TERRITORIAL CONFLICT IN THE DIGITAL AGE: MAPPING TECHNOLOGIES AND NEGOTIATION

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The Conventional Interpretation of Digital Mapping and Negotiation

As noted in the text of the article, the impact of digital mapping on negotiations over territory has been considered in a few analyses (some focusing explicitly on this issue and others discussing it more incidentally[1]). These tend to follow a fairly straightforward framework of new technological tools enabling faster, more efficient, and more effective conflict resolution. This builds on a general view of technological progress as making existing goals easier to achieve. The following paragraphs demonstrate how this conventional view plays out, both in terms of mapping and negotiation in general and on the specific case of digital cartography. My point here is not to caricature a position to be easily dismantled—the arguments presented in these studies are carefully considered and offer an accurate description of some of the potential effects of digital mapping. Yet they leave out a significant portion of the possibility space of what digital mapping can do to disputes and negotiations over territory, and those other possibilities are what this article explores in detail.

In mapping, technological change as better tools means connecting improved accuracy in cartography with improved outcomes in conflict resolution. "Accurate" maps, including those that make explicit territorial claims, are posited as an unproblematic base layer for negotiators' discussions: "Most maps [used in negotiations] are largescale, properly surveyed editions, quite unlike crude propaganda" (Blake 1995, 48). "Propaganda" maps are thus separated from "properly surveyed" maps, and the more accurate and up-to-date those surveys are, the better. This entire framework has been critiqued by authors who challenge the notion that *any* map can be an unproblematic, "scientific" image of the world; all maps, in other words, have inherent distortions, emphasizing certain things and eliding others (e.g., Crampton 2001; Harley 2001; Wood 2010). This critical approach has not been integrated into the discussion of maps and negotiation, where the emphasis on accuracy and progress persists.

Moving from mapping in general to digital cartography, there is a clear expectation among practitioners that the new technologies will provide

[1] On mapping at Dayton, for example, Johnson (1999) writes specifically on the topic, while general accounts of the negotiations (e.g., Holbrooke 1998; U.S. Department of State 1997) address mapping and its use in passing.

better negotiating tools and thus will improve outcomes. Typically emphasized are the ease of computation (which assumes that easier computation is inevitably a force favorable to conflict resolution—an assumption challenged in this article) and the reduction in time required between mapping a territory, negotiating a new or altered boundary, and demarcating the updated boundary on the ground. With the slow pace of paper-based cartography, facts on the ground could outrun the traditional mapping of those facts, and digital tools help shorten that gap (Corson and Minghi 1996).

An essay by William B. Wood, who was director of the Office of the Geographer at the U.S. State Department,[2] clearly states the expectations of those in government who have been closely involved in the past use and future design of digital mapping tools. This short essay is also one of the only studies to approach the issue of digital mapping and territorial negotiation directly. It thus bears close examination, not because it is wrong, but because it paints an incomplete picture of the context-sensitive and potentially ambiguous effect of digital cartography's new capabilities. Wood writes:

> As the political map of the world continues to change, GIS [Geographic Information System] tools could be used to make decision-making more transparent, analysis of options more thorough and the presentation of results more convincing—factors that could affect the future stability of those living in border regions (Wood 2000, 72).

In other words, better-defined borders can be good for stability, and GIS improves the definition process. Wood then outlines the "GIS advantage":

> GIS-organised data can help clarify the spatial elements of a territorial dispute and its socio-economic and military implications. GIS software can apply remote sensing imagery, terrain elevation models, and other digital data layers to visualise the extent of the area in dispute, the types of resources at stake, populations who might be affected, and other considerations. GIS is also a proven means for exploring 'what if' scenarios for proposed territorial changes. The parties can view each territorial change proposal in light of how it might affect their strategic and national goals (p.76).

Satellite imagery in particular can be a "relatively quick and accurate means to portray land features," building a more "objective" and uncontroversial base layer for negotiation (p.77). In short, "Like all other 'technical' tools, a properly implemented GIS can go far beyond a paper map and pencil to assist in the resolution of complex boundary problems" (p.78). There are potential problems and hazards raised, but they relate to parties not trusting each other—and thus not trusting any geospatial information that the other side brings—and have little to do with the new technological capabilities themselves.

Studies of related issues reveal similar assumptions. Claussen (2009), for example, looks at the use of new mapping technologies in boundary demarcation (rather than negotiation or delimitation), but makes analogous arguments. New tools will "assist in ameliorating ongoing boundary-related controversies" and "help to put an end to measurement error and incongruities in the location of contentious borders" (258).

Johnson (1999) examines mapping at Dayton specifically (and is discussed at length in the main text of this article), building on a similar framework that sees new tools as helpful. The only significant challenges his analysis highlights are cases in which the negotiators were unwilling to take advantage of the new capabilities. This focus on technological progress can result in odd juxtapositions, positing contradictory benefits simultaneously. At Dayton, for example, the U.S. use of high-tech digital mapping is argued to have accomplished multiple goals at the same time: a) intimidating Milosevic and other intransigent parties; b) flattering all the leaders involved (because of the U.S. investment in the process); *and* c) presenting "neutral" cartographic resources. From Johnson (1999, 5): "There should be an iron-clad rule that mapping support for negotiations come from a single source, preferably one perceived as unbiased. This was achieved at Dayton." The contradiction in these purposes (intimidation of one side *and* neutrality) remains unexamined in official accounts.

[2] The office tasked with providing mapping support to U.S. diplomats and also with determining official U.S. positions regarding international boundaries.

This view, in short, argues that digital mapping will increase the availability and accuracy of information, raise the speed of processing, and thus improve the chances for successful conflict resolution. All of these predicted effects are very much possible, but they are not inevitable, and they are matched by other effects, not all of which push toward easier or more efficient resolutions. The latter are the focus of this article.

Historical Context: Mapping and Negotiations

As is discussed briefly in the text of the article, the transition from paper to digital mapping is by no means the first time that cartographic technologies and tools have shaped the conditions of possibility for political interactions. The expansive *History of Cartography* project has shown that, from prehistoric mapping through to the modern period, cartographic representations have been tied to political authority, organization, and action. Especially relevant for this paper is the way in which earlier changes in mapping—in particular, the transformation and dramatic increase of cartographic tools in early modern Europe—reshaped negotiations between political actors. The types of negotiated solutions reached, or even discussed, are transformed by the tools available to negotiators and related officials, experts, scholars, and so on. Yet the relationship also travels in the other direction: tools with particular features and capabilities are demanded when political ideas or interests shift. The following paragraphs explore this relationship historically, focusing on European political history because of the greater availability of data on this relationship there. This will show that the tools available have long shaped the process and outcome of negotiations over political divisions. (I discuss much of this at greater length in Branch [2014], especially in chapter 6.)

Maps were extremely rare in the European Middle Ages (as they were in most other contemporary civilizations), with hand-drawn spatial representations used occasionally but more often replaced by written texts. Even for purposes that we tend to think of as a natural fit for visual mapping, such as property records, navigation, or political claims, written documents served the same purposes well—with important consequences for some of those activities. "In the Middle Ages, the normal way of setting out and recording topographical relationships was in writing, so in place of maps we have written descriptions: itineraries, urban surveys, field terriers, and so on" (Harvey 1987, 464; see also Grafton 1992; Woodward 1985; Edson 1997; Revel 1991). The maps that did exist were hand-drawn, they rarely followed what we would think of as a consistent scale or projection method, and each served a particular purpose such as coastal navigation or religious instruction.

How did this absence of mapping shape political negotiations?[3] For one, political actors rarely if ever conceived of dividing their realms in strictly territorial ways, instead relying on a mix of claims over particular places, such as towns, and jurisdictional rights, made without reference to territorial limits (Sahlins 1989, 28). At the 843 A.D. Treaty of Verdun, for example, Charlemagne's empire was divided among three of his descendants. While we can look at this division in retrospect and see a territorial delimitation (as modern historical atlases typically depict it), the actual treaty was written in terms of jurisdictions: "numerous commissioners . . . established a list of the counties, bishoprics, abbeys, chapters, and royal domains situated within the territories to be divided, and attempted to prepare equivalent shares: equivalent in regard to revenues and equivalent in regard to the amount of lucrative offices *(honores)* and benefices that could be distributed among the aristocracy" (Ganshof 1970, 48). Similar trends appear in an example from the end of the medieval period, at the Congress of Arras, held in 1435 A.D. between the English king, the French king, and the duke of Burgundy (Dickinson 1955). Studies of these negotiations show no evidence of map use by diplomats—unsurprising, given how rare maps were in general at the time. Negotiations were predominantly held in the form of presenting and arguing over lists of towns and feudal rights, not territorial boundaries.

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[3] It is important to remember that in even asking the question this way we are approaching the issue from the point of view of our own, map-filled society. For a culture like that of medieval Europe that rarely used maps, the question would simply be one of how negotiations proceeded based on the textual documents brought to the table.

Then, in the fifteenth, sixteenth, and seventeenth centuries, a fundamental transformation occurred in how maps were produced, what they looked like, and the purposes toward which they were put (Woodward 2007). Conventionally seen to begin with the Latin translation and wide distribution of Ptolemy's *Geography* (a classical Greek text with instructions for creating maps), mapping as we know it took shape starting in the late fifteenth century. Using celestial coordinates (latitude and longitude) and mathematical projection methods, early modern mapping took on the form that we would recognize today, even though the accuracy of content was limited. Combined with the rapid expansion of printing technology during the same period, maps went from being rare, unique, and specifically purposed visual documents to being an everyday commodity and tool of trade, governance, and—perhaps most importantly—knowledge generation. These geometrically measured images of the world presented a new way of seeing from afar that showed the world as a spatial expanse, divided by lines into discrete territories (Harley 2001; Cosgrove 2001). Even though the accuracy and detail of early modern mapping was not up to the task of detailed territorial negotiations, the very *idea* of using an visual representation to make or contest claims was revolutionary.

We can see the first inklings of this effect in the negotiations between Spain and Portugal in the 1490s (first involving the Pope but then later signing their own direct agreement at Tordesillas in 1494), in which the two crowns divided the non-European world in half with a line in the Atlantic Ocean. In retrospect, this appears as a clear linear division, similar to boundary negotiations in the modern era. In one way it certainly was: the *idea* of a linear division, negotiated without any knowledge of what was contained within those lines, was a constant practice by European colonial powers through the nineteenth century.[4]

The Tordesillas negotiations, however, were not based on maps, and no maps were necessary to interpret it: the exact location of the line (370 leagues west of the Cape Verde Islands) was unknowable, given the impossibility of accurately measuring distance at sea. The use of a line, however, was inspired by the growing acceptance of grid-based mapping as a way of knowing the world (Schmitt 2003 [1974], 88). The pretense of this being a cartographically measured division was further revealed in the later negotiations for the treaty of Saragossa (1529), which was meant to determine where that line, originally drawn through the Atlantic Ocean, would fall on the other side of the globe. Again, this was scientifically unknowable, and the resulting treaty was a purely political bargain covered with rhetoric of finding Tordesillas' anti-meridian scientifically (Sandman 2007, 1108–1115; Brotton 1997, ch.4).

The absence of mapping at negotiations, and the resulting absence of the linear territorial divisions that maps make possible and encourage, is also evident in some of the most well-known—albeit misinterpreted—treaties and peace settlements of the early modern era. In the negotiations and treaty texts from the 1648 Peace of Westphalia, for example, there are no delimited linear divisions. Claims and counter-claims are instead defined in terms of jurisdictional rights or, if geographically framed, in terms of authority over lists of places (Croxton 1999; Israel 1967, 31). Maps were in circulation by this point, especially among the educated European elites, but they appear not to have been applied in this document or to other contemporary negotiations and diplomatic interactions. The relationship works both ways: without maps present, the capabilities and ideational incentives to draw linear boundaries were absent, but there was also no demand for cartographic tools because—within Europe at least—the existing framework of jurisdictional and personal authority relations worked well for the actors involved.

This interaction between the types of claims rulers and negotiators are interested in making and the types they are able to make (shaped by their maps, among other factors) persisted in later negotiations. The 1713 Treaty of Utrecht, for

[4] In well known examples such as the Congress of Berlin, but actually following patterns established much earlier, Europeans used maps to make and negotiate—with each other—claims from afar, without actual knowledge of the contents of the territories they discussed (Bassett 1994). But cartographic techniques—both material, in maps, and ideational, in the notion of linear divisions defined by latitude and longitude—were a powerful tool that first made possible and subsequently encouraged linear divisions.

example, involved territorial claims both within Europe and in the Americas, with an important difference between the two. Within Europe, disputes were settled by means of listing jurisdictions or places (although we do see a general shift toward more spatial terms and fewer feudal rights and obligations), but the New World claims were made entirely in terms of geographic divisions over spaces that were not known in detail (Miquelon 2001, 654). Maps were directly used in the New World negotiations, with particular documents sometimes passed back and forth with successive proposals marked on them. In the absence of detailed information about what was contained in the areas under discussion—information that could have been used to effect a negotiation based on lists of places or jurisdictions—negotiators made use of the technology available to them, which shaped their interactions and the outcome. (The result, in fact, was of limited use because of the inadequate detail and accuracy of the cartography used—commissions set up to work out the details of the negotiations took decades to complete their work.)

A century later, at the negotiations ending the Napoleonic Wars, a dramatically different picture emerges. Linear territorial boundaries, delineated in detail in treaties and drawn on maps, are the exclusive form of division negotiated. This built on a transition in the second half of the eighteenth century, when an increasing number of zonal or overlapping frontiers within Europe were negotiated as linear boundaries for the first time (Konvitz 1987, 32–38). In 1814–15, the texts of the treaties stated claims in terms of lines, drawn from place to place along geographic features or through a listing of coordinates and compass directions (e.g., the Final Act of the Congress of Vienna, 1815, Article II; Israel 1967, 520). At this point, feudal rights and personal bonds of authority were no longer seen as acceptable bases for political organization at the state level, and, simultaneously, mapping technologies were finally up to the task of negotiating detailed boundaries. For example, even in France, one of the most cartographically sophisticated societies in Europe, the government's effort to survey and map the entire realm at a high level of detail was only completed and printed in 1789 (Turnbull 1996, 18).

A century later, at the post-World War I negotiations in Paris in 1919, the way in which mapping shapes the process and outcome of negotiations can be seen even more clearly. Maps and geographic expertise were a significant component in the various sides' preparations, their positions taken, and the resulting treaties. Reisser (2012), for example, demonstrates the importance of the U.S. "Black Book" of maps and territorial policies, prepared by a commission of experts led by Isaiah Bowman, an academic geographer. The maps prepared by these scholars were used for everything from high-level discussions down to detailed boundary negotiations. "[T]he Black Book and its maps served a principal role in shaping discussions on borders by the American plenipotentiaries" (Reisser 2012, 33). For example, "Isaiah Bowman's base map of Europe was the most cited map at the Paris Peace Conference, serving as a basis for negotiations throughout the European region" (Reisser 2012, 18).

What was the impact of these, and other, cartographic tools on the negotiations? For one, there was no question about what was the best way to divide territorial claims, to set up new political entities, or to deal with the Wilsonian issue of national self-determination: linear boundaries needed to be drawn, separating territorial states. As Isaiah Bowman put it, "nations cannot be separated approximately. A boundary has to be here, not hereabouts" (Reisser 2012, 14). Where this became particularly problematic was in the effort to create new states along ethnic lines, especially in the former territories of the Austro-Hungarian Empire. The data used for determining the spatial distribution of ethnic groups was often outdated (Reisser 2012, 158), and, moreover, many of the mapped proposals put forward by the U.S. commission, meant to be preliminary suggestions to serve as a foundation for further refinement, were actually adopted without change (Reisser 2012, 35). The maps brought to the table, in other words, were sometimes more convincing than the cartographers themselves had intended.

Overall, as Crampton (2006, 731) succinctly puts it, the U.S. delegation's "maps and reports framed the problem of contested areas such as the Balkans as one of race and territory," and that was how the negotiators sought to achieve goals such as a lasting peace or national self-determination. The maps brought to Paris, while extraordinarily sophisticated and detailed, still emphasized the standard representations of drawing lines between

homogeneous spaces. Maps of the distribution of ethno-linguistic groups were complex images but nonetheless emphasized solid areas of homogeneous settlement (for making new national states) with only very few mixed or overlapping areas—in spite of widespread intermixing in many regions. In 1919, in other words, both the ideational grammar of political organization and authority (the territorial state) and the dominant representational tools (paper maps with linear divisions between color-coded areas) reinforced the end result of negotiating linear boundaries between territorial entities.[5] As Culcasi (2014) makes clear, the important role played by cartography extended outside of the mapping of national groups in Europe and reshaped much of the negotiations and settlement of the post-Ottoman space as well.

These historical cases, extending from before the early modern development and adoption of cartography as a tool of political negotiation through the sophisticated use of maps in the twentieth century, show the complex interaction between the tools brought to the table and the negotiation processes and outcomes that result. Without a representational tool capable of showing a particular division—or a particular type of division—that boundary simply cannot be negotiated. Or, in many cases, the parties involved will not even consider such a boundary a useful way to sort out their conflicting interests, relying instead on a different set of political ideas and practices. Once maps came to be seen as essential tools of statecraft, however, negotiations increasingly focused on the modern delineation of boundaries that we continue to see today.

[5] An interesting feature of the racial mapping used in Paris was the effort to assert a claim of being "scientific" rather than political: "In their reports, the [U.S.] Inquiry emphasized their maps were objective and scientific while those produced by other delegations were biased and partisan." But, "In truth, the Inquiry staff remained susceptible to political leanings and therefore included significant bias in their maps" (Reisser 2012, 18). The goal providing "unbiased" or "scientific" mapping—as well as the difficulty or impossibility of achieving that goal—is apparent in negotiations with digital mapping as well. As Johnson (1999, 5) writes regarding the U.S. mapping support for the 1995 Dayton negotiations: "There should be an iron-clad rule that mapping support for negotiations come from a single source, preferably one perceived as unbiased. This was achieved at Dayton, and permitted the establishment of a common series of products for discussion and a common geometric framework."

Challenges Facing Case Studies of Negotiation

There are a number of challenges to examining case studies of negotiations. Primary evidence is often limited, and many of the essential interactions take place behind closed doors without publicly available notes or transcripts. Thus, case studies often must rely on post-facto accounts from the participants themselves—at least those that are willing to report on what occurred—accounts that "must be approached with a great deal of skepticism, except where information can be verified from multiple sources" (Hopmann 2002, 76). Ideally, case studies should rely on a close process-tracing of events, using sources from multiple sides and reports from outside observers as well. As Matz (2004, 362) notes, many of the most important aspects of informal communication through tone, body language, and so on "have much to do with negotiating success, but they are extremely difficult for authors to recapture after the event." The dependence on individual recall may give studies of negotiation "a distorted 'data base' from which to generalize" (Matz 2004, 359).

Equally problematic is the tendency of first-hand accounts to rely on what Tilly (1998, 257–58) called "standard stories": straightforward narratives that take a limited number of actors, ascribe clear motivations to them, and conclude that all relevant events were the result of those actors' pursuit of their interests.[6] Analyses of negotiations that then rely on this type of narrative first-hand account will tend toward a similar structure, overemphasizing specific turning points or causal factors that were probably just one element among many, in a negotiating process "replete with interactive, indirect, and relational causes" (Holmes and Yarhi-Milo 2016, online material p.2).

The specific element this paper explores—digital mapping technologies—suggests an even more complex possibility. Actors involved in negotiations often construct a narrative emphasizing

[6] My thanks to one of the anonymous reviewers for bringing this issue to my attention.

the revolutionary nature and implications of new technologies. They not only do so after the fact but also, sometimes, during the negotiations themselves. Thus, even though this type of narrative is sometimes constructed very much in the way of a "standard story," it is real to the participants themselves, and thus can potentially be consequential for the negotiation processes and outcomes (in a sort of self-fulfilling prophecy).

Evidence Available on the Dayton Negotiations

The available information on mapping at the Dayton negotiations comes both from general sources on the negotiations and from a few brief reports on mapping directly. One of the main general sources is Richard Holbrooke's (1998) book on Dayton, which is not unproblematic: memoirs like this "may provide valuable information from the inside of very private, even secret negotiations, but they must also be utilized very cautiously" (Hopmann 2002, 76). There is also a declassified internal report from the U.S. State Department (U.S. Department of State 1997), as well as a collection of internal State Department documents that have been declassified recently.[7] Information on mapping is sprinkled throughout these sources. Studies specifically addressing mapping include Johnson (1999), Hasik (2008, ch.6), and Corson and Minghi (1996).

Although this represents a significant body of material (especially when compared to other cases of digital mapping in negotiation), it still faces an array of challenges. First, nearly all the material is very U.S.-centric, in terms of authors, focus, etc. Very little is reported directly from the three Balkan delegations on their use of, or reaction to, the new digital mapping systems. Nearly everything on them is second-hand, reported by the U.S. delegation. The American sources, moreover, rely on an overlapping set of materials to an unfortunate degree: Holbrooke's memoir was written in conjunction with the State Department internal report (with very similar structures and impressions), and most of the declassified documents are the primary materials for those two secondary sources.

Second, it is difficult to get a clear cross-time picture of a single issue or discussion. Ideally, we would have information on how negotiations over a particular issue proceeded before and after the introduction of a digital mapping tool (since these systems, while present in Dayton from the beginning, were sometimes brought to bear at a particular point). Unfortunately, the level of detail in existing reports is inadequate for this task.

Third, there may be good reason to expect participants to construct a post-facto "standard story" around new mapping technologies. For the reports whose express purpose it is to look at the role played by digital mapping (e.g., Johnson 1999), that impetus is particularly strong, since these are often written by technicians or officials who are closely tied to the use of new tools. Thus, when Johnson (1999, 2) writes that "digital mapping became a core tool, used wisely, that contributed significantly to the success of negotiations at Dayton," this is not necessarily false, but it is exactly what we would expect this analysis to conclude. The focus on the importance of digital mapping by the creators, users, or advocates of those tools has continued in official circles since Dayton. For example, the official history of the U.S. National Geospatial-Intelligence Agency (the successor to the DMA) starts with a preface that mentions examples of "geospatial intelligence" as diverse as the Lewis and Clark expedition and the raid on Osama bin Laden, and then discusses the participation of the DMA at Dayton. The introduction, literally titled "Something Happened in Dayton," argues that digital mapping made peace possible in the face of Milosevic's intransigence (Office of the NGA Historian 2011, 1).

Yet, when considering the importance attributed to mapping in *general* narratives or documents, the picture becomes more complicated. Holbrooke and others do not set out to demonstrate the importance of mapping but instead note it, albeit often in passing, as one essential component. Reports on negotiations tend to focus on a few key elements—events, personal characteristics or relationships, or even technological tools—and ascribe significant causality to them. Digital mapping at Dayton was reportedly a shocking, impressive, and even entertaining set of technologies, all factors that would make it even

[7] Available at the Clinton Digital Library: https://clinton.presidentiallibraries.us/collections/show/37.

more likely to be incorporated as one of those key elements in participants' recollections of events and in their post-facto construction of "standard story" narratives.

As noted above, however, if that effect (technology felt to be more important than it "really is") is present *during* the negotiations themselves—i.e., if participants are impressed by the tools and thus pay more attention to them—this could become a self-fulfilling prophecy: technical systems actually end up having an important effect because participants think they should have an important effect. The references to digital mapping in general narratives like Holbrooke's or in primary documents like U.S. State Department internal memos might point toward such a process.

These challenges to finding enough available information in existing sources probably make it impossible to conclusively test any strong hypotheses about the direct impact of digital mapping on getting to a settlement at Dayton, but they do enable this article's exploration of negotiation processes that were altered, in diverse ways, by those tools.

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