertheless, in the meantime it is relevant to note that the nascent literature on the issue is not foreign to the risks and opportunities that the digital economy could bring in conflict and post-conflict scenarios. In fact, scholars have warned about concerns around the design, implementation and evaluation of peacetech interventions, and the pivotal need of placing the communities at the centre of the interventions, working with them using bottom-up approaches, empowering marginalised populations and designing context-based interventions that tackle ethical concerns, especially around the risks of actually increasing inequality (Unwin, 2013; Graham, 2014).

2.3 Artificial peacetelligence: using bots to challenge online polarisation

One of the biggest risks of the use of algorithms in social media is the creation of filter bubbles and echo chambers that could increase polarisation (Flaxman et al., 2016; Zuiderveen et al., 2016). There are several studies and projects regarding the effect of technology to both foster social cohesion or increase fragmentation in divided groups (Walther et al., 2015; Amichai-Hamburger et al., 2015; Cao and Lin, 2017). In this context, Michaela Ledesma, Programs Director of Build Up, presented the results of the project *The Commons*, a peacetech intervention to address polarisation on Facebook and Twitter in the United States.

According to Ledesma, the project aimed to fight the effects of social media in polarisation, defined by Build Up as a process that drives groups' political opinions and/or personal values towards opposite poles, creating distorted perceptions of out-group members and decreasing trust. Hence, Ledesma explained that *The Commons* was designed under the assumption that, frequently, people tend to become polarised due to social media, without even realising so. Hence, as highlighted by Build Up, despite the challenges, *The Commons* aimed to move people 'from passively accepting a context that escalates conflict to constructively engaging in mediating dialogue' (Build Up, 2018b).

Consequently, Ledesma explained that the project envisioned to create a scalable model to make people aware of the polarised debate they are a part of in social media, help them reflect and engage with their position in the polarised debate, and offer avenues to take action on depolarisation. To do so, *The Commons* built a process to identify people engaged in political discussions about the USA on Twitter and Facebook, analysed the likelihood that they are polarised or polarising based on their behaviour, used bots to engage with them and organised a network of trained facilitators to follow up on the automated contact through a conversation.

Nevertheless, as explained by Puig (2017), using artificial intelligence such as bots, even with the aim of building peace, involves several ethical risks that Build Up had to face throughout the intervention. For instance, the 'fine line between amplifying a message so it receives the attention we believe it deserves (as we are trying to do) and manufacturing consensus to a point where it loses credibility' (Puig, 2017). This is why, as Ledesma explained, *The Commons* had strict ethical guidelines that informed the design, implementation and evaluation of the intervention, such as the use of non-partisan and multi-partial values, and a do-no-harm approach. Hence, this provides a rich example of many of the complexities portrayed in the previous section, regarding the design, implementation and evaluation of peacetech projects.

The Commons tested different interventions in Facebook and Twitter over six months, to understand strategies for success. As a result, the project identified two automation strategies with a high conversion rate into conversations with facilitators (Build Up, 2018b). On Twitter, the most effective strategy was to tweet messages that used the most liberal and the most conservative hashtags about political topics, pointing out that the conversation was polarised by suggesting people were not being heard. On Facebook, the strategy that worked best involved posting specific prompts on *The Commons*' Facebook page, with micro-targeted ads, directed towards the most polarised cities, as based on political campaign donations.

'The code for the use of digital tools to foster reconciliation, social inclusion, and economic prosperity in conflict and post-conflict scenarios is not yet cracked'

Overall, even though social media can cause both positive and negative effects in conflict and post-conflict scenarios, *The Commons* project is a cutting-edge example of how peacetech interventions, when complying with ethical standards and engaging with context-based solutions, can harness the power of technology to produce positive outcomes.

3. Peacetech and beyond: the start of a deeper conversation

In a world facing increasing digital growth, questions regarding the relationships between technology and society abound, particularly around how to harness the opportunities and tackle the challenges that it brings to solve human conflicts in issues such as peace, social cohesion, reconciliation, prosperity and trust. Yet, as highlighted by McSweeney, 'there is no one technology and therefore there is no one problem'.

Consequently, as seen in the first section of this essay, peacetech scholars and practitioners have made different efforts to reflect critically on the use of technology for peacebuilding, shape guidelines and share lessons on an emergent area with the potential of assisting peacebuilders around the globe to solve the world's most pressing problems.

This is shown with more detail in all the three cases portrayed at the session on 'Peace, technology and innovation' during the Peace and Beyond conference. From different perspectives, using diverse technologies and for different purposes, all the three speakers showed both the broad range of opportunities that technology could provide to strategically foster peace, but also the extensive range of challenges that could emerge around the design, implementation and evaluation of peacetech interventions.

As peacetech advances from a liminal space to a more consolidated and mainstream area, it is pivotal for education, policy and regulation around the implementation of peacetech best practices to also move forward. Issues as delicate as data security, the automation of jobs, antitrust practices, manipulation of public opinion and fake news, inherent to the digital space and everyday more common to delicate trust-building tasks such as peace processes, require being addressed effectively.

The session on 'Peace, technology and innovation' showed that sessions such as the one hosted by Peace and Beyond or the Build Peace conferences are just the start of a deeper conversation that should also inform policymaking, regulation, funding decisions, educative strategies and capacity building. A dialogue that, as peacetech best practices show, should be inclusive, open, transparent and collaborative.

Diana Dajer is Director of Policéntrico

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