Surveying in British North America: a homology of property and territory

4. Surveying in British North America: A Homology of Property and Territory

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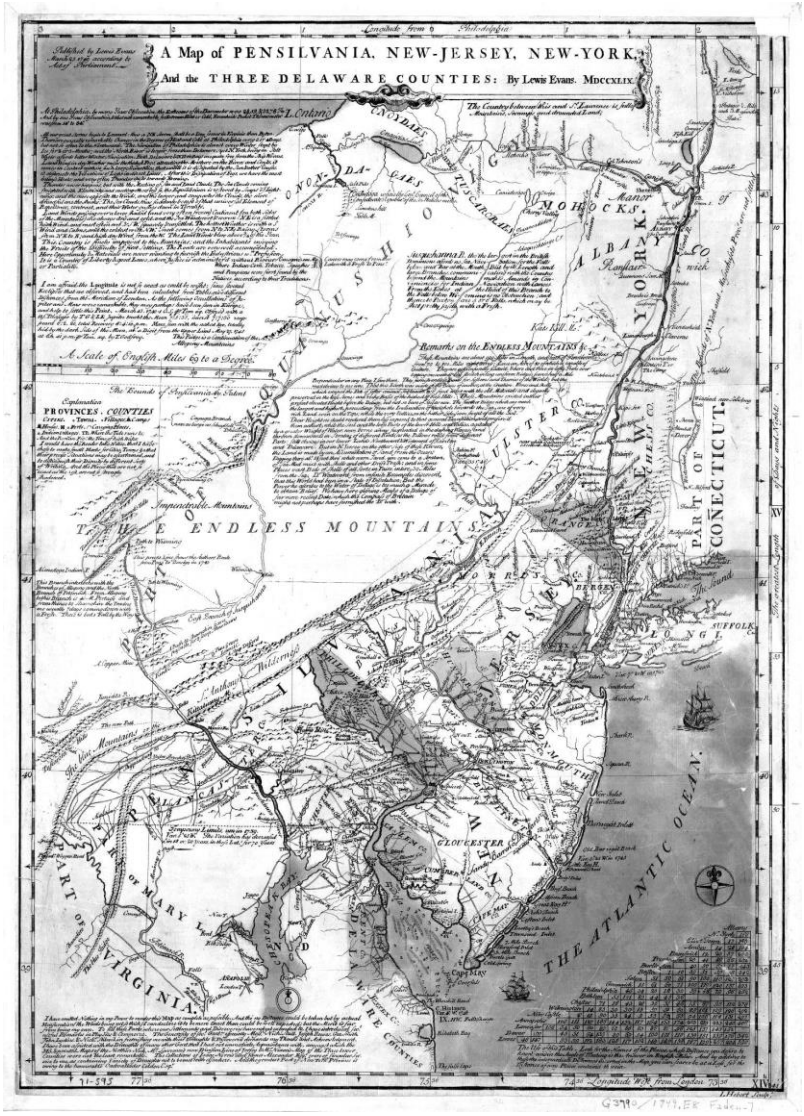
Without explaining why, Lewis Evans' 1749 'Map of Pennsilvania, New-Jersey, New-York, and the Three Delaware Counties' shows the colony of Pennsylvania as having two different northern boundaries. One of them is the boundary of the colony's patent, given by an imperial declaration. The other is the limit of the Native American land purchases. The former boundary is labelled 'the Bounds of Pensilvania by Patent', while the latter has no label, but the name 'Pensilvania' in large letters is clearly confined deliberately within it. Which one was the real boundary of Pennsylvania?

Pennsylvania's two northern boundary lines in this map, which do not differ from each other according to any clear pattern, illustrate the ambiguous relationship between spaces of landownership and those of colonial authority. But beyond simply representing this ambiguous relationship, the map also contributed to it. On seeing the new map displayed in a New York print shop shortly after its publication in 1749, an anonymous landowner of New York Province wrote to the *Pennsylvania Gazette* complaining that New Jersey's northern border was shown too far north and that the cartographer must have been employed by the East Jersey proprietors to try to steal more land (Klinefelter 1971, 22). The East Jersey proprietors were

only owners of the land, and had no powers of government, yet it was the East Jersey proprietors and not the provincial government that the anonymous writer was concerned with. As with many of the boundaries on the Evans map, the New Jersey-New York boundary was both a property boundary and an intercolonial one, and as this episode suggests, property boundaries could be more important than intercolonial boundaries. This chapter explores that ability of maps to make connections between different kinds of socio-political activity.



A Map of Pensilvania, New-Jersey, New-York, and the Three Delaware Counties (Evans and Hebert, 1749)

One of the most distinctive aspects of the English settler colonies in America, some historians have argued, was its emphasis on control of land. While other European empires in America laid claim indiscriminately to mountains, rivers, and souls, English settlers explicitly coveted the land of Native Americans and worked to justify methods of separating them from their land (Greer 2017, 191). At the same time, the English colonies, particularly in the seventeenth century, lacked a great deal of military might, and were populated to a large extent by newly created landowner settlers (Keene 2002, 62). In this context, cartography, and even more so, the surveying work which went into it, became a crucial element in the making of empire (Brückner, 2006). With many settlers emigrating to these colonies in pursuit of land, governments found regulating the process of tracing, memorializing, and increasingly marking and mapping property boundaries to be crucial to avoiding civil disputes that could cripple the nascent colonies.

While there is much scholarship on the role of private property within colonialism (eg. Bhandar 2018, Blomley 2003), the relationship between individual property claims and other, concurrent forms of colonial spatial claims, such as the colonial charters of the English North American colonies, has not always been fully addressed. In particular, the technologies and practices of surveying provided a crucial connection between property boundaries and intercolonial boundaries, which resulted in a mutual reinforcement. This kind of connectivity I call a 'homology', a 'correspondence in type and function' which goes beyond analogy to denote a historical linkage between practices, ideas, or structures (Owens 2015, 6). Far from being a coincidence that both property boundaries and intercolonial boundaries were surveyed, often by the same people, the growing hegemony of surveyed mapping meant that practically any kind of boundary, large or small, in any part of the world, was in principle amenable to the same kinds of techniques.

From this historical basis, in this chapter I argue that mapping and surveying can be important for the making of empire in two distinct ways which are yet related. On the one hand, surveying was an instrument of settlers aiming to become landowners, as well as an instrument of colonial governments attempting to expand their settler populations without collapsing in a mess of property disputes. Surveying was used for a variety of purposes, some legal and institutional, and some more rhetorical and symbolic. On the other hand, however, committing a colony to an institution of surveyed private property had larger consequences that could scarcely have been intended. In the process of committing the colonies to the spatial grammar of surveying, the territories of entire colonies became tied to the same process of boundary surveying. Not only did property in land have to be surveyed, but the competition for land between neighboring colonies came to be plagued by much the same kinds of disputes. In understanding the relationship between mapping and empire in the English North American colonies, then, we must attend to both the rhetoric and the unintended consequences of surveying.

I proceed in four main sections. First, I engage with two different understandings of the relationship between mapping and empire, which I refer to as 'rhetoric' and 'unintended consequences'. Second, I elaborate on how the idea of homology can illuminate the connection between those two understandings of mapping and empire. In the third and fourth sections, I investigate in more historical detail how each of these logics worked in the English North American colonies.

Imperial Cartography: Two Perspectives

How can we conceptualize the significance of maps and surveying in the making of empire? One well-known paradigm through which scholars of cartography have theorized the significance of maps is what I will call 'rhetoric'. This was one of the main contributions of J.B. Harley, who in many ways instigated systematic inquiry into the role of mapping and surveying in politics and society (Harley 1989). Harley criticized the discipline of cartography for its dogmatic scientism and its denial that social theory had anything to say about maps. The main characteristic of this scientistic view of cartography was an epistemology which defined truth in terms of mathematical accuracy and correspondence with systematic observation.

While Harley opened up many avenues for those interested in maps and social theory, his focus was on the rhetorical power of maps. As he put it,

> My position is to accept that rhetoric is part of the way all texts work and that all maps are rhetorical texts. Again we ought to dismantle the arbitrary dualism between 'propaganda' and 'true,' and between modes of 'artistic' and 'scientific' representation as they are found in maps. All maps strive to frame their message in the context of an audience. All maps state an argument about the world and they are propositional in nature (Harley 1989: 11).

His argument used the language of textual criticism, but it extended beyond visual representations themselves to the surveying techniques that lay behind many of them, which he argued conveyed a 'rhetoric of neutrality'. Indeed, his intervention was intended not only for an academic field of study but also those within the community of practitioners whose aim it was, through technological means, to eliminate rhetoric from maps.

The meaning of any particular text or map, with Derrida, might be 'undecidable', or in other words, 'enigmas, problems to be explained, prison-houses which lock the understanding away from the world' (Harley 1989, 8). But at the same time, Harley's main concern was, with Foucault, to show how maps are enmeshed in historically particular power struggles, and are never neutral reflections of an external world. This was not necessarily limited to instrumental uses of maps, in which the cartographer is fully aware of and in control of the intervention that the map makes, and makes the map expressly for the purpose of bringing about some particular outcome. Yet the suggestion remained at least of a general alignment between the positionality of the cartographer and the political significance or effect of the map. For example, 'maps of local estates in the European *ancien regime*, though derived from instrumental survey, were a metaphor for a social structure based on landed property' (Harley 1989, 10). In other words, while the immediate concerns of the mapmaker in these cases may have been limited to representing individual measurements, their broader significance in underpinning an agrarian system supported those who paid for the maps. Likewise, a map purporting to show particular borders as a neutral reflection of the world might in fact represent an aspiration rather than a reality. In this case, the map would have to be understood as a means towards the making of a 'spatial reality' (Strandsbjerg 2010) by using the grammar and techniques of science to convince an audience of its truth.

This model of mapping and surveying as rhetorical has, from its beginning, been a key contribution to the study of how empires are made. As Harley noted, maps have long been 'weapons of imperialism', particularly in that lands were 'claimed on paper before they were effectively occupied' (Harley 2001, 57). Taking the example of colonial North America, he argued that it was cartography that allowed Europeans 'to say, "This is mine, these are the boundaries"'. In other words, cartography compensated with rhetorical power where empires

were lacking in other forms of power. Even surveying that was less specifically tied to visual representation in maps, such as the ancient Roman centuriations that laid out land in geometrical grids, was 'an expression of power'.

Sometimes, however, maps have significance exceeding the cartographer's purposes. Consider the map commissioned by Louis XIV in the 1680s which, because of its superior accuracy, decreased the apparent size of France (Konvitz 1987, 7-8). More generally, the rapid increase in mapmaking activity in Europe beginning in the late fifteenth century, including many state maps, initially had very little state sponsorship. It was only by the end of the sixteenth century that rulers regularly took an active interest in having maps made (Biggs 1999). One reason for this is the extreme expenses required for large-scale projects to measure the size and dimensions of an entire state. If geometrically representative maps had rhetorical value which could be deployed politically, a potential patron would have to be convinced that this was worth its production costs. While no doubt maps were implicated in political struggles, it cannot be assumed that any particular powerful interest was behind their creation, or that a map had any particular effect that it appears to intend.

Against this backdrop, Jordan Branch has argued that important effects of mapping that occurred in international relations were indeed political but do not seem to have been intended by anyone (Branch 2014, 88). In particular, in the sixteenth and seventeenth centuries, European maps began to show authority as bounded by carefully drawn borderlines, and only afterwards in the eighteenth century, these precisely delimited borderlines began to appear in treaties as well. Branch shows that new mapping practices led to a change in authorities' background knowledge about how authority was held, which then in turn led to a change in territorial practices that resembled mapping practices. These changes were certainly political,

because if maps were taken for granted as true depictions of the world, polities that could not be mapped in the new way would simply disappear. This would happen not only to the temporal authority of the Roman Catholic Church, but also to countless minor princes and lords whose authority depended more on feudal relations with a superior than on precise territorial boundaries. Nor were the advantages of having accurate maps unnoticed by those polities that were becoming increasingly territorial, such as France. Despite their territory being apparently shrunk by more accurate cartography in the 1680s, French authorities found that maps were extremely useful for projects such as tax reform and simplifying administrative divisions.

Again, this way of understanding the significance of maps had important consequences for the study of empire, but at the same time brought to light consequences which went beyond rhetoric. Two particular contributions can be noted here. First, as Branch noted, European empires were making imperial claims in the Americas using cartographic lines several centuries before they were expressing state boundaries within Europe using the same techniques. What this suggested for the making of empire was that this was not a process of simply applying age-old European techniques of rule, but that imperial construction was in some sense a laboratory of new technologies of domination. Second, it also suggested that in some cases cartography could actually be quite counterproductive for certain kinds of empire. In particular, with the popularization of a map-based worldview, types of authority which were less amenable to depiction through these new technologies became delegitimized, such as the Holy Roman Empire's claim of rulership over all Christendom, or the city-league of the Hansa (Branch 2014, 27).

On one hand, Branch's account shows how the importance of maps for the making of empire may be more than rhetorical, having wider implications beyond the intentions of the mapmaker.

Despite the shift in the nature of authority towards linearly defined territory being in the interests of states such as France, these states do not seem to have promoted this particular effect of cartography beyond their own frontiers. On the other hand, the advantage of the rhetorical model, in relation to the notion of unintended consequences, is its focus on power and its scepticism of any claims of innocence on the part of maps.

These two ways of understanding maps are not mutually exclusive, as the remainder of this chapter will try to show. In the next section, I interrogate the intersection between them conceptually, before examining colonial maps of British North America in order to illustrate how these two models might be connected.

Cartographic Representation as Enabler of Homologies

While all cartography in principle can be used in multiple kinds of social contexts simultaneously, this chapter focuses on particular features of Ptolemaic mapping. Ptolemaic here means following broadly many of the techniques of cartography set out by the ancient Greek writer Claudius Ptolemy in his *Geography*, including longitude and latitude, projection, and proportional representation. These techniques in various ways, at various times, became more common in European mapping during the fifteenth and sixteenth centuries (Branch 2014, 51-55). Homogenization is a crucial implication of many of these techniques. Unlike in many early medieval European maps of the world which were explicitly centred on Jerusalem, every point on the map is, in theory, of equal significance, and it is centred nowhere. With proportional representation, things are represented according to quantitative measures, rather

than qualitative characteristics or relations, and so one set of measuring principles in theory suffices for everything.

To take this a step further, where Ptolemaic mapping flattens out and obscures qualitative differences between represented objects, it creates a certain kind of connectivity among those objects that appear the same. So not only does the space within a territory appear homogenous, suggesting that power is evenly spread within that space, but may also do this for all territories within the scope of the map in the same way (Strandsbjerg 2010, 83). The linearization of borders which took place after linear borders began appearing on maps was not an isolated process in each individual state, but instead the homogeneity of Ptolemaic mapping suggested that if territory could be linearly defined in one territorial unit of authority, then this could be done in all of them. The same technological instruments and techniques of measurement could be used in any part of the world, and in many cases this created connections across distance.

To take the case of colonial North America, the borders established by English charters in the seventeenth and eighteenth centuries created a relatively regular pattern of parallel east-west lines across the eastern part of the continent, along with the occasional diagonal line (Sack 1986, 10). While these colonial lines were being drawn, and as they took on more importance, a practice of boundary surveying emerged which was increasingly professionalized and homogenized. By the late eighteenth century, for example, it was possible for one surveyor, David Rittenhouse, to have personally surveyed boundaries for more than half of the Thirteen Colonies (Cazier 1976, 13). In defining the particularly difficult Maryland-Pennsylvania border, the empire had to draw on the best of its network of scientific expertise. Introduced to them by the Astronomer Royal in London, the colonial proprietors selected astronomer Charles Mason and surveyor Jeremiah Dixon, who had just returned from observing the transit of

Venus in Cape Town for the Royal Society (Danson 2017, 74). The spatial homogenization of Ptolemaic mapping thus in principle puts all borders in connection with a range of scientific practices which seem to be global in remit, unlimited by local particularities.

This particular kind of connectivity that through homogenization Ptolemaic mapping makes possible can be called a homology. A homology is similar to an analogy, as Patricia Owens explains, which is 'a likeness in form or function', but makes a stronger claim than analogy (Owens 2015, 6-7). Claiming a homology exists goes beyond analogy in that it involves an actual, not just comparative, relation between two things. When biologists say there is a homology between organs in two animals, for example, it means not just that there is a similarity but that this is due to the two animals having a common ancestor. Similarly, to say that modern territorial borders are homologous is not just to say they have common characteristics but that they are historically related to one another, in this case through the technologies of surveying and mapping that make them possible.

Importantly for our purposes here, Ptolemaic mapping is not just used for mapping states and the boundaries of their sovereign territory. Instead, the proportional representation of three-dimensional space as two-dimensional and seen from above is the default mode of representation in many very different contexts, from road maps used for navigation to university campus maps. Floorplan diagrams of houses or other buildings which state explicitly that they are 'not to scale' indicate an anticipation that the viewer would normally expect to see such diagrams drawn to scale. Many of these proportional maps show linear boundaries not related to sovereign territoriality, whether to do with administrative units, districts, or other divisions. Many early modern maps using Ptolemaic methods also showed regions as being linearly bounded such as Germany or Italy which at the time did not correspond to any existing

political institutions (Biggs 1999). If there is a basic homology among modern territorial borders which has to do with how they are mapped, does this also extend to all linear borders cartographically shaped by Ptolemaic mapping, no matter the size or nature of what they bound?

Such a far-reaching question is beyond the scope of this chapter, but in the following sections I examine colonial maps of British North America to show how the two models of rhetoric and unintended consequences might be connected together homologically. Whereas the initial territorial claims made by the English and British Empires were bounded on only some sides, and overlapped each other, the colonies that emerged over time tended towards more precise and narrow boundaries (Hubbard 2009). The United States, at independence, had territorial boundaries specified in painstaking detail, although it was later discovered that even the degree of specificity in the 1783 Paris Treaty was far from sufficient, and it took many decades to survey them. To a large extent this was linked to the growing importance of geometrical private property surveying.

These two logics link directly to the question of how the practices of surveying were connected to the making of empire. On one hand, the rhetorical impact of surveyed mapping on empire was felt in the legitimacy it afforded to what were, in practice to a large extent, property titles newly created out of dispossessed Native American land. Surveying, promoted by the colonial state, attempted to be as precise and geometrical as possible in order to reinforce private property. Governing at a distance without great means of direct coercion, a surveyed property regime attempted to bring stability to the masses of often overlapping individual claims. Moreover, it helped protect the private property of many of the officials in colonial

governments, leaving poorer settlers to usurp more Native American land rather than pay increasing prices for already colonized land (Zinn 2003, 54).

But on the other hand, the concern for precision in surveying and mapping spilled over into intercolonial struggles, having implications on the kinds of surveys required for these boundaries as well, and in turn on the politics of competition for land among colonies. In the last section, then, I explore some of the side-effects of surveying which were not necessarily productive of empire. Indeed in some cases, reliance on surveying created a vulnerability of empire, limiting the geographical reach of colonial governments and pitting them against each other.

The Rhetoric of Geometric Property Mapping

The rhetorical effect of geometrical maps, in terms of reinforcing the status and property of landowners in North America, can be traced back to profound changes occurring in the English surveying practice beginning in the sixteenth century. Surveying in England before that time was a multifaceted practice which included investigating boundaries by interviewing tenants and reviewing whatever written records might exist but also providing advice on farming, manuring, draining, and irrigating (Darby 1933; Taylor 1947). Surveyors were well-versed in law and agricultural techniques, and measured the extent of the land often by estimation, sometimes without visiting all the premises. Quantitative measures were only required by statute for 'improved' areas, and even then were often done by counting strips of land. By the early sixteenth century, many of the astronomical and mathematical techniques needed for

accurate surveying existed, but this knowledge had so far remained academic and in Latin (Lindgren, 2007). Numerical measurements and calculations made up a relatively small part of the surveyor's job, and the ability to do advanced kinds of computations was generally unnecessary.

This changed during the enclosure movement, the process beginning in the sixteenth century of fencing and walling in previously open lands, in which landowners absorbed much land that had been held in common (Darby 1933; Taylor 1947). In this context, surveys provided landowners with an opportunity to increase their holdings under the pretext of seeking greater accuracy and knowledge of their property. Many feared that peasants had been 'concealing' part of the land by living on it. The rhetoric of property mapping, in this context, was a way of justifying dispossession, as well as providing a narrative for a rising agrarian bourgeoisie.

When English settlers came to North America, they had partially different reasons for implementing surveys (Greer 2017). Unlike the surveys of the English enclosure movement, which were often done in order to strengthen and expand property titles, in colonial North America surveys were done in order to alienate land which was in theory owned only by the Crown, creating new titles. Whereas landownership in England was derived from the conveyance of rights from person to person from time immemorial, settlers were self-consciously moving in and replacing the existing inhabitants of the land. Whether surveys were done prior to or after settlement, there were no apparently ancient rights to simply measure out more accurately.

Surveys were nevertheless equally important in underpinning the rapid redistribution of land that occurred in the colonies, although here it was mainly Native Americans who were

dispossessed. One reason for this was that the precision of surveys implied fairness and justice, something which many of the English settlers identified with themselves. According to historian Allan Greer, the Protestant empires with colonies in North America more generally, including also the Netherlands and Sweden, believed that a market system of property gave them a moral high ground over their Catholic rivals (Greer 2014). If Native Americans had freely sold the land and had been given adequate compensation, they could not be accused of theft. The French, Portuguese, and Spanish, by contrast, declared sovereignty over indigenous peoples without sharply distinguishing them from their land. As one English observer put it, the French in Canada and Louisiana 'have scarce any other title to the country than what they obtained by usurpation, very seldom asking leave of the natives' (Greer 2014, 76-77). Despite vast differences in circumstances, the free market in property played a similar role of justifying dispossession in North America as it did in England.

The practice of surveying also came with a kind of social capital among the landowning class. By the time of US independence, knowledge of the surveying practice, or at least a passing familiarity with it, to a certain extent pervaded the colonial elite. Both George Washington and Thomas Jefferson, the first and third presidents, had direct experience with surveying (Cazier 1976). Surveying manuals such as John Wing's *The Art of Surveying* and John Love's *Geodaesia* were widely popular among gentlemen planters. Surveying was comparable in social status with other professions which required technical knowledge and could come with formal certification, such as the medical and legal professions. 'Their satin waistcoats, brocaded vests, patent slippers, and powdered wigs were of the latest English fashions' (Hughes 1979, 156).

It was more difficult to find skilled and well-equipped surveyors in the colonies than in England, and the new and somewhat rapidly created colonial property boundaries were constantly in dispute (Greer 2017, 346-354). Yet this only made it more necessary for landowners to learn the practice themselves and further cemented a connection between landowning and surveying. With landowning a general aspiration for white male settlers, surveying became widely dispersed enough that it could be called 'a new form of popular literacy' (Brückner 2006). Less geometric techniques for fixing boundaries persisted, for example in New England, townspeople would perform perambulations, collectively walking the town boundaries together. But these were stripped of their older religious meaning by Puritans, and made to resemble as much as possible the surveyor's blank page with connected lines.

One of the most important surveying manuals published in England in the seventeenth century, John Love's *Geodaesia*, was specifically aimed at settlers in North America (Richeson 1966, 126-7). As the author wrote, he had seen surveyors in the colonies struggle to apply English surveying principles to their fields. So, for example, in the 'thick woods of Jamaica, Carolina, &c', where there are no iron ore deposits, he suggests using a magnetic needle to measure angles (Love 1768, 59). One way to read *Geodaesia* is as a way of bringing the pure, almost metaphysical conceptions of geometry to apply to a particular practical pursuit done by people with no particular level of education beyond basic literacy. In this respect it can be seen within a Protestant religious context in which worldly labour, as opposed to ascetic contemplation, was given an increasing spiritual significance, and in which one's practical vocation was the highest aspiration available (Weber 2001). Love refers to geodesy as 'a study so pleasant, and affords such wholesome and innocent exercise, that we seldom find a man that has once entered himself into the study of Geometry or Geodaesia, can ever after wholly lay it aside' (Love

1768, preface). Yet he takes it upon himself to answer questions that mathematicians, in their academic isolation, would find trifling, but which have left 'young men in America so often at a loss...(particularly in Carolina)', such as how to lay out a field five or six times wider than its length (Love 1768, preface). It is perhaps owing to its exceptional clarity and practical utility that the book was published in thirteen editions over more than one hundred years after its first publication in 1688 (Richeson 1966, 126).

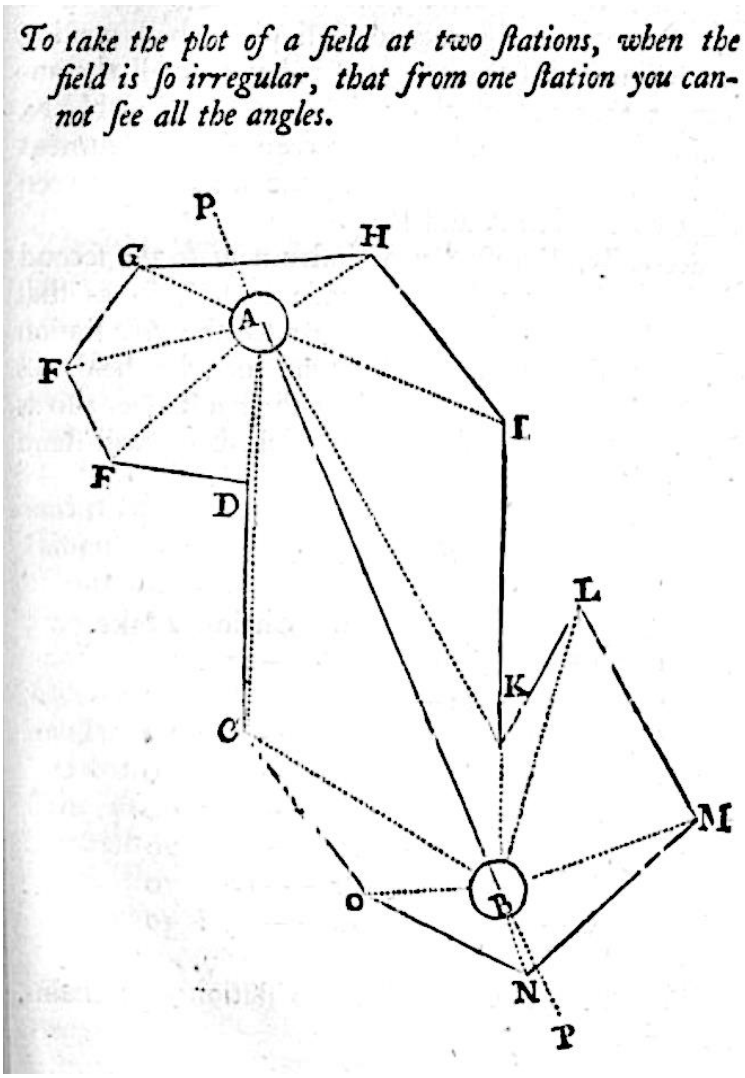


Illustration in John Love (1768, 83), *Geodaesia: Or, the Art of Surveying and Measuring Land Made Easy*. Image in Public Domain.

While settlers on their own looked for ways to solidify their newly invented property claims, some being more concerned with quantitative measures than others, it fell mostly to the colonial governments to try to ensure that these claims did not overlap with each other, and surveying was seen as an important part of achieving this goal. While maintaining a scientifically surveyed property order would privilege wealthier landowners connected to the government and able to obtain skilled surveying, it was mainly thought to reduce the amount of necessary litigation, and potential frontier conflict. This meant that surveying became an important problem for colonial governments. We can see a good example of this at work in seventeenth-century Virginia, where a surveyor-general was appointed in 1621 to control the appointment of county surveyors, who would in turn control how crown lands were parcelled out to private owners (Hughes 1989, 8-19). Because the allocation of land was so contentious, surveyors-general had support from a sizeable faction in the Virginia Assembly and by the end of the century, this position grew to be one of the most powerful offices in the colony. Suspicions grew that the surveying profession was being used for personal gain rather than purely scientific purposes, and this contributed to popular discontent with the government which threatened to escalate into a full-scale rebellion. In response, then, laws were enacted, in Virginia and in other colonies, which mandated that surveyors perform their work up to certain scientific standards and using specific kinds of equipment (Kain and Baigent 1992, 269). The rhetorical force of these laws, and the kind of surveys that they mandated, was to create a distribution of property which was fixed and fair, or at least had this appearance.

These rhetorical effects continued as settlers transitioned from small, weak coastal footholds towards a continental hegemony, and these issues continued to be debated. After independence, Congress saw surveys as part of what would entrench its power over far-away settlers and the

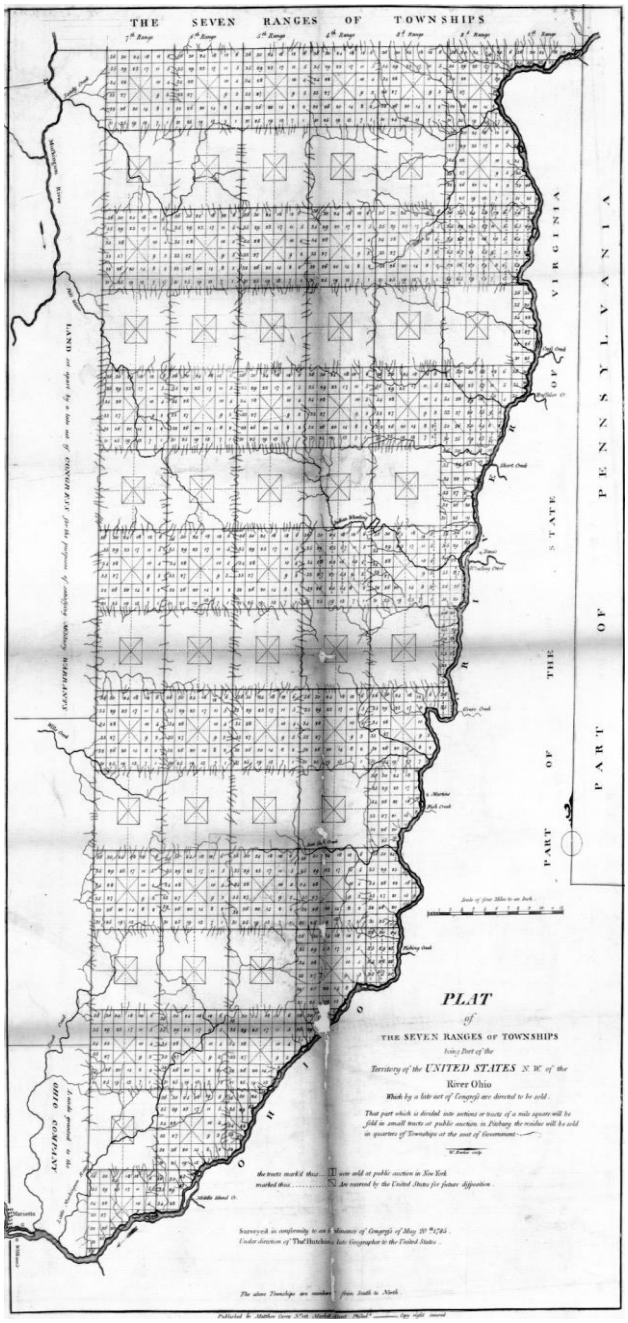
Native Americans with whom they often came into violent contact . Much of the land ceded to the US by Britain, in the western parts of the area between the Mississippi River and the Atlantic Ocean, was at first claimed by but not fully under the control of various individual states. For example, Connecticut and Massachusetts both continued their northern and southern borders westward, in accordance with their original grants, which were specified by lines of latitude going all the way to the Pacific Ocean (Gates 1968). Virginia claimed all of the US territory north of the Ohio river, including the land claimed by Connecticut and Massachusetts. In consolidating the confederation of states, these western lands were ceded to Congress, which would then create new states out of them.

To this end Congress agreed on the Land Ordinance of 1785, which detailed the methods to be used in dividing up this vast area into ranges of townships running north-south (Onuf 1987; Hubbard, 2009). By this time the perceived importance of the technical practices of surveying had become so great that roughly the first third of this semi-constitutional piece of legislation consisted of detailed instructions on surveying methods:

> The lines shall be measured with a chain; shall be plainly marked by chaps on the trees and exactly described on a plat; whereon shall be noted by the surveyor, at their proper distances…

> The plats of the townships respectively, shall be marked by subdivisions into lots of one mile square, or 640 acres, in the same direction as the external lines, and numbered from 1 to 36; always beginning the succeeding range of the lots with the number next to that with which the preceding one concluded…

The geographer and surveyors shall pay the utmost attention to the variation of the magnetic needle; and shall run and note all lines by the true meridian, certifying, with every plat, what was the variation at the times of running the lines thereon noted (White 1983, 11-12).



Plat of the Seven Ranges of Townships (Hutchins, Barker, and Carey 1796)

These surveys had at least three results from the rhetorical point of view. First, this process of surveyed settlement was designed to contain disputes and conflicts which could proliferate violence and legal complications (Onuf 1987, 88). Colonial elites imagined the frontier as a violent space and viewed both Native Americans and many settlers as uncivilized, and they hoped that fixing clear property boundaries would reduce the potential for conflict between them. It was assumed that there would be a mad rush for this land once it was opened to settlers, as myths spread about its ideal qualities and, very much mistakenly, how this land was spared the harsh winters of the Northeast. While the British Empire had tried to simply prevent settlers from going beyond the Appalachian Mountains, Congress decided to have the western lands surveyed in advance. Boundary disputes also arose between new states, as they had existed between colonies before independence, and some of these threatened to turn violent. With Congress's power and constitution on unstable ground, surveys could provide a kind of scientific certainty.

Second, Congress badly needed money in the wake of its War of Independence, and selling off the western lands was a major opportunity to fulfil this need. Other ideas existed of how to use the land, such as using it to pay soldiers' bounty claims or to maintain a kind of middle ground between wilderness and civilization which was thought to help preserve the liberty of the republic. These ideas lost out to a general acceptance that the land would pay for the war. Moreover, selling the land to individual citizens was promoted ideologically as a means to stimulate the emergence of a free market in land, paradoxically, if done in a controlled way (Festa 2013; Onuf 1987, 35). Congressional leaders saw the sale of land to individuals, and thus the cultivation of docile yet industrious developer-settlers, as productive for the common good. Many of them, such as George Washington, themselves having a history of involvement

in land speculation, knew that an unrestrained scramble for wealth could destroy wealth and take control away from Congress. Speculators threatened to take up all the best land, and as a product of fierce competition drive the price of land down to a point where it would not pay for Congress's war debts. Meanwhile the land would sit in the hands of speculators rather than being developed, and would remain defenceless against Native Americans or other European empires. As always, alienating the land into a free market in property required commodifying it by geometrically surveying it, and only surveys could serve to divide up vast areas of land into small pieces in a way that could be controlled by the central authority of Congress.

Third, Congress needed to avoid groups of separatist settlers from breaking out of its control. Groups of settlers were organizing their own governments, with Vermont being the only successful instance. As another example, a group of colonists in Western Virginia had been trying in the decades preceding the War of Independence to create a new colony there within the British Empire, to be named Vandalia in honour of the Queen Consort of England, Charlotte of Mecklenburg-Streilitz, who was supposedly descended from the Vandals (Anderson 1979). While the initiative mostly faded away during the War of Independence, the threat of separatist movements was apparent enough for Rhode Island's Congressional delegates to predict that 'In the course of a few years the [Ohio] country will be peopled like Vermont. It will be independent, and the whole property of the soil will be lost forever to the United States' (Onuf 1987, 29). In addition to Native Americans, other European empires, and speculators, even the settlers themselves were potential threats to Congressional authority. Many, especially those who travelled the furthest from settler-populated areas, were considered by elites to be 'corrupted', 'disorderly', or 'nearly related to an Indian' in manners (Onuf 1987, 31).

Yet the emergence of a widespread concern with accurate surveying, and the normalization of referring to fixed and mapped linear boundaries in property disputes also had consequences that are not so easily seen as instrumental or purposeful. In particular, the transformation of landscapes into geometrical spaces eventually necessitated a transformation in the kinds of territorial agreements and disputes that could take place. In the next section I examine how the connection between property boundaries and intercolonial boundaries, through mapping, had important consequences for the international politics of British North America.

Unintended Consequences: The Linearization of Territoriality

Modern territoriality, as defined by linear boundaries, was not brought over from Europe by settlers. In Europe at the time, such precise linear borders were not commonly agreed between polities, with major peace agreements concerning territory being phrased almost exclusively in lists of objects and places (Branch 2014, 125). In contrast to this, linear definitions of authority predominated in the English North American colonies in the seventeenth century, as an outcome of property surveys. In this way the rhetorical logic of property surveying was transferred in its application to colonial jurisdiction. Disputes between colonies tended to result from disputes over the ownership of specific lands, and so addressing these disputes involved similar surveying practices, writ large.

We can see an early example of this in a property disagreement between colonists of Plymouth and Massachusetts Bay colonies, two of the first English colonies to survive permanently, in the 1630s shortly after they had been established. In the predominantly Congregationalist New England colonies, lands were granted to individuals by townships, which retained much

autonomy. A dispute arose between the inhabitants of Scituate, a Plymouth town, and Hingam, a Massachusetts town, over some meadow grounds. Some Hingam people 'presumed to alotte parte of them to their people, and measure & stack them out', but then some Scituate people took the stakes out and threw them away (Bradford 1856, 368). Because the two towns were in different colonies, a new practice had to be improvised. In this context the colonial governments decided to appoint commissioners to determine a line, and a 'mathematician' was sent to survey this line (Dean 1897, 170). This would serve for the 'avoiding and preventing of all differences and controversies that might arise about or concerning the extents and limits of the patents of New Plymouth and Massachusetts Bay' (Shurtleff 1855, 127).

In 1641 the same surveyor was sent to survey the Massachusetts border with Connecticut, addressing a dispute that was also instigated by private property claims (Shurtleff 1853, 323). The town of Springfield, on the Connecticut River and governed by Connecticut, had already been experiencing strained relations with the government in Hartford, which disapproved of Springfield's dealings with the nearby Pocumtuc Native Americans (Green 1888, 58-61). Springfield was charged with buying maize from the Pocumtucs for Connecticut, but the Pocumtucs did not want to sell maize at the price being offered, and in response Connecticut sent up an armed contingent to force the sale. Upset by this interference, Springfield requested that Massachusetts include it within its boundaries, in order to cut ties with Connecticut. Massachusetts' subsequent letter to Connecticut reveals the assumptions underlying the politics of space between colonies, focusing on recent land grants made by Connecticut that it believed 'to bee within our patent' and 'to belong to us', and informing Connecticut that 'wee intend (by Gods help) to know the certeinty of o^{r} limitts, to the end that wee may neither intrench upon the right of any of o^{r} neighbo^{rs}, no^{r} suffer o^{r}selues & o^{r} posterity to bee deprived of what rightly belongeth unto us…' (Shurtleff 1853, 324).

According to its colonial charter, then, Massachusetts sent surveyors to find the point three miles south of the southernmost point on the Charles River, and then run a line due west from there. When the survey found Springfield to fall on the Massachusetts side of that line, Connecticut's response was not to rely on Springfield's having been founded under Connecticut jurisdiction or its lack of authority to unilaterally secede. Instead, Connecticut disputed the credentials of the surveyors, calling them 'obscure sailors' who had apparently not even run the line at all but instead sailed around Cape Cod and up the Connecticut River to a point they thought was at the same latitude as their starting point but was actually some seven or eight miles to the south (Bowen 1882, 19).

This linear geometric logic also affected some inter-imperial boundaries, but this applied unevenly, depending on where settlements, and thus property surveys, were. We can see this by contrasting two agreements made by New Englanders, one with the French and one with the Dutch. The Dutch in New Netherlands pursued a kind of settlement similar to that emerging in New England, leading the settlers of the two empires to attempt to negotiate a linear boundary. In contrast, the French presence in Maine did not involve a significant settler population, and by extension, it did not involve property surveys, making a linear boundary unnecessary.

In the Treaty of St. Germain in 1632, England returned Canada and Acadia to France after having briefly seized them, but did not define their boundaries (Davenport 1917, 347). In 1635 the French co-lieutenant-general Charles d'Aulnay captured and fortified an English trading post at Penobscot, or Pentagoet, marking the westernmost extent of French control on the Northeastern coast (Faulkner 1981). Strife had broken out between the two co-lieutenant-

generals of Acadia, and the other, Charles de la Tour, attacked Pentagoet in 1643 with the help of some Massachusetts colonists. The embarrassed Massachusetts government sued for peace, while still complaining about the French seizure of Penobscot. This resulted in a 1644 agreement between the New England Confederation and New France which established peace and free trade, and that 'if any occasion of offence shall happen, neither of them shall attempt any thing against the other in a hostile way…' No boundary or frontier was mentioned in the treaty, and the only contact between the English and French implied by it was through trade. With the area surrounding Pentagoet controlled by Etchemin Native Americans, and with few French settlers coming into contact with the English by land, there was little French influence on property boundaries in the area (Price 1995, 77). As a result, it should be no surprise that there seems to have been no perceived need for a French-English boundary.

The Dutch Empire, however, did alienate land to private owners in the lower Hudson river valley, and in this context we do see a linear border emerging between the Dutch and the English. While the Dutch West India Company was initially motivated primarily by Native American trade, especially in fur, this failed to produce suitable profits, and so in order to facilitate trade, the company introduced settlers (Rink 1978). In theory, properties would come with obligations to feudal lords called *patroons*, but this proved difficult to implement in practice, because of the availability of land and the nearby presence of non-feudal colonies, and so the Dutch system, like New England, approached individual ownership of land (Keene 2002, 66-67). In 1650, then, representatives of the Dutch and English settlers agreed on a boundary:

> The bounds upon the mayne to begine at the west side of Greenwidge Bay, being about 4 miles from Stanford, and soe to runne a northerley lyne twenty miles up into the cuntry, and after as it

> shalbee agreed by the two goverments of the Duch and of Newhaven, provided the said lyne com not within 10 miles of Hudsons river (Davenport 1929, 5).

The distance of twenty miles inland makes sense as an outcome of settlement, as this was roughly the extent of the patroonships concentrated into one area. Unlike the absence of French settlement in the area of Acadia nearest to New England, Dutch landowners did have an important influence on the layout of towns and properties that remains today (Price 1995, 220).

In creating a linear boundary, the settlers were imagining dividing up this land between their respective empires in the same way that they would between individual landholders, as if on a survey map. This is illustrated further by a dispute over this border that later emerged between the colonies of Connecticut and New York (Bowen 1882, 69-72). In 1664, during the Second Anglo-Dutch War, England conquered New Netherland from the Dutch, leading to a renegotiation of the boundary, which was now to run north-northwest. It became apparent, however, that the 1664 line was agreed on the false assumption that it would not give Connecticut any land within twenty miles of the Hudson River. In fact, that line would not only have crossed the Hudson but would have included most of the European-occupied area of the province of New York. At the same time, New York's claim included several Connecticut coastal towns, where it tried and failed to extend its jurisdiction by issuing arrest warrants. A compromise, then, was agreed on in 1683 which would rely on abstract geometry rather than conflicting claims and evidence. Connecticut was allowed to keep most of the coastal towns it claimed, but in exchange, if that land should

> Diminish or take away any Land within twenty miles of Hudsons River that then soe much as is in Land Diminished of twenty miles from Hudsons River thereby shall be added out of Connecticut bounds unto the Line aforemenconed & Parallel to Hudsons River and Twenty miles

Distant from it the addition to be made the whole Length of the said Parallel line and in such breadth as will make up Quantity for Quantity what shall be diminished as aforesaid (Van Zandt 1976, 73).

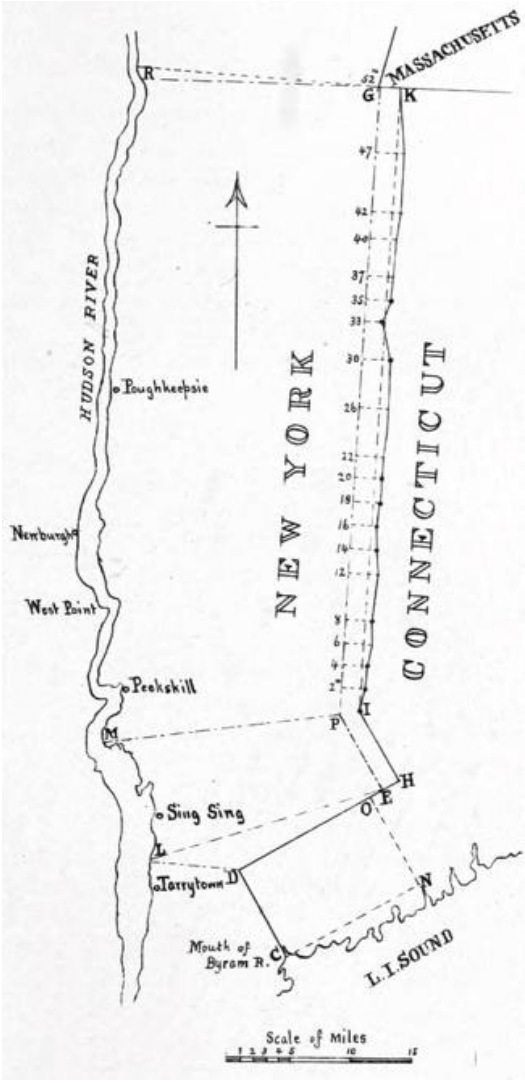


Illustration in Clarence Bowen (1882, 75), *The Boundary Disputes of Connecticut*. Image in public domain.

In other words, in exchange for the coastal area, Connecticut would have to give to New York a very thin strip of land all along the rest of the border, to which the quantitative area, calculated on paper, would be equivalent. Agreements such as this tried, and at least in the case of the

1664 agreement, failed to reduce colonial authority to geometrical space as it existed on a property surveying map. While officials debated over the intentions of the 1664 negotiators to include particular areas of settlement, they did not question the type of agreement itself, which did not mention any of these settlements in the actual text. Rather than taking up problems of representation as such, the structure of the 1683 compromise resembled more closely the concerns of John Love in *Geodaesia*, such as how to impose pure and calculable mathematical forms onto a landscape that defied such purity.

Yet although the rhetoric of quantitative survey maps was one of stability, purity, abstraction, and precision, and many looked to them as the natural solution to disorder of various kinds, surveys did not always work this way. In fact, the growing expectation that quantitative surveys were the only source of geographical knowledge often contributed to the conditions which were imagined as disorderly and called for surveys in the first place. One source that historians have often looked to for settlers' ideas of order on the frontier is the writings of William Byrd II, a Virginia squire who was part of a boundary survey between Virginia and North Carolina (Boyd 1929). In his *History of the Dividing Line*, he recounts how a territorial dispute between the two colonies arose. When the Province of Carolina was created in 1663, with a northern boundary of 36° N, the most recent southern boundary of Virginia had been set by its third colonial charter at 30° N, leaving a very large potential overlap of six degrees of latitude (Van Zandt 1976, 92).

This numerical overlap was a somewhat common occurrence among English colonial charters in the seventeenth century. Virginia's northern boundary, as set in its second charter of 1609, was a line running from a specified point on the Atlantic coast 'West and Northwest' all the way to the Pacific Ocean (Van Zandt 1976, 92). Such a boundary would, in theory, overlap

with any of the more northerly colonies established in the following decades which were defined by latitudes stretching to the Pacific Ocean. The revealing aspect of these geometrical overlaps is that the reason for the confusion was not because of a lack of available geographical knowledge. If this had been the case, we could draw the conclusion that such problems are only a temporary limitation on the power of cartographic boundaries, which can be overcome by gathering some additional amount of knowledge. Instead, the abstract, numerical nature of the boundaries given in the overlapping colonial charters shows that empirical knowledge of particular locations was not lacking but simply irrelevant to several of these disputes, and that these territories overlapped not only in practice but also in theory. These were contradictions that no amount of surveying could resolve.

In response, King Charles II issued a second charter in 1665 which specified that the boundary between Virginia and Carolina would be a latitude defined by 'Weyanoke Creek, lying within or about' the latitude 36° 30' N (Boyd 1929, 10). The identity of this creek, however, was contested in the following decades, with fifteen miles between two different possible creeks. Byrd claimed that settlers entering the area 'took out Patents by Guess', either from Virginia or Carolina, and that Carolina benefitted from this arrangement because the taxes and the terms of taking up land were easier under Carolina law (Boyd 1929, 11). Yet when Carolina sent the English authorities over Virginia a request that a boundary survey be done, as early as 1681, there was no reply (Boyd 1929, xvii-xix). Only in 1705 did Virginia agree to a boundary commission, and an attempt in 1710 at a joint survey failed. This was for various reasons, for example, the Carolina representatives found the Virginia commissioners' instruments faulty. Only in 1728 was part of the line actually surveyed.

William Byrd II, who was eventually assigned to the commission which finally carried out the survey, left an account of the expedition which consistently portrays the boundary region as one of utter disorder and full of lazy inhabitants. He considered all the inhabitants of the area to be Carolinians, 'Apprehensive lest their Lands Should be taken into Virginia. In that case they must have submitted to some Sort of Order and Government' (Wohlpart 1992, 8). He imagined North Carolina as a state of nature, where people live off of nature's bounty and produce nothing of value. Because pork was 'the staple Commodity of North Carolina', for example, he wrote that this made the inhabitants 'extremely hoggish in their Temper, & many of them seem to Grunt rather than Speak in their ordinary conversation' (Boyd 1929, 55).

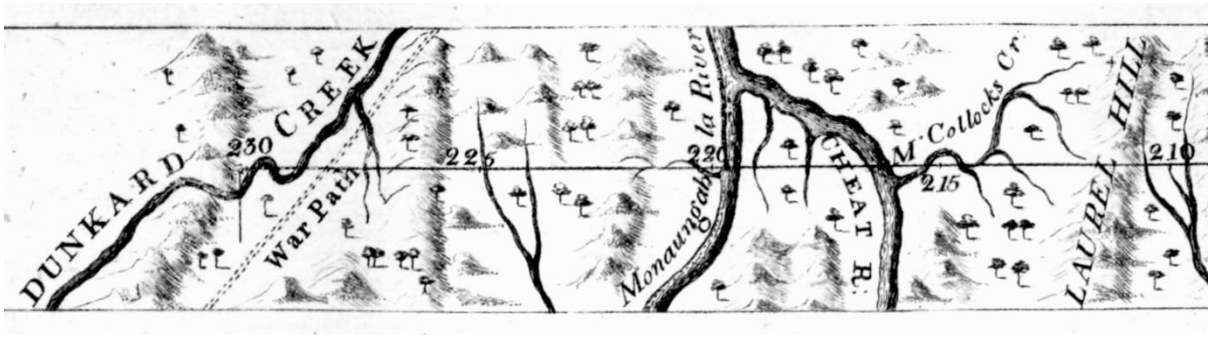
The growing expectation that borders were created by official surveys, which had to be both accurately mapped and clearly marked, could not always be fulfilled, sometimes creating confusion to the point of violence. The most prominent example of this is the 'Conojocular War', a conflict between Maryland and Pennsylvania settlers in the 1720s and 1730s. In terms of casualties it was miniscule compared to many of those fought between settlers and Native Americans, but it involved militias of hundreds of men and blocked further settlement except by those willing to risk their lives (Spero 2012; Dutrizac 1991). By 1682 it had been discovered that due to a cartographic error the Maryland-Pennsylvania border, written in the colonial charters at 40° North, excluded Pennsylvania's capital from its territory. In 1732, the proprietary governors came to an agreement addressing this problem, but were unable to implement it due to an ambiguity in that agreement over whether a 'twelve-mile circle' in the eastern part of the border referred to the radius or circumference of the circle (Wainwright 1963). As a result, over decades these technical problems prevented any possibility of a formal settlement. Representatives of both colonial governments repeatedly tried to arrest each other

and use armed force to evict settlers holding land titles from the other government, leading to a constant threat of violence.

It is difficult to say whether or not some other kind of effective jurisdiction, if it had been imaginable at the time, could have been successfully imposed. By the time of the 1732 agreement, enough settlers from both sides were entrenched and determined to evict the others that some kind of unrest seems to have been likely. At the same time, if European settlement had from the beginning proceeded for example, as it did in early New England, on the basis of relatively cohesive townships rather than individual plots of land, perhaps the two colonies could have governed their respective townships wherever they emerged. Allowances would have had to be made for enclaves and exclaves, but perhaps no more than those that persisted within the French-Spanish border, which was without a defined linear border until the late nineteenth century (Sahlins 1989). Territorial discontinuity did not prevent Connecticut from surveying and sending settlers to land it claimed in what is now Pennsylvania in the 1770s, resulting in a similar kind of war (Ousterhout 1995). In any case, an expectation was created in the seventeenth century that only a surveyed boundary line could be the basis of any agreement between the colonies, and as long as this technical process was frustrated, any jurisdiction in the disputed area could only be provisional, providing for circumstances that permitted this particular type of conflict.

Surveyed boundaries did, in many cases, make resistance to settler colonialism difficult, as it did in England during the enclosure movement. But dependence on the very particular practices involved also afforded new opportunities for Native American resistance that would not otherwise have existed. One example of this can be seen in the ending of the Mason-Dixon Line, which settled the Maryland-Pennsylvania border in response to the Conojocular War

(Strang 2012). Because the Mason-Dixon Line ran across the Appalachians and into the land set aside for Native Americans, Iroquois observers were sent to accompany the survey. Rumors had been spreading of the potentiality of a general war between Natives and settlers which would engulf all the sporadic violence that had long been taking place, and the settler authorities were cautious to avoid such a war. The Iroquois Confederacy, the main Native American power in negotiations with the British, had agreed to allow the extension of the Mason-Dixon Line into the lands of the Delaware, a people over whom they claimed authority. But as some of the surveyors' diaries show, the western expedition of the Mason-Dixon party was subject to ongoing negotiations between Iroquois in the surveying party and groups of Delaware with whom they came into contact. At a certain point, after crossing a particular warpath, the Iroquois felt they could no longer defend the survey's further progress, and refused to continue along with it. Although it had been intended for the line to continue on another thirty miles, this forced Mason and Dixon to turn back.



A plan of the west line or parallel of latitude, which is the boundary between the provinces of Maryland and Pensylvania (Mason, Dixon, Smither, and Kennedy 1768)

Conclusion

This chapter has examined colonial maps of British North America, showing how they made possible a certain kind of connectivity between property and colonial territoriality. Through maps, as well as the many practices surrounding their making and use, spaces of property and of colonial authority became linked, with intercolonial boundaries having to be surveyed and mapped in a similar way. Where colonial authority and knowledge depended on property surveys, ideas and practices were transferred from the making of property boundaries to that of intercolonial boundaries. Based around this historical investigation into the English colonies of North America, the chapter has aimed to make a more general argument about the relationship of mapping and the making of empire. While maps do have rhetorical power and are embedded in particular contexts and struggles, the significance of maps may go beyond this, and they can have effects which appear unrelated to or even contrary to their aims. The notion of homology helps conceptualize how these things may not be mutually exclusive. Through the apparently universal ability of surveying practices to translate proprietary, colonial, and imperial spaces into spaces on the surface of a map, these spaces become historically linked.

This chapter has also inquired into the relations between mapping and empire with attention to imaginaries of connectivity over time and space. In particular, it examined a system of surveying which emerged throughout the English colonies, despite many differences in government and particular institutions. It approached the mapping-empire relation through an investigation into a particular moment in history. The connections and practices it revealed, of course, may not have surfaced in other contexts where surveying emerged as a practice. To some extent a similar logic could possibly be applied to the neighboring French and Dutch

empires, where surveying was also an important part of landownership (Price 1995). New France was divided into administrative units based on *seigneuries*, which were surveyed according to government regulations, and as we have seen above, Dutch settlers in New Netherlands negotiated a linear boundary with New England, which might have been surveyed if it had been ratified by both imperial centers (Greer 2017, 335). Yet due to the much more centralized nature of both of these empires, we do not see the kind of territorial competitions among autonomous governments that we see in the English colonies.

Maps such as that of the Seven Ranges of Townships above reveal a progressive, rational, and orderly settlement of the Northwest which hides the violent and unstable realities of its history. While in some ways maps certainly aided the making of empire, the expectation that property boundaries and colonial boundaries would be as stable in reality as they appeared on maps may have made possible territorial conflicts that might not otherwise have occurred. Scholars should thus not only be aware of the extent to which maps are successful in achieving their aims but also ways in which they might unintentionally affect the politics of space, and in this way we can avoid being misled by maps that served imperial purposes.

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