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Abstract
Humanitarian maps assembled using digital technology are indicative of transformations underway in how the world is made knowable, sensible, and actionable, including for international legal purposes. These transformations are exemplified by the Missing Maps Project (MMP), an initiative of the Humanitarian OpenStreetMap Team, a U.S.-registered non-profit, and three other non-governmental organisations operating internationally: American Red Cross; British Red Cross; and Médecins Sans Frontières. Projects such as the MMP make it harder for international lawyers to lay claim to, and seek to imaginatively reorient, shared repositories of common sense. Meanwhile, international legal scholars continue to propagate ideas that the world may be reimagined with their help, largely without regard to such transformations. In lieu of imagination's standard evocation to the end of enhancing critical agency in international legal writing, this article contends that the idiosyncratic notion of imagination advanced in the writings of Walter Benjamin may be better attuned to ongoing shifts in sense-making apparent in international humanitarian mapping. Walter Benjamin's atypical rendering of imagination as a 'purely receptive, uncreative' force in a field of technological reproduction offers international legal scholars another way of thinking about agency and prospects for re-forming their field in the face of its burgeoning digitalisation.

Keywords International law · Humanitarian mapping · Digital technology · Imagination · Walter Benjamin

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Introduction

Many international legal scholars have relied to date on conceptions of critical agency for which ideas and vocabularies of both 'imagination' and 'mapping' have been important. The argument of this article is that change underway in practices relevant to international legal work—specifically, change in how mapping is done, in a literal sense, on the international plane—demands reconsideration of such notions of critical agency and the understandings of imagination on which they often rely. The digitalisation of mapping for international humanitarian purposes is indicative of transformations underway in how authoritative knowledge about the world is formed and shared. Meanwhile, international legal scholars continue to propagate ideas that the world may be reimagined or remapped with their help, largely without regard to such transformations. Appeals commonly made in international legal scholarship to enlarge or redirect international law's disciplinary imagination tend to presume that the ways in which international legal scholars have typically understood and sought to mobilise imagination to date remain unproblematic. This paper calls that conviction into question. In lieu of imagination's standard evocation to critical ends in international legal writing, this article contends that the idiosyncratic notion of imagination advanced in the writings of Walter Benjamin may be better attuned to ongoing shifts in knowledge- and sense-making apparent in humanitarian mapping and therefore more apt for contemporary international legal scholars to think with at this time.

The argument proper begins in Part II with a brief description of shifts emergent in the visualisation and navigation of worldly phenomena with which international lawyers are typically concerned. The concern of Part II is to lay out this article's story of change in the formation of authoritative knowledge and sense about the world, and to bring this story to life by reference to a concrete example: namely, the use of multi-dimensional, real-time digital mapping for humanitarian purposes exemplified by the Missing Maps Project (MMP). The MMP is a project borne of collaboration between the Humanitarian OpenStreetMap Team (HOT)—a U.S.-registered non-profit—and three other not-for-profit organisations: American Red Cross; British Red Cross; and Médecins Sans Frontières (Humanitarian OpenStreetMap Team n.d.-b). Launched in 2014, the MMP aims to put 'the world's most vulnerable people on the map' by marshalling volunteers to label and validate open-source digital maps of areas poorly represented by other maps available online—poor representation that can make them difficult for international lawyers and other humanitarian professionals to navigate and assist ('assistance' being the presumptive goal of humanitarian work, even if its aims are often multiple and its effects vary). The MMP thus seeks to expand the potentially actionable terrain open to international lawyers and others authorised by international law. Mapping in and around international legal work has always produced mismatches and overruns, but new versions of these are becoming apparent in connection with digital mapping efforts such as the MMP.

By focusing on the MMP, Part II seeks to draw out some of the challenges posed for international lawyers and others by the digitalisation of knowledge- and sense-making on the international plane illustrated by the MMP. These challenges are associated with the dispersal and diversification of sources of input deemed potentially

authoritative; the prevalence of real-time or near-real-time customisation; the heightened contingency of epistemic relations between digital proxies and their purported referents; and the delinking of digital outputs (that is, outputs standardised according to binary schemes) from the conditions of their creation such that concurrent outputs—multiple versions of digital maps, for example—may readily be circulated and reproduced on their own, seemingly self-sufficient terms. The MMP raises the prospect of international lawyers and other humanitarian professionals making maps in new ways. And because of the literal and figurative connection frequently drawn between mapping and imagination in international legal scholarship, this has implications for the work of international legal imagining.

Part III of the article considers what these changes may imply for prevailing ideas about international lawyers' powers of strategic choice and critical reimagination. The concern of Part III is threefold. It lays out some ways in which international legal scholars have typically written about the power of imagination. It highlights how much weight international legal scholars have commonly laid on authoritative oversight and masterful 'remapping' of the world. And it shows how the digitalisation of knowledge and sensing practice—including mapping practice—in the humanitarian field (a domain of recurrent international legal concern) might pose difficulties for international lawyers seeking to chart novel imaginative pathways for the world.

Part III remarks especially upon the propensity for international legal scholars to appeal to 'imagination' and figurative 'mapping' when articulating aspirations to make overarching sense of the world and thereby make it better. The digitalisation of sense in and of the international legal field troubles this ideal of international lawyer as imaginative overseer and guide, Part III shows, by making it harder for international lawyers to lay claim to, and seek to imaginatively reorient, shared repositories of common sense—repositories of which analogue maps are emblematic. The discrete logic, in-built redundancies, proxying, and referential breaks that are features of digital technology confound such aspirations, and break apart such common repositories, potentially remaking everyday practices of navigation, orientation, and prioritisation over which international legal scholars aspire to exert some influence.

Part IV suggests that this is not the only way that imaginative work in international law may be done. Walter Benjamin's atypical rendering of imagination as a 'purely receptive, uncreative' (Benjamin 1996a, p. 48) force in a field of technological reproduction may offer international legal scholars another way of thinking about agency and prospects for re-forming their field in the face of its burgeoning digitalisation. Part V is a short conclusion.

The Digitalisation of Humanitarian Mapping: The Missing Maps Project

Mapping entails much more than imaginative work, and the work of international legal imagination extends far beyond cartography. Nonetheless, one important register in which international lawyers engage in imaginative work, and in which international legal scholars have engaged critically and imaginatively with their field, is that of mapping. As numerous scholars have highlighted, international legal work

has long been and remains intensely 'cartogene[tic]' (to borrow Nicholas Rajkovic's term), both literally and figuratively. That is, it has been and still is both highly productive of maps in its own right, and more broadly invested in the practice and authority of cartography (Leuenberger 2013; Rajkovic 2018). At the same time, leading scholars of international law have frequently employed both the language and (idiosyncratic versions of) the practice of cartography to try to 'catalog elements in' and engage critically with 'the shared vision' of the field (Kennedy 2016, p. 133). For all these reasons, it is worthwhile examining mapping as an influential mode of imagining undertaken in international legal work.

Maps are products of 'spatial practices enacted to solve relational problems' (Kitchin and Dodge 2007, p. 335). Some of the problems that maps are produced or deployed to address are legal, including problems of international law. Many scholars have shown, for instance, how significant a role that maps have played in shaping and framing contestation around international legal jurisdiction, relations, and authority (Mahmud 2007; Nesiah 2003; Rajkovic 2018; Worster 2017). As Brian Harley famously contended, maps are 'at least as much an image of the social [and legal] order as they are a measurement of the phenomenal world of objects' (Harley 1989, p. 9; see also Cosgrove 2008).

As well as employing maps in generic constitutive and disciplinary operations, international lawyers work a great deal with what has been called 'thematic map[ping]': cartography that purports to show 'the geographical occurrence and variation of a [particular] phenomenon' (Robinson 1982, p. 16). International lawyers have dealt especially in maps oriented towards human suffering and deprivation; that is, international lawyers have been prolific makers and users of humanitarian maps. Mapping meets the descriptor 'humanitarian' when it entails making or modifying maps to 'promote human welfare' and advocating 'action on this basis rather than for pragmatic or strategic reasons' (OED Online 2020), although the scope of what gets called 'humanitarian' has expanded greatly over the past half century (Barnett 2005). This does not, of course, preclude humanitarian maps having multiple purposes and variable effects. So understood, humanitarian mapping facilitates the discharge of international legal responsibilities, the pursuit of international legal goals, and the exercise of international legal authority. Changes in humanitarian mapping practice are therefore of immediate concern to international law and lawyers.

Humanitarian mapping is one among many areas on the international legal plane in which digital technology is playing a growing role. A range of actors in the international humanitarian field are turning to digital technology out of concern about deficits of timeliness and specificity in humanitarian response and commitments to trying to overcome these. The digitalisation of mapping in international humanitarian work offers a way of 'grasping… contingent relations as an object of governance and integrating non-linearity into governmental reasoning' (Chandler 2018, p. 37). In this connection, the practice of humanitarian mapping has begun to move away from efforts to create a coherent visual scheme that would afford maps' master-creators room for imaginative intervention and redirection, and toward the generation of streams of geographic data that may be adapted to the vantage points, arguments, and needs of many users.

Once digitalised, the humanitarian map no longer comprises (to the extent that it ever did) a single, visual artefact that may be generated and shared in the way that authoritative maps were published, printed, and circulated in prior centuries. Towards the end of the twentieth century, humanitarian mapping started to become, instead, a multi-nodal, networked activity yielding composite, customisable outputs. This has had implications for the kinds of imaginative distance and common points of reference that humanitarian professionals—including international lawyers—often evoke.

The MMP, briefly described above, is one illustration of this shift in mapping (and imaginative) practice. As noted earlier, the MMP mobilises a combination of remote and local volunteers to help create digital maps of human-inhabited areas that are 'unmapped or undermapped', through collaborative analysis and labelling of satellite imagery (Feinmann 2014). Volunteers use a range of different digital applications and interfaces for these purposes: Field Papers (an interface enabling the creation and printing of multi-page atlases for manual annotation and the uploading of annotated documents) (Stamen Design n.d.); MapSwipe (an open source mobile application for map labelling) (Cahill 2018); and OpenMapKit (an application allowing users to create mobile phone data collection surveys for field data collection) (American Red Cross n.d.). The resulting maps are then made available, after validation in accordance with the map-making protocols of HOT (referenced above), via the free and open platform OpenStreetMap (OSM) (Glasze and Perkins 2015). The overall goal of the MMP is for local, national, international organisations working in and with these 'unmapped or undermapped' communities to become better equipped to meet the needs of vulnerable people within them. As Givoni observes of the MMP, 'collaborative crisis mapping is conducted under relatively controlled conditions with a view to building capacities for a collective disaster response to form independently in the future' (Givoni 2016, p. 1036).

To understand how the MMP is indicative of a reorganisation of sense-making on the international plane, it is important to get into some detail about its operations and contributors. One of the main interfaces through which the work of the MMP is advanced is the HOT Tasking Manager: a 'tool for coordination of volunteers and organisation of groups to map on OpenStreetMap' (Humanitarian OpenStreetMap Team n.d.-a). It 'divides up a large area of interest into many smaller mapping tasks that individual mappers can "check out" to complete' by way of collectively assembling a digital map intended for use by humanitarian organisations and other actors in crisis response. Through this interface, groups of users are assigned to teams and team members may be granted varying levels of permission to map, validate, and create within them. The code written for each version of HOT Tasking Manager, and any incremental updates, is made available via an open-source code repository. Version 4, released in May 2020, was built using React: an open-source, JavaScript programming library for building user interfaces originally created by Facebook (now Meta), the public company based in Menlo Park, California. Version 4's development also made use of the open-source JavaScript programming library Mapbox GL-JS, created by the private company Mapbox, based in San Francisco (Miller 2020; Rawat and Mahajan 2020). That development was funded by Microsoft Philanthropies through their AI for Humanitarian Action program (Maron 2020). Microsoft Philanthropies is

a not-for-profit entity created by Microsoft, Inc. (a public corporation headquartered in Redmond, Washington) in 2015 (Smith 2015).

The digitalisation of humanitarian mapping changes who gets involved in that practice, who is imagined as a maker of maps, and how they do so and are so. Through interfaces such as MapSwipe and OpenMapKit, the MMP offers volunteers opportunities to get involved 'on a more casual basis' than was previously possible in international humanitarian work, without great sacrifice or longstanding commitment: that is, 'by mapping through the use of their mobile devices while sitting on the sofa for example' (Scholz et al. 2018). Humanitarian mapping in this casualised, piecework mode enables the practice's de-professionalisation (or a revival of the amateurism of prior centuries' humanitarianism) as non-experts are afforded novel points of entry to its divisions of labour (Albuquerque, Herfort, and Eckle 2016; Glasze and Perkins 2015; Haklay 2013). The work of humanitarian mapping is broken down into assignable microtasks that are meted out to a diversity of concurrent contributors, with varying levels of insight, incentive, and experience; in the MMP this is effected via the HOT Tasking Manager. This breakdown and technological dispersal of responsibilities is facilitated by the shift from analogue to a combination of analogue and digital technologies.

Also significant, among the features that distinguish the MMP from other, predominantly analogue humanitarian mapping efforts, is the growing prominence that the MMP gives to 'crowds' in the sourcing and analysis (that is, mainly labelling) of data from which maps are assembled (Brabham 2013). Emphasis is regularly placed, amid discussion of the MMP, on the quality (in terms of resolution) and quantity of the image data made available by satellite technology and the potential potency of combining this with the latent force of a 'crowd' (Turk 2017). The crowd is unknowable and unplaceable in such accounts because it is made up of a partially remote workforce focused on fragments of a succession of projects. It is an 'anonymous workforce' that 'bring[s] strangers together to generate new knowledge'—although both the newness and the reliability of the knowledge so generated may be questioned (Turk 2017, pp. 21–22; Currion 2015). Even so, an important dimension of both the claims to novelty and authenticity of the MMP—and hence its claim to authority—is its tapping and mobilisation of a 'crowd'. Digitalisation facilitates this crowdsourcing of data because binary standardisation accommodates input in many forms without the need to maintain continuity with data previously imbibed.

The digitalisation of humanitarian mapping also changes the forms that maps and mapping take. Key to understanding these changes in form (of which the MMP is emblematic) is a distinction between analogue and digital logics. This distinction warrants brief explanation in general, stylised terms before we return to the MMP and its like. Of course, in the day-to-day of international legal work, including in mapping, analogue and digital logics are typically entangled and hard to prise apart. Digital computing does not expunge all analogue logic; the comparability of computers to human minds has been a continuous point of reference in the development of digital computing, for example (Turing 1950). Digital maps also seek to maintain some degree of comparability to non-digital referents and proxies. Indeed, the difference between the two logics is only salient because of their ubiquitous copresence. Nonetheless, the contrast between analogue and digital logics offers a way of

crystallising certain differences and tensions manifesting in humanitarian mapping practice, and international legal work, with which the rest of this article is concerned. These differences entail transformation in the way common sense and knowledge are assembled. This is transformation in which international lawyers have a stake when the sense or knowledge in question is developed, at least in part, to elicit international legal response, as is the case in humanitarian mapping.

To describe certain mapping initiatives and interfaces as predominantly analogue in form, as opposed to digital, is to characterise them as concerned with continuous qualities along a spectrum or scale. Analogue logic is concerned with similarity, comparability, contiguity, and sequence. Analogue differences are differences of degree, not those of opposition or either/or distinction (Wilden 1972, 1980). Units of analogue analysis are typically divisible into smaller units without any necessary loss of significance, while digital analysis cannot employ units of analysis below the level of the discrete unit on which it depends. Traditional cartographic delineation of governmental or administrative units—by international lawyers and others—exemplifies analogue mapping because the areas in question tend to be nested among comparable units of greater and lesser scale, together comprising the international. Likewise, a physical globe is an analogue mapping device because it draws a direct and ostensibly meaningful relationship between its own physical properties and the physical properties of the planetary phenomena for which it is offered as a proxy.

In contrast, digital logic works with discrete units in binary relation: one and zero, on and off, something or nothing. Digital logic is discontinuous and presupposes gaps between formal elements—gaps that, in digital circuitry, must be spanned by wires, gates and latches. According to digital logic, no value can be ascribed to any intermediate state between one and zero—an embedded prohibition or agreement that comprises part of the juridical infrastructure of digital technology. As Julian Bigelow pointed out at the famous Macy Conferences of 1946–1953, this 'involves a forbidden ground in between and an agreement never to assign any value whatsoever to that forbidden ground, with a few caveats on the side' (Siegert 2018, p. 9 quoting Julian Bigelow). Accordingly, at any one point in time or space (for example, in any one pixel of a digital image), a digital signal might leap from one value to another without regard to the state that preceded it or to any interim state.

Whereas analogue communication tends to employ icons or proxies that claim some enduring resemblance to or continuity with the signified (the thing represented), digital communication employs symbols (digits) that maintain no inherent connection between signifier and signified; in digital settings any such connection must be learned or ascribed (as and when required). The digital thus presupposes 'breaks in referentiality'; its 'epistemological power' is not conditional upon claiming any lasting relation or continuity between the symbolic and the real (in contrast to analogue logic) (Siegert 2018, p. 18).

These changes in form have implications for the kinds of imaginative work and engagement most readily elicited from maker-users of humanitarian maps (hereafter just called 'users' even though their input is partially constitutive of the maps that they use). In comparison to more traditional, largely analogue techniques of world mapping most familiar to international lawyers, digital humanitarian mapping (of which the MMP is illustrative) is less predicated on encompassing 'imageability'

(Halpern 2014, p. 115; 241, drawing on work of Kevin Lynch) than on customisability and responsiveness to user input. Automated customisation facilitated by digitalisation ensures that mapping interfaces follow and adapt to their viewers or users. Users of digitalised maps are often not afforded intervals within which to imagine a route through or beyond a map because the map is continually changing to reflect their inputs. Real-time or near-real-time customisation closes the space between a map and its user, making it challenging for a user (even speculatively) to step back from the map with which the user is presented.

Digitalisation facilitates humanitarian maps' customisation because digital logic invites no reconciliation between any one version of a map and an original or prior version. Just as a digital signal may switch from one state to another without regard to what came before, a customised digital map's efficacy does not typically hinge on its comparability to other versions. Each version is presented on its own terms, answerable only to its inputs and processing parameters (which, when machine learning is incorporated, may be the outputs of a prior stage in the automated learning process). Digital data does not wear its contentiousness on its proverbial sleeve because it does not attempt continuous reconciliation. In digital mapping systems, data is continually pruned and shed to optimise the system's performance on prescribed tasks without any effort being made to make sense of successive iterations' relation to pre-existing outputs. In contrast, customised analogue maps tend to announce their difference from other maps in circulation; they are often designed to be compared and contrasted (as in various organisations' contending analogue maps of Israel and the Occupied Territories: Leuenberger and Schnell 2010). That is the case in part because analogue maps cannot rely on the customisation of user interfaces. Users often hold and refer to multiple analogue maps, because they are not typically delivered to them via a continually updating interface. Users of digital mapping systems are less likely to access different versions of a digital map simultaneously for comparative purposes because digital interfaces tend to rank and prioritise outputs and ensure that, once accessed, each version quite literally fills a user's screen.

Digitalisation tends to discourage users of humanitarian maps from interrogating the conditions and assumptions under which those maps were generated and from querying how generalisable (or not) those might be. The binary standardisation and related properties of digital technology tend to delink digital mapping interfaces from the conditions of their creation—and, in turn, from the ideal of all people inhabiting common or convergent imaginings. A digital data set does not purport to represent, convey, or reflect the conditions of its creator(s) or creation, nor seek to reconcile those with the conditions of its user(s) or use. When digitalised and processed automatically, data's substantive content gets subordinated to a binary classification scheme, associated processing parameters, and the imperative of maintaining readily usable interfaces. When people confirm certain features on a map via a digital interface such as those used in the MMP, their political, experiential, or other basis for doing so become irrelevant; if the data input meets applicable thresholds, it will be incorporated; if not, it will not. Beyond generic considerations of quality control and measures to ensure this, digital mapping systems are generally indifferent as to the circumstances of data's sourcing or assemblage. This is one of the reasons why

quality assessment of large volumes of volunteered geographic data in digital form can be very difficult (Foody et al. 2015).

Predominantly analogue knowledge forms routinely relate how and from where they originated or make explicit their sources of authority; this is consistent with analogue concerns for continuity. For example, maps published by the U.S. Geological Survey—in paper until 2006 and as digital documents since then—announce themselves as such, invoking the legislative mandate for that organisation and referencing its many decades of published work on methods (Rabbitt 1989; U.S. Geological Survey n.d.). In contrast, digital knowledge forms typically embed sourcing and methodological information relatively deeply into their interfaces to ensure that they appear as 'frictionless' as possible for users (Vasudevan 2020). The online interface of the MMP, for instance, refers only vaguely to the involvement of remote and community volunteers.

Of course, beyond the work of data-generating volunteers, outputs of digital humanitarian mapping are not just machine-made. Their creation is still subject to the continuous scrutiny of inputs and occasional reweighting of internal values by humans or under human supervision. Nonetheless, the validity and sufficiency of digital mapping interfaces tend to be assessed based on whether they improve upon available alternatives in their performance on technical tasks. Validation techniques are built into the MMP's processes, but the question of validity is narrowly framed in such contexts. MMP inputs are validated by experienced remote mappers and by local volunteers on the ground, but the question in each instance will be whether data is plausibly labelled given the information available (Scholz et al. 2018). Questions of political or normative acceptability in the face of conflicting perspectives are not typically at issue. Once inputs are determined to meet then-prevailing internal, technical thresholds, they will be incorporated and made operative. Beyond the option of showing a dotted line, annotations and qualifications of the kind often included on analogue maps are not readily accommodated within digital maps' binary schemes.

Consider, for example, one recent instance of the World Bank partnering with the HOT, OpenStreetMap Mali and others on an Africa Cash for Digital Work Program, a pilot project that involved more than 100 individuals in Bamako, Mali. Users were trained on how to use MapSwipe, a mobile app, to look at satellite or aerial imagery on their phone and identify solid waste that threatened to clog drainage systems—waste being a matter of immense international legal interest as evidenced by the plethora of international treaties on waste management and disposal. The pilot project was declared a 'clear success' because in under two weeks, 'users swiped an area of over 450 square kilometers, producing some of the highest quality, detailed data ever produced by MapSwipe' (Bergmann 2022). That data was 'used at the city level to start visualizing where waste is being generated and dumped and to plan where to distribute facilities to collect waste before it is dumped in streets and vacant lots' (Bergmann 2022).

The digital dimensions of this project would not have determined how it was presented or assessed. Nevertheless, digital interfaces such as those employed in the Bamako project predispose users towards discrete assessments in which legitimacy or efficacy are judged according to metrics at one remove from the substantive goals supposedly pursued. Just as digital systems create binary proxies for phenomena that

they ostensibly represent without continuously referencing underlying phenomena (an array of pixels in a satellite image file serves as a proxy for solid waste, for instance), digitalisation encourages the translation of material goals into discrete proxies. Accordingly, a project oriented towards clearing solid waste may be judged a 'clear success' based solely on the properties and quantum of digital data collected and evidence of 'change [in] the paradigm of data generation' (Bergmann 2022).

It becomes difficult to assess the political stakes or effects of a project when the work involved is framed in such discrete terms, all the more when it is cast as unprecedented: producing 'Bamako's first high-resolution solid waste map' (Bergmann 2022). When the whole point of a project is to create a form of knowledge that has not previously existed—as in the missing maps of the MMP—then this sets the bar quite low; almost anything appears better than nothing.

In these ways, the determinacy of digital maps tends to be miniaturised relative to analogue comparators. Perceptions of their determinacy come to hinge on the resolution of the data presented, not on that digital map's ongoing relation to its referents: the problem of urban waste or communities doing the mapping. Their determinacy effects do not typically depend on 'ascending' and 'descending' patterns of justification as to value or facticity as has typically been the case in international legal argument (Koskenniemi 2005). Whereas imaginative assessment of political stakes at play in predominantly analogue projects commonly involves the assessment of meanings and consequences, the Bamako waste map need not purport to mean anything beyond itself, at least in the first instance. It is a 'success' on its own terms irrespective of whether or how it advances 'the progress of solid waste management in Bamako' (Bergmann 2022).

With the greater incursion of digital logic into humanitarian mapping, that practice is being transformed in ways that may have implications for how international lawyers reflect critically on the knowledge forms and sensory practices of their discipline, as the next section will show. Yet meanwhile, international legal scholars often proceed as if their imagination's exercise—and associated strategic choices—were still dispositive.

Mapping and the Limits of 'imagination' in the International Legal Field

Changing practices of sense- and knowledge-making about the world—of which the preceding section has offered a snapshot—have implications for how international lawyers approach their work. This section shows this by highlighting, first, how crucial to international legal scholars' sense of critical agency has been an ideal of international legal work as a matter of imagining and reimagining the world and sharing that with others, and second, the limited purchase of this ideal in the face of digitalisation, including the digitalisation of maps. The ideal of international lawyers envisioning the world as a whole and guiding others' navigation of it according to a common set of legal, social, and geophysical coordinates seems increasingly difficult to realise, both figuratively and literally, in view of the changes in practice outlined in the prior section.

It matters to international lawyers how humanitarian needs are mapped across the world because it is common for international lawyers to charge themselves and their colleagues with figuratively mapping and overseeing the world and attempting to transform it for the better. One motif to which international lawyers commonly return to express this aspiration is that of 'imagination'— that is, international lawyers commonly talk of international legal scholarship and practice as work of 'imagination' (see, e.g., Carty 1986; Jenks 1969; Simpson 2019). In a related sense, international legal scholars often characterise themselves as figuratively 'mapping' the world and their discipline's place in it. Maks Del Mar has observed that all international lawyers possess and routinely exercise imaginative competence: facility to engage in 'an active and conscious mental process, exercised in a way that is independent of immediate sensory stimulus, and which involves four different (though combinable) abilities: supposing, relating, image-making and/or perspective-taking' (Mar 2017, p. 174). In a related way, but with more emphasis on language, Martti Koskenniemi has cast imagination as 'a critical capacity' vital to international legal work: 'one that enables shifting between professional languages, and between professional and private languages…impl[ying] the ability to step outside the position of authority to examine it critically, and perhaps to redirect its use… finding new uses for old idioms, creating hybrids or using the languages against themselves'. In Koskenniemi's telling, (international) legal imagination has been especially concerned with 'justify[ing], stabilis[ing] and critiqu[ing] power at home and abroad' (Koskenniemi 2021, p. 953).

As the foregoing remarks attest, imagination is frequently linked with agency in international legal scholarship. Imagining entails, for many, detaching from and rendering examinable one's received knowledge or circumstances in a way that presupposes some mastery over and liberation from them—however fleeting. In Koskenniemi's work, this is the agentive power of being able to identify oneself as occupying a 'position' in a field and to 'step outside [that] position' in order 'to examine it critically' as noted above. Koskenniemi has observed elsewhere that 'it is often necessary to abstract from any particular legal discipline, field or theory and instead focus on what could be called the *legal imagination*' with a view to making and giving effect to 'strategic choices' (Koskenniemi 2018, p. 470). Throughout his influential body of work, Koskenniemi has consistently depicted international lawyers exercising, through the work of imagination, powers of strategic choice—powers that demand both 'a full mastery of the grammar [of the discipline] and a sensitivity to the uses to which it is put' (Koskenniemi 2005, p. 617).

This agency may be ascribed to individuals or collectives, although individualism often predominates amid talk of imagination. For example, when Jean d'Aspremont identifies imagination with the prospect of international lawyers 'unbridling' and 'unchain[ing]' themselves from historical referents and narratives, he employs plural terms ('international lawyers') but seems mainly to be counselling individuals towards 'embrace [of the] consciously interventionist history-writing attitude' that he would have them adopt (d'Aspremont 2019, p. 89; 115). When Carl Landauer writes about 'a temporal, narrative imagination' having long dominated international law, he develops this argument by analysing the work of a series of celebrated individuals:

Alejandro Álvarez, Taslim Olawale Elias, Nagendra Singh, Obiora Chinedu Okafor, and Martti Koskenniemi (Landauer 2010).

Individualism is also apparent in earlier appeals to imagination by international lawyers. In 1969, Wilfred Jenks called upon the 'creative imagination' of the 'contemporary international lawyer' possessing a mind 'inhibited by nothing' (Jenks 1969, pp. 21–23; 299). In 1986, Anthony Carty lamented how the 'the main categories of thought commonly employed by international lawyers shape the way in which they interpret "reality"…[such that] the world and his [sic.] way of looking at it are one and the same thing'. Carty commended to each international lawyer 'the task of… introspective reflection' upon these limitations to 'extricate himself [sic.] from [existing] frame[s] of legal meaning', a process that he cast as 'unavoidably individual and partial' (Carty 1986, p. 11; 129–31). Not all pertinent international legal writing has this valence of course; individualism is less prevalent amid international legal talk of 'imaginaries' for instance (see, e.g., Craven 2019; Ranganathan 2019 and more generally James 2019; Jasanoff and Kim 2015).

In international legal renderings of the imagination, agency and transformative potential are identified not just with detachment and mastery but also with oversight. This, in turn, demands common points of reference. International lawyers can only lay claim to being overseers to the extent that they can persuade others to see what they see and direct others towards it. In this, international law affirms a link between vision and power long dominant in the West, rescaled over the modern period from an optic, psycho-perceptive capability to a capacity to record, measure and produce new objects for speculation (Halpern 2014). For international lawyers as well as others, maps have often facilitated this experience of imaginative oversight.

Digital knowledge and sensory forms, such as digital data from satellites or crowdsourced from digital interfaces (characterised by discrete, distinct, bounded elements and relations of discontinuity), operate in awkward conjunction with these ideals and the analogue knowledge forms with which these ideals are most strongly associated. Analogue knowledge forms such as administrative jurisdictions and legal notions of property rights (comprised of differences of magnitude and relations of continuous variation) are more easily reconciled with ideals of humans inhabiting shared imaginings because the latter presuppose that one person's imaginings are at least partially continuous with those of others. It would not make sense to speculate about 'redirecting [the] use' of disciplinary imagination and vocabulary, as Koskenniemi has, if each instance of that imagination were seen as discrete and discontinuous (Koskenniemi 2021, p. 953). Once practices of visualisation and tools of navigation are digitalised, however, this ideal of continuous relation and common imagining becomes harder to sustain.

Analogue knowledge and sensory forms depend on common frames of reference to a far greater extent than their digital counterparts. For example, territorial borders, as they appear in analogue maps and signage, must be legible and locatable by all on roughly the same terms if they are to operate as expected. The boundaries of a nation state may be disputed in parts, but they are typically presented in analogue renderings as continuous both in the sense of being unbroken and being comparable to other states' borders.

Digitalisation of mapping interfaces is potentially antithetical to this making and holding of sense or knowledge in common, and to sustaining relations that depend on repositories of common sense or knowledge, because of their greater orientation towards customisation. A digital mapping interface that is adaptable to a wide range of uses and users does not attempt to smooth over conflict among those uses and users to the same extent as analogue maps. Producers of widely used online maps, such as Google Maps or OSM, must grapple with how to represent disputed territories just as analogue mapmakers have long had to do. However, the solutions that digital interfaces tend to arrive at differ from typical analogue solutions; they make use of the discontinuity and discreteness characteristic of digital technology. Where territorial boundaries are disputed, one provisional solution on which digital interfaces often settle is to customise boundaries and names, resulting in multiple, equally authoritative versions of a map being accessible from different geolocations (with geolocations typically attributed based on network routing addresses or devices' internal GPS) (Quinn and Tucker 2017). As digital artefacts, these different maps maintain no continuity with one another and the discrepancies among them are not typically made plain. Rather, each version of Google Maps accessible online from different locations becomes potentially actionable independently of any others.

Consider, for example, the brief 'accidental' invasion of Costa Rica in 2010 by Nicaraguan troops who reported to a local newspaper that they mistook the area in question to be Nicaraguan territory because of the area's mislabelling on Google Maps accessible from Nicaragua (Brown 2010). In that instance, the error was reportedly due to flawed compilation of data sourced from the U.S. Department of State. In other settings, however, discrepancies between online maps accessed from different geolocations arise because the maps in question are designed to reflect back to users the version of the world officially preferred at their location. Users accessing Google Maps from a device geolocated to India, for example, see Kashmir mapped as fully within Indian territory, while users from other locations may see the Indian-Pakistan border in this vicinity represented as a dotted line (Bensinger 2020). The relative ease of digital customisation and the tailoring of interfaces by geolocation bring about a surfeit of irreconcilable data, eroding the common ground that analogue frameworks surrounding the delineation of territorial boundaries and the resolution of territorial disputes (such as traditional official maps) strive to maintain. And it is precisely the on/off quality and incessant updatability of digital interfaces that facilitate this erosion.

These digital-analogue mismatches may foster openings as well as closures (Burns 2014). What they make harder to sustain, however, is an expectation of international lawyers being able imaginatively to 'step outside [a shared] position' or common predicament in order 'to examine it critically' (Koskenniemi 2021, p. 953). Once digitalised, data constitutive of the position or circumstances that international lawyers experience flow from too many disparate (often contested) sources and through too many processes of analysis (some of which are automated) for that sense of mastery presupposed by earlier talk of imagination to be maintained. The act of 'step[ping] outside' one's current circumstances and disciplinary frame to examine them critically with a view to subsequently re-entering and acting upon them presumes a continuous (analogue) frame of reference that digitalisation renders newly unstable—only com-

pounding that sense of instability and discontinuity that twentieth century analyses of international legal indeterminacy previously yielded (Kennedy 1987).

Digital humanitarian mapping may put more informational resources at international lawyers' disposal. Yet the terrain of international lawyers' prospective intervention is difficult to invest with a sense of being even contingently, ideally 'theirs' to survey, control, or critique. OSM products, including those resulting from the MMP, are the work of many and their intricacies are relatively inaccessible to many international lawyers without relevant technical training or skills. They are also readily adaptable to proprietary claims and purposes. For example, Uber, Facebook, Microsoft, Apple, and other major corporate players in the digital economy make growing use of OSM to help refine and support their own products (Anderson, Sarkar, and Palen 2019). International lawyers continue to exercise authority, of course, but their capacity to hold a field in view, for purposes of (imaginatively) detaching from, mapping, and potentially reimagining it, is compromised by the kinds of multi-nodal, ever-changing, automated sensory environments of which the MMP is exemplary. This may not be an entirely new challenge. Nevertheless, it has been intensified by the growing recourse to digitalisation in international legal work, including mapping work.

This heightened instability and nodalism have implications for international lawyers' capacities of critique. For example, Koskenniemi is among those that have observed international legal doctrine's tendency to oscillate between 'legal' and 'pure fact' approaches to state sovereignty (Koskenniemi 2005, p. 224–302). Sovereignty is either conceptually anterior to the state and allocated to it by law, or normatively external to the law such that the law may recognise but not control it. And recognition of this pattern and others like it among the day-to-day practices of international legal work typically entails international lawyers imagining themselves 'escap[ing] from the limitations of [their] role' and the routines of their practice and acting as a 'conscious agent' within their field (Koskenniemi 2005, p. 550, 553).

The normativity expressed in a digital mapping interface's delineation of state boundaries circumvents such routine patterns because it belies either 'legal' or 'pure fact' descriptors. When Google Maps or OSM present a state boundary as authoritative, that authoritativeness is embedded in proprietary code and open to continual customisation. Sovereignty is neither anterior to its cartographic presentation (insofar as sovereignty is materialised at digital mapping interfaces in real time) nor subject to other states' recognition (because other states may be recognising some other presentation of its extent via another interface). States' continuance, through international legal doctrine, of both 'an ascending and a descending argument about sovereignty' is interrupted as is international legal scholars' ability to trace such patterns. This interruption takes place because states' effective possession of certain territory may not manifest in ways readily available to other states, and they cannot be sure of what other states see or recognise; consider, for instance, the Indian-Pakistan border scenario mentioned above (cf. Koskenniemi 2005, p. 291). The imaginative acts of trying to balance or harmonise conflicting argumentative positions in which international lawyers routinely engage are difficult to perform when those conflicting argumentative positions are actualised concurrently in digital formats in mundane practices of international legal import (such as humanitarian mapping). So too the

imaginative act of surveying the field in order to comprehend and consciously redirect it becomes harder to accomplish when the 'everyday practices of international law' are dispersed and reformatted across any number of specialised systems, as digitalisation encourages (Koskenniemi 2005, p. 550).

Undeterred, international lawyers often confront digital technology's pervasiveness through an attempted reinstatement of motifs of imaginative autogenesis. It is not uncommon for international lawyers to make pronouncements along the lines of the following: with '[t]he rise of ML/AI [machine learning/artificial intelligence]… the time for a humanly capacious and politically imaginative contrariwise turn… [in international law] is now arriving' (Kingsbury 2019, pp. 185–86).

Such talk of imagination grasps for autogenetic power. That is the case even though international lawyers have perennially railed against the capacity of a sovereign ruler to will into being an international legal order to their liking. As Susan Buck-Morss has remarked of the 'myth of creative imagination': '[t]he fact that one can *imagine* something that is not, is [readily] extrapolated in the fantasy that one can (re)create the world'– a fantasy that is, among other things, gendered in its fear of dependence on feminine genesis (Buck-Morss 1992, p. 8). When posited as an antidote to the diffusion and digitalisation of power in international law, and read through Buck-Morss's lens, international lawyers' reach for imagination may be a regressive move.

Even if articulated in progressive terms, expectations that international legal imagination might serve as an antidote to digital technologies' rise still miss their marks. That is because they presuppose a continuous evaluative capability with respect to international legal digital decision-support tools such as the MMP, while those tools tend to discourage or elude such continuous evaluation by offering up a succession of discrete outputs. Conventional appeals to imagination in international legal scholarship presuppose capacity to scrutinise the inputs and syntax and calibrate the political effects of tools like the MMP: in Koskenniemi's words, a capacity to maintain 'full mastery of the grammar and a sensitivity to the uses to which it is put' (Koskenniemi 2005, p. 617). Perhaps the idea that one might make the properties, problems, and potentials of the international legal field legible and actionable through point-in-time scholarly critique has always involved a degree of fantasy.[1] Nonetheless, the unrealisability of that fiction gets amplified to the extent that the practices of the field take on the logic of the digital with its discrete logic, in-built redundancies, and referential breaks.

As argued above, the prospect of international lawyers promulgating imaginings or reimaginings—maps and remappings—of the world for the good of all by making fresh sense of everyday practices has declining allure insofar as international lawyers remain indifferent to change in those practices. Ubiquitous computing infrastructure has extended into social, economic, political and legal life, on the global plane and in many (but not all) parts of the world, 'to the point where [human] vision loses any function in producing identification or recognition between or within subjects' (Halpern 2014, pp. 240–41). Data collection and processing—including in geographic information systems—is underway worldwide at such scale and velocity as to reduce the call or opportunity for human vision or human comprehension as a pre-

[1] I am indebted to Leila Brännström for this important reminder.

lude to judgment in many settings (Johns 2017). Satellite imaging, for instance, may assemble images without any human stipulating which objects are or should be of interest and the interpretation of its outputs will often be at least partially automated. This demands a reconsideration of international lawyers' persistent appetite for 'an image of thought to return' whereby we (or they) might be 'able to "envision" and apprehend something beyond or outside of us' in dispositive ways (Halpern 2014, pp. 240–41). It demands, in other words, a reconsideration of international lawyers' tendency to identify political possibility and strategic opportunity with the masterful redirection of an encompassing disciplinary gaze. Walter Benjamin's unorthodox writings on imagination might aid that reconsideration.

Imagination Redux: Walter Benjamin's De-Formative Imagination

The relatively uninhibited, individualised powers of creative imagination that some international legal scholars try to mobilise in the face of digital technologies' challenges may be poorly attuned to transformations underway in international legal practice, as evidenced by the proliferation of digital-analogue tensions in practices of humanitarian mapping. That has been the argument of this article above. Not all versions of imagination are, however, equivalent. For example, Walter Benjamin's writings on political possibilities 'imminent in the field of reproduction technology' and in capitalism yield a very different, quite peculiar notion of 'imagination' unlike those in which international legal scholars have mostly traded to date (Benjamin 2003a, p. 182). In Benjamin's version, imagination does not entail ideational detachment from or conscious perspective-taking on a field. Rather, imagination entails the 'de-formation of what has been formed' from within, more from the multiplication of forms and materialisation of new forms than in their ideal redirection (Benjamin 1996b, p. 280). Whereas many international lawyers have written of imagination as work of design and construction, Benjamin writes of imagination as work of decrypting, dismantling, and reconfiguration—or indeed revolution. The latter could suggest to international legal scholars some ways of working and thinking imminently in the field of international law amid the transformations being wrought by digital technology.

In the Neo-Kantian tradition in which Benjamin initially worked, experience becomes legible insofar as it is conditioned by form—that is by what has become knowable, known, valued, or routinised. In Benjamin's telling, however, forms are not established *a priori*. Form becomes a necessity only *a posteriori*, through historically contingent occlusion of an indefinite number of other frameworks through which experience could have been presented. Benjamin's writings show that the speculative, non-empiricist rendering of experience may disclose transitional moments out of which form emerged, and out of which it would equally have been possible for other forms to emerge. This is the work of imagination. Imagination entails the dissolution and re-materialisation of forms into 'an unending series of transitions' (Benjamin 1996b, p. 281). In Benjamin's work, imagination reveals 'the world caught up in the process of… eternal ephemerality…It appears different at dawn and at dusk, but not less authentic' (Benjamin 1996b, p. 281). Crucially, imagination does so by

'proceed[ing] from within… the form itself' rather than projecting new forms or 'prophetic visions'; it 'is unconstructive, purely de-formative or (from the standpoint of the subject) purely negative' (Benjamin 1996b, pp. 281–82). Imagination, in Benjamin's atypical rendering, works 'within the canon, [but] not in accordance with it; it is therefore purely receptive, uncreative' and non-synthetic of dialectics alive within a canon (Benjamin 1996a, p. 48). As Alexei Procyshyn explains further:

> Benjamin introduces the idea that different descriptions of historical epochs produce distinct—incommensurable—*possibilities*. In other words, …because things are distinct from the various presentational forms we use, they have what Benjamin sometimes calls a *Vorleben*, a life prior to their contextual thematization. Similarly, because the necessary relation between things and concepts obtains only retroactively, objects also have a *Nachleben*, a life that persists well after the productivity of a given conceptual form has been exhausted. What the *Vor-* and *Nachbelen* of a thing indicate, for Benjamin…, is that *necessity is always relative to a speculative orientation*, and that *this orientation itself can change* (Procyshyn 2013, pp. 678–79).

Imagination, in Benjamin's writings, 'is not an inventive power' but 'comes from within' and proceeds by passing through new technologies and 'de-form[ing]' them with a speculative and, more explicitly in Benjamin's later work, a revolutionary orientation (Benjamin 1996b). Imagination explodes forms, releases possibilities, and expands the range of political experience. So understood, imagination could well thrive in the tension between analogue and digital knowledge forms apparent in digital humanitarian mapping, rather than being wielded in the hope of overcoming that tension. It could be through the digital-analogue conjunction of disparate, heteronomous forms of experience apparent in digital humanitarian mapping that new points of entry and routes for negotiation and struggle could perhaps emerge in and around persistent international conflicts and regimes of oppression. Consider, for instance, if every digital map bore the traces of all those who had been displaced from within its bounds—if its constitutive parameters were set to make visible prior and persistent claims and attachments. What would or should become of the international legal doctrine of *uti possidetis* if effective possession could never extinguish such traces? What would the task of international dispute resolution entail for those working with such unruly materials? What if international legal scholars sought to tap the concurrencies of digital formats to try to de-form existing doctrine and dogma rather than chart new, incomparable imaginaries beyond them? Benjamin's could be a sense of imagination with which international lawyers may wish to experiment in grappling with the transformations being wrought by digital technologies.

Conclusion

Walter Benjamin's unconventional rendering of imagination does not offer a solution to the challenges posed for international lawyers by digitalisation and associated shifts in technical practice in the humanitarian field: challenges apparent in the chang-

ing forms of the map. It does suggest, however, how international lawyers might explore further prospects for thinking *with* and *through* those changing practices, rather than offering 'prophetic visions' (Benjamin 1996b, p. 281) of their discipline being comprehensively reimagined from on high in the face of them. In line with this suggestion, this article has taken the detail of the MMP as indicative of how sense-making on the international plane is undergoing 'an unending series of transitions'—transitions that 'de-form' the way that international legal scholars are accustomed to thinking and writing about renewal of their discipline and offer ways of proceeding otherwise 'from within… the form itself' (Benjamin 1996b, pp. 280–281).

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