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Contents

THIS IS NOT A MAP

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A three-meter long mural found at the Neolithic site of Çatalhöyük (fig. 1) has long been taken to be a map of the Neolithic town (Steward 1980; Delano Smith 1982; Delano Smith 1987, 73–74; Casey 2002, 132, 225–26). This identification was convincingly challenged by Stephanie Meece (2006). Meece's arguments have however been summarily dismissed by several academic and lay commentators. What intrigues me is how the discounting of Meece's arguments reveals certain modern preconceptions about the nature of cartography. (Unfortunately, to explain these intriguing elements, I need to delve into the weeds; please bear with me.)

Figure 1. The mural. Image from a recent blog post, which credited it to the Museum of Anatolian Civilizations, Ankara; several copies of this image can be found online, together with many other photographs and redrawings of the mural.

Background 1: Çatalhöyük and the Mural

Çatalhöyük (or Çatal Hüyük) is located at 37°40'N 32°50'E, in the plains of central Anatolia near Konya, Turkey. The tell was first subjected to an exploratory excavation by the British archaeologist James Mellaart in 1958; he returned for several intensive field seasons in the early 1960s. The excavations were ended by a scandal, when Mellaart was accused of selling pilfered antiquities. Ian Hodder restarted

archaeological investigations at the site in 1991, and they have continued into the present. Hodder's teams have substantially changed Mellaart's interpretations, from complicating and redating the site's settlement levels to overturning Mellaart's arguments that the city was a major trade hub and a site of goddess worship. The conflicting interpretations have some significance for what follows, but I am not really concerned with the site *per se*, rather with what discussions of the one mural reveal about intellectual presumptions about the nature of maps and mapping.

The town comprises some eighteen levels that Mellaart dated from 7500 BCE to 5600 BCE. Each level comprised a series of mudbrick buildings, mostly apparently homes, that lacked windows and door. Each building was built against its neighbors; there were had no paths or alleys between the buildings. The townspeople walked across the roofs, made from wood covered in plaster, the access holes or hatches providing the only ventilation. The archaeologists estimated that the town's population was at most 10,000 people and more likely to be 5–7,000 people at any given time.

The interior walls of the buildings were routinely whitewashed and replastered; it is unclear precisely how frequently the walls were refreshed. In between refreshing the walls, the inhabitants decorated them with a series of murals and plaster reliefs (of auroch heads and leopards). The murals featured hunting scenes, abstract geometrical patterns, and other shapes, some of which have been described as leopard skins (an identification based on the common reliefs of leopards).

Mellaart's team found the supposedly cartographic mural in the 1963 field season, in room 14 on Level VII, which Mellaart dated to about 6000 BCE. The mural has two components in two registers: a long pattern of some eighty squares in the lower register and an irregular figure in the upper.

Background 2: Mellaart's Interpretations of the Mural as Town Plan and Volcano

Mellaart's interpretations are not generally available, so I quote them in full, here. He made an initial, public announcement of the findings of the 1963 season in the *Illustrated London News*.

> The larger shrine to the east, VII.14, produced one of the most extraordinary wall-paintings found at Chatal Huyuk. Nine feet in length it covers both walls above the main platform which was covered red with fine reed matting. The subject represented is extremely hard to interpret and we are fully aware that our interpretation may not be the right one. However, any interpretation will have to take into account one important point: the wall-paintings at Chatal Huyuk were not mere decoration or doodling, they served a definite and religious purpose, after which they were covered up. As our architect was quick to perceive, the 80 or more squares strung out along the bottom in rows or terraces vividly reminds one of the plan of a town, and one has only to compare the plan [image 2, above], its internal divisions into platforms, benches, etc. to see that this is indeed a possibility. On the other hand, we *know* that at Chatal Huyuk there were no streets or passages, but houses were built up against each other like the cells of a honey-comb.

> Nevertheless, we believe that this is a representation of a town, almost certainly Chatal Huyuk itself, rising in terraces, as we know it does, but portrayed in the way children will draw. If we concede this point, then the strange object in the back which looks at first sight like a leopard's skin, becomes more intelligible, for wherever one looks from the top of the mound, twin-peaked mountains surround the plain. There are the twin cones over Konya, the twin peaks of the Karadag and in the far distance the twin peaks of Hasan Dag, the volcano above the town of Aksaray. At first sight the object by itself may be interpreted as a leopard skin, with the extremities cut off, and blood spurting from it. But this hardly explains the streaks and dots painted above the right hand "peak" or the dots to the right beyond the "skin" and why should anybody want to paint such a scene for religious reasons?
>
> If, on the other hand, we try to identify this object with the distant, twin-peaked volcano (visible from Chatal Huyuk) of Hasan Dag, and when we realise that it was from here or nearby that the Neolithic people obtained their obsidian, a volcanic glass which is the most prized and earliest commodity of trade, and perhaps the basis of Chatal Huyuk's wealth, then it is not such a far cry to suggest that what was shown here was an eruption of Hasan Dag. Far from being a profane or unusual subject, a volcanic outburst of the obsidian mountain was a threat to Chatal Huyuk's existence, a sign of anger (or perhaps the reverse if more obsidian were produced) of the goddess of nature, and as such a highly relevant subject for pictorial composition.
>
> If our interpretation is right, we have here the altogether unique early seventh millennium "eye-witness account" of a volcanic eruption. It is known that Hasan Dag and others were active until the second millennium B.C.… (Mellaart 1964a, 194; also quoted by Meece 2006, 6, 8)

The twin-peaked volcano Hasan Dağ (Mount Hasan; 38°8'N 34°10'E) is about 120 miles (190 km) from Çatalhöyük. It is just visible from the tell on clear days, just to the north of west.

Mellaart's write up of the findings for the specialist, archaeological community was actually more florid:

> The larger building to the east (VII, 14) should probably also be regarded as a shrine on account of one of the most fascinating wall-paintings found in it. Nine feet in length, it covered both walls above the north-east platform which was carpeted with fine reed matting. The interpretation of the subject depicted is, of course, subjective (and perhaps controversial) but it seems likely that the eighty or more squares drawn along the base in

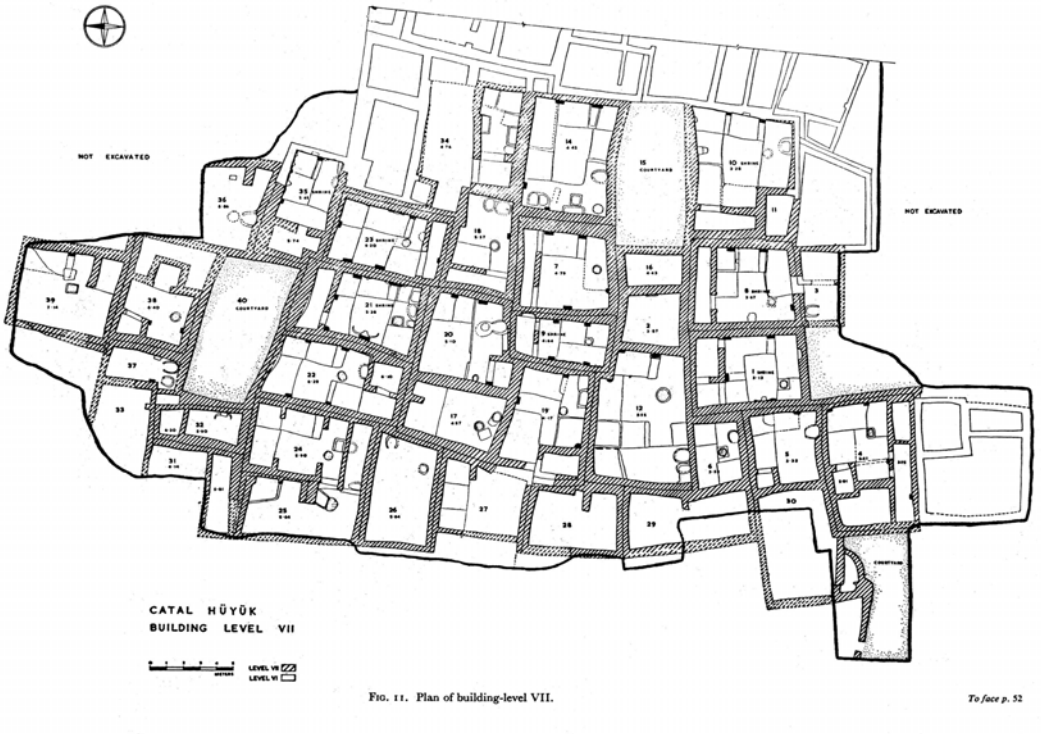

Figure 2. Plan of Level VII as excavated in 1963, from Mellaart (1964b, opp. 53).

> rows or terraces represent a view of a town and one has only to compare [fig. 2] with [fig. 1] to see that this is indeed a possibility. Each house has its own walls and the internal divisions in the drawing remind one of the platforms, etc., in the plan, and one is struck by the variations and irregularities in the drawing of the individual houses. Therefore in our opinion this is a representation of a neolithic town, probably Çatal Hüyük itself, the houses of which rise in exactly the same manner as is shown in the painting. This brings us to the strange double-peaked object in the back and if one looks from the top of the mound to-day, such objects are easily identified as mountains. Twin cones mark the position of Konya to the north-west, twin peaks crown the mighty mass of Karadağ and in the far distance one sees on a clear day the double cone of Hasan Dağ (10,000 feet), then an active volcano and the highest mountain in the region. Hasan Dağ had a special importance for the neolithic inhabitants of Çatal Hüyük, for it was the source of obsidian, the volcanic glass from which they made their tools and weapons, beads and mirrors, the commodity which they exported far and wide. The exploitation of the obsidian fields and a monopoly in the obsidian trade was probably the basis of Çatal Hüyük's wealth. Its mysterious origin, sharpness, transparency, and reflective power were probably regarded as

> unusual if not 'magic', the benevolent earth goddess's gift to neolithic man. Volcanic eruptions still stir even the most unimaginative moderns and must have been regarded with awe by early man. How much more so then when his precious source of income was at stake! This brings one to the spots on the mountain, the objects spurting out of the right-hand top, the 'cloud' of dots and strokes above (and to the right) of it and the lines extending from the base of the mountain. All these can be interpreted as the usual phenomena of a volcanic eruption: the rain of glowing volcanic bombs and red-hot rocks; the cloud of glowing particles above it and perhaps tongues of lava welling up from vents near the base of the mountain. It is known that the Central Anatolian volcanoes were active until the second millennium B.C. An "eye-witness" painting of an early seventh millennium eruption of Hasan Dağ is therefore certainly a possibility and in view of its economic importance a highly relevant subject to be recorded in a shrine. (Mellaart 1964b, 52, 55)

Finally, in his book on the site, Mellaart (1967, 176) simply stated that the mural shows the plan of the town with the profile of Hasan Dağ in eruption above.

Meece (2006) noted the manner in which Mellaart's interpretation of the mural grew ever more certain as he kept writing, although without adducing any new evidence in support. At first he admitted that the initial interpretation of the upper register was a leopard skin, one of many found at the site, and he implied that the team's architect, Miss Pat Quin (Mellaart 1964b, 39), was perhaps incorrect in her "perception" given that the town lacked the alleys that the mural, if a map, depicted between the houses. Both caveats are missing from the archaeological report, which is further notable (to my mind) for the manner in which its initial hesitancies are allowed to drop away; for example, Mellaart transformed the terraces from a possibility within a possibility into an "exact" certainty. Finally, in his book, Mellaart "admitted no uncertainty, and made no attempt to persuade" (Meece 2006, 9).

Note also that Mellaart's interpretation of the mural rested on some untrustworthy logic:

- the realism of the two registers of the mural are mutually reinforcing. Only when Quin "perceived" that the lower register was a map did a more figurative interpretation of the upper register as a mountain profile suggest itself; the realism of the mountain profile implicitly sustains the realism of the plan;
- the realism of the image of the volcano is justified by reference to Mellaart's interpretations of the religious significance of an erupting volcano, especially one that is an economic resource to the townspeople.

Background 3: Meece's Challenge to Mellaart

In addition to the increasingly unwarranted certainty with which Mellaart presented his interpretation, Stephanie Meece leveled several specific objections.

Mellaart had strongly implied that the upper register is the profile of the volcano as seen from the tell. But, when viewed from Çatalhöyük, Hasan Dağ's "higher peak is on the left and the smaller on the right"; Mellaart had fudged the issue by reproducing photographs of the volcano from a quite different perspective (Meece 2006, 6). Moreover, scholarship in the 1990s had also revealed that Çatalhöyük's obsidian did not, in fact, come from Hasan Dağ (see Carter 2011). This finding rather guts Mellaart's argument that the upper register must be a profile image of an erupting volcano that was so important to the town.

And why, Meece asked, should the Neolithic townspeople have sought to map or image their town and, if they did so, why did they use this particular representational strategy? This is perhaps the weakest element of Meece's argument in that she had to interpolate examples from several other ancient yet nonetheless historic cultures. She pointed out that the surviving maps and plans of urban places stem from larger, more complex societies and generally concerned major public works such as large temples and fortifications that Çatalhöyük lacked. To this end, she cited Denis Wood's (1992) clear distinction between internal spatial schemas (a function of human cognition) and the making of external inscriptions of spatial knowledge (i.e., maps), and she quoted Bill Gartner's comments on the divide:

> Although informal mapping (the analogical expression or performance of spatial knowledge) may well be a human universal, it has been argued that formal mapmaking (the inscription of spatial knowledge) tends to arise as a discourse function only within highly organized, bureaucratic societies. The conditions necessary for formal mapmaking include "the demands of agriculture, private property, long-distance trade, militarism, tribute relations, and other attributes of redistributive economies." (Gartner 1998: 257, quoting Wood 1993, 56; quoted by Meece 2006, 10).

One might quibble with the forcefulness of Wood's sentiments, but it is a fundamental point that the making of maps is a social endeavor that requires some kind of semiotic system shared by producers and consumers, and that means that map making is an ineluctably social phenomenon. Without large public works and living in a small "walking city" that even strangers can navigate easily by asking directions (verbal, incorporative mapping), why should the inhabitants of Çatalhöyük map their town?

To his credit, Mellaart had not thought that the mural was a functional map. Rather, he argued that the mural must have been part of a religious ritual of some sort, and why should a ritual emphasize economic relations when there are so many elements to cosmographies that need to be represented. The question then arises, if the town must be represented, why should these Neolithic people have shown it in just the same manner as modern archaeologists?

> The method of two-dimensional recording used by archaeologists, adopting an "objective" bird's eye view to record data, is a unique, specialised method of recording observed archaeological features. The inhabitants of the site would almost certainly have not understood their village as an exposed horizontal layer (a very archaeological concept!), with their roofs absent and walls partly removed, but rather a conglomeration of different

> levels. (Meece 2006, 5)

Any similarity of the mural's lower register to modern archaeological plans is strictly coincidental. Peoples in multiple cultures symbolize their homes in various ways, through totems—perhaps the aurochs' heads and leopards whose images proliferate at Çatalhöyük—and other abstractions that look nothing like modern maps and that require cultural informants to interpret them (Meece 2006, 10). If there was a reason to represent Çatalhöyük in some way, it would not have been through an image that looks like a modern archaeologists' plan.

Finally, Meece adopted the fundamental art historical practice of analyzing images by placing them into their proper discursive context. Rather than treating the mural as a unique and exceptional work, to be compared with images made 8,000 years later, we need to consider it in the context of images made by the same culture at the same time. As noted, Çatalhöyük is full of imagery. It is far more logical to treat this mural as a combination of geometrical patterns and a leopard skin, as are common to the rest of the site, than to impute unique acts of map making and landscape art to this Neolithic people. It makes much more sense to set modern cartographic fixations aside and follow good historical practice by considering the image in terms of the style of the other wall art found at the site (see Krygier 2008).

Overall, Meece concluded, Mellaart should have stuck with his original interpretation of the upper register as a leopard skin, and he should have resisted Quin's overly quick realization that the lower register is just like a modern plan so it must be one. I for one am persuaded by Meece.

Post-Meece Reassertions of the Mural's Mapness

Since 2006, a number of authors have affirmed Mellaart's interpretation. At least one made no reference to Meece's work, probably because the Çatalhöyük mural was only tangential and because the published work is not updated significantly from the original, 2007 presentation (Rochberg 2012, 9–11). But others have cited Meece's essay and have dismissed her arguments. They have done so because they remain committed to the conviction that maps are only direct products of the observation of landscape.

Two such essays appeared in a special, anniversary issue of *The Cartographic Journal* in 2013 that asked a number of leading academic and professional cartographers to reflect on the field. Two of the several respondents, neither with any background in map history, chose to consider the origins of the field. In the first of these two essays, Danny Dorling mentioned Meece's argument but did not cite her essay. He left the interpretation of the upper register open—it could be a volcano, it could be a leopard skin—but he was absolutely clear about the significance of the lower register:

> but we know that this map—revealed on a 9000-year-old plaster wall—served a purpose greater than simply being a remarkably accurate depiction of the buildings around it, for many thousands of years having been buried and ruined.
>
> The original image is augmented by two modern-day plans drawn directly below it. These

> show how the city without streets might have looked had anyone then been able to fly and how it was laid out in plan form. We presume that people got to their homes by walking over the roofs of others' property. Also almost certainly property will have had a different meaning then. There were no countries, as we know them now, and the idea of given generic names to masses of water, the entire lengths of river networks, and maybe of towns and cities will have all been inventions of thought that have come long since Çatalhöyük was first built, along with both the idea of streets and, in some cases, a very long time later: sewers. (Dorling 2013, 152)

From his blithe acceptance that the mural presents a town plan, Dorling makes a series of assertions that are manifestly false yet which seem quite valid from the perspective of modern cartography.

- If the lower register *is* a map, the map is *not* "remarkably accurate": even Mellaart's assistants were unable to match the mural's squares to a particular portion of the site (Meece 2006, 9). Rather, the statement is one of visual impression, yet another instance when commentators have mistaken graphic precision for accuracy in both geometry and topographical content.

- Again, if a map, then it is a map akin to the archaeologists' plan that omits the roofs that that would have obscured the interiors of the buildings; thus, the mural *cannot* show what the town "might have looked like had anyone then been able to fly." The presumption that the planimetric perspective is the natural consequence of the view from above is a crucial element in the ideal's pictorial preconception.

- By shifting from the mapping of the town to regional and perhaps world mapping, Dorling revealed the conviction that cartography is the making of maps of any part of the world at any scale, that the same processes govern the mapping of regions as the mapping of places and towns.

Dorling (2017, 551) later rehearsed the same arguments: "The map shows how this ancient people thought that their city and that part of the world was organized."

The second essay from the 2013 issue of the *Cartographic Journal* is explicit in its rejection of Meece's arguments or, at best, in its qualification of them ("true, although"; "credible, yet …"). But the reasons for these qualifications were all strictly impressionistic and were grounded in presumptions of the nature of maps. Keith Clarke falls back on naive resemblance: the upper register *looks like* a twin-peaked mountain, is therefore the mountain, so that the map might have been in situ "for generations" to serve as "spatial memory, telling generations where to go to trade for obsidian"; however, this interpretation fails to take into account the manner in which the townspeople regularly whitewashed their walls and Clarke's own (incorrect) description of the site as one in which "each family built its own separate house…and each generation demolished the house and rebuilt on top," both processes that would limit the longevity of the image (Clarke 2013, 139, 138). Clarke ultimately rejects Meece's argument because she seemed to reject the mental capacity of the Neolithic townspeople:

> Perhaps, however, most telling is Meece's contention that "the process of actually making a map, including reducing a space, constructing analogies between two-dimensional and three-dimensional space, and representing distant features is a significant development of abstract thinking and symbolic representation" (Meece, 2006, p. 17). While Meece acknowledges that "the development of mapmaking was as significant to human life as was the development of literacy" (Meece, 2006, p. 17), clearly she sees mapmaking as beyond the thinking capabilities of Çatalhoyuk's residents. I not only dispute this assertion, I argue that maps predate Çatalhoyuk itself by thousands of years. (Clarke 2013, 139)

For Clarke, map making is a natural and inevitable outgrowth of the development of a cognitive spatial schema (what is often misleadingly called a "mental map"). His imaginative examples all sound so reasonable—a hunter could make a map of the land across the river for another hunter—because they accord with the fundamental conviction that all map making stems from the individual map maker's experience with and observation of the landscape. Only from this perspective can an argument that prehistoric peoples did not make maps become a statement that prehistoric peoples could not make maps.

What Clarke missed in his quotation from Meece is that "abstract thinking" and "symbolic representation" are *not* the same thing. The one is cognitive, the other is social and cultural. The one is common to all cognitively developed adult humans, the other is a function of social needs and cultural conventions. What Meece argued is that social needs likely did not call for a town plan, and cultural conventions would have likely led to a quite different kind of representation than something that sort of looks like a modern archaeological plan.

A third reaction to Meece's challenge of cartographic orthodoxy came from an archaeologist. Elizabeth Wayland Barber (2010, esp. 343n2) briefly discounted Meece's argument by overly simplifying it, even as she permitted the possibility that the mural was not intended to be an exact map:

> I do not see the "village" as a realistic map of its lanes and houses but as a rectilinear pattern simply denoting "houses," that is, "us."

Barber's real aim was to bolster her general arguments that myth can be long-lived. The fact that geologists had dated the last eruption of Hasan Dağ to about 7550 BCE, or some 1,500 years before the mural was painted on the wall, is thus evidence of the longevity of oral legends and not a flaw in the identification of the upper mural as a volcano.

Most recently, geologists have refined the dating of some of the deposits at the summit of Hasan Dağ, laid when it last erupted, to 6960±640 BCE. This date range could just about encompass the period when Level VII at Çatelhöyük was occupied and the mural made (Schmitt et al. 2014). The possibility of chronological overlap is made all the more likely given that recent archaeological work has refined the dating of Level VII to 6430–6790 BCE (Cessford 2005). The possibility that, were the upper register actually Hasan Dağ in eruption, then the potential chronological overlap rather undercuts Barber's argument and obviates her need to insist that the lower register must be a map.

It is perhaps worth, at this point, to restate a key piece of evidence from Meece's essay, that Hasan Dağ does *not* have the same profile as the upper register in the mural when seen from Çatelhöyük.

However, the geologists who undertook the redating of the volcano's last eruption also took the essays by Clarke (2013) and Barber (2010) to support their conviction that the mural is indeed a realistic depiction of the town and the volcano. Their findings were accordingly received by lay commentators as proof that the entire mural is, indeed, realistic: the eruption was contemporary to the mural, the upper register is therefore the erupting volcano by an eye-witness (as Mellaart had originally asserted), so the lower register must be a map (Boyce 2014).

Commentary (at last …)

All of this—from Quin's initial interpretation in 1963 of the mural's lower register as a plan of the town, through its acceptance by map historians, to the more recent persistence of the identification—indicates a basic lack of concern that we are evaluating an 8–9,000 year old image by reference to a modern map that was made by a particular subset of map makers driven by their own clearly modern motivations. For such an evaluation to be valid we must presume that:

- the ancient mural, when it was made, had the same geometrical and conceptual relationship to the world as the relationship of the modern archaeological plan to the excavated site;
- the ancient people who made the mural lived in a world in which this relationship was meaningful;
- this relationship is the exclusive preserve of cartography; and
- the only way in which spatial knowledge can be communicated is through specifically *cartographic* works.

For an academic cartographer to insist in the face of archaeological doubt that the mural is indeed a map suggests a certain chutzpah: it is a declaration that a map is a map is a map, and that only students of cartography have the knowledge and experience to recognize one.

Furthermore, the later assertions that the lower register of the mural can only be a map relies on the apparently reasonable conviction that the foundational act of mapping, to create the *ur*-map, occurred when some ancient individual converted their personal cognitive spatial schema into an external spatial schema of some sort. The problem is that map scholars have routinely construed this foundational act as producing a graphic image that is recognizably "a map," such that they presume that the connection between a cognitive spatial schema internal to the individual (and certainly all of Clarke's hypothetical instances of early map making featured one individual) and the external map made by the individual of that spatial schema is presumed to be direct and unmediated.

The alternative position to this highly individualistic perspective is that the production, circulation, and consumption of maps are ineluctably *social* processes and they need to be studied as such. There are other socially defined representational strategies for communicating spatial knowledge, oral and gestural ones, that can be deployed. Historical sensitivity is also needed. When one appreciates the ways in which modern maps are made and used according to a wide variety of social and cultural factors, one must understand ancient mapping as having similarly been a function of multiple variables. Indeed, we can see that the conviction that map making is an individualistic endeavor is itself an idealization established over the last couple of centuries.

But Clarke for one wants nothing to do with this position. He began his short essay by snidely dismissing out of hand any idea that normative mapping might have been coeval with the development of writing in early Mesopotamia:

> To be generous, we could say that humans developed writing about 5000 BP, about the time of the cuniform tablets, and about the time of the first maps according to the cartographic texts.
>
> However, this interpretation seems to conveniently date maps as "texts," as the "critical cartographers" and their French philosophers have deemed and interpreted them. In this essay, I offer another interpretation based on scientific and other evidence. (Clarke 2013, 136)

His other evidence comprises either hypotheticals grounded in a preconceived notion of mapping as individualistic and an essay interpreting petroglyphs from an ancient Spanish site, about 11,600 BCE/13,600 BP old, as local maps (Utrilla et al. 2009). The quality of the interpretation of the last is beyond my ability to evaluate. In the end, Clarke's argument amounts to: the inhabitants of Çatalhöyük *could* have made a map, so the mural *is* a map.

Overall, it is not enough to say that any image is a map because of the manner in which it apparently replicates that portion of a world, in whatever way, unless it is evident that the image was also consumed as a map within a discourse whose parameters are understandable. Those who have focused on the Çatalhöyük image without contextualizing either register have confused cognition with semiosis.

Finally, two further points about how Mellaart's arguments drew on this excessively individualistic interpretation of map making. First, in his passing comment that the lower register of the mural was a map "portrayed in the way children will draw," he seemed to reference the long-standing equivalency, fostered by Jean Piaget, of prehistoric and indigenous peoples with modern children (Blaut 1993, 99–101; see Wood 1993). Second, I am struck by Mellaart's admission that the "perception" that the mural's lower register was a map was accomplished by a woman, Pat Quin. This seems an instance of the long-standing and sexist conviction that the minds of modern women share in both modern rationality and unmodern irrationality, so that women are able to mediate between them.

All told, the original interpretation of the mural as comprising a pair of realistic images and the subsequent insistence on the correctness of this interpretation reveal some basic beliefs and convictions about the nature of maps and cartography that are wrong.

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WHY I DON'T LIKE THEMATIC MAPS

Originally posted: 15 January 2018

https://www.mappingasprocess.net/blog/2018/1/15/why-i-dont-like-thematic-maps

Updated 19 January 2018: comments added at the end in response to a complaint from a friend.

Don't get me wrong: I love the kinds of works that most people call "thematic maps." Those that present large amounts of data in a readily understandable manner can be works of genius (as fig. 1). What I don't like is the *concept* of "thematic map." It is misleading and sustains an inadequate disciplinary identity. The concept significantly retards the development of a processual approach to maps and mapping.

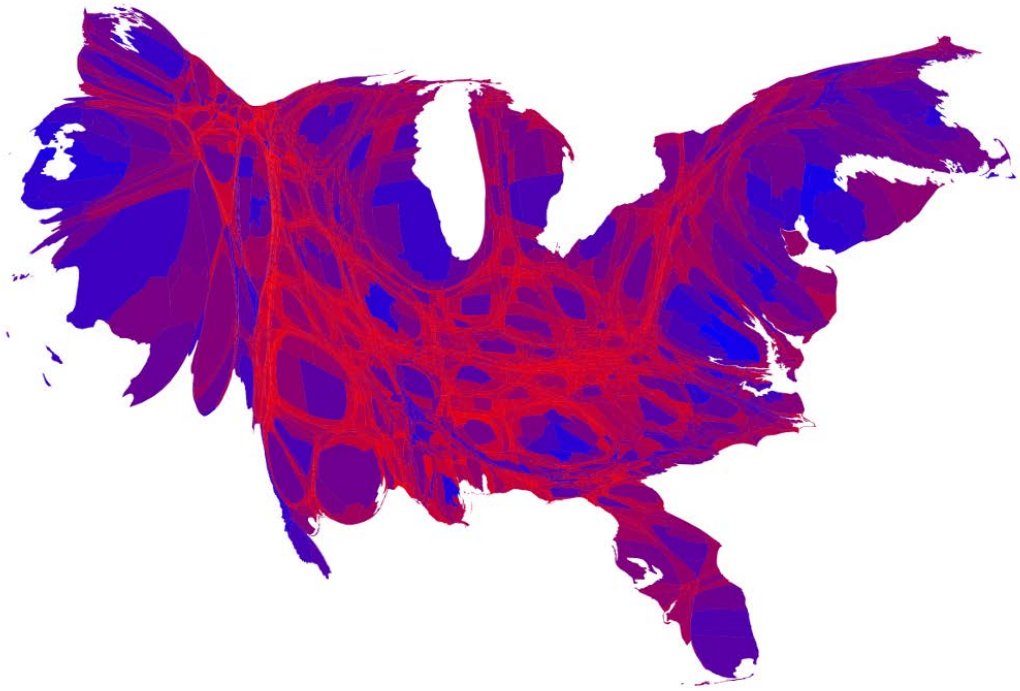


Figure 1. A multivariate maps of U.S. voting patterns, showing 2016 U.S. presidential vote (red, Republican, shading to blue, Democrat), by county-level, population cartogram. Mark Newman, University of Michigan, http://www-personal.umich.edu/~mejn/election/2016/

The concept of "thematic map" is ideological, not empirical. Denis Wood (2010, 121–26)

demonstrated that map scholars developed the concept in the twentieth century in order to sustain arguments that the scientific study of maps and mapping properly constitutes an autonomous discipline. This origin has caused a number of fundamental problems and confusions that map scholars have generally skirted and ignored so as not to challenge their core disciplinary identities.

This brief essay builds on Wood's account to reveal the flaws in the concept of "thematic map," not least the manner in which it promotes core convictions of the ideal of cartography. It then suggests an alternative conception of "analytic mapping."

"Thematic Map" and Academic Cartography

Arthur Robinson (1986, 807), writing in the *Lexikon zur Geschichte der Kartographie*, stated that the label "thematic map" was first coined by the German geographer Nikolaus Creutzburg in a presentation to a cartographic study day in Stuttgart in 1952. Creutzburg's subject was the problems that map designers face when making "thematic maps." The study day's organizers published an abstract of his presentation (Creutzburg 1953), which recent authors have tended to identify as the source of the new coinage (e.g., Wood 2010, 122; Slocum and Kessler 2015, 1501). After remaining latent for a few years, the new term spread rapidly after 1960 in "a little thematic cartography explosion" (Wood 2010, 285). In 1961, for example, the International Cartographic Association (founded 1959) established a commission specifically to address "thematic cartography"; dedicated textbooks on *thematische Kartographie* began to appear (starting with Imhof 1962 and Arnberger 1966); and Robinson incorporated the term into the third, 1969 edition of his classic textbook, *Elements of Cartography* (Slocum and Kessler 2015, 1501).

The timing of this "little explosion" was not a coincidence. The late 1950s and 1960s were precisely the period in which academic cartography expanded and institutionalized in the universities of the industrialized world. Geographers had taught map design in central European technical schools and universities since at least the 1880s and Max Eckert (1921–25) had argued for the academic study of *Kartenwissenschaft* (map science), but the field did not develop anything like a strong institutional presence (Kretschmer 2015), with separate degree programs and even departments, until academia's post-war growth. The intellectual and pragmatic need for trained map makers to sustain nuclear-powered industrial societies during the Cold War led cartography to become firmly institutionalized within universities on both sides of the Atlantic; academic societies proliferated (see Wolter 1975). To justify their newly (semi)autonomous place at the academic table, cartographers pointed to their work in codifying and perfecting the thematic map.

The ideological contribution of "thematic maps" to the creation of an intellectual identity for post-war academic cartography is still more apparent when we realize that Creutzburg had actually proposed the label much earlier than 1952. He used the term in the preface to a new edition (the eighth)

of *Meyers grosser Handatlas* in 1933.* On a complete tangent: the letterpress portions of this atlas have absolutely beautiful typesetting, as seen in its title page (fig. 2).

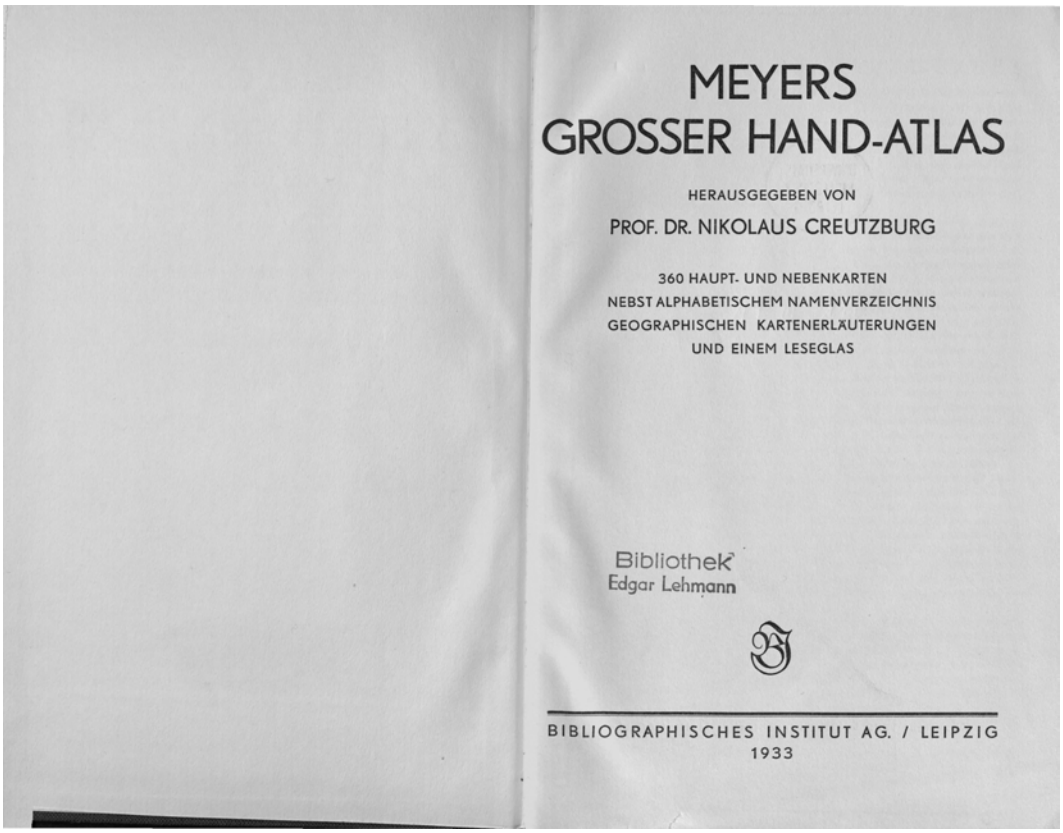


Figure 2. Titlepage to *Meyers Grosser Hand-Atlas* (1933). Universitätsbibliothek, Leipzig

Creutzburg (1933) noted that the previous, seventh edition of the atlas had first included "some 'thematic maps,' i.e., maps that deal with specific geographic topics, usually the distribution of particular geographical features" ("mit einigen "thematischen Karten", d.h. Karten, die spezielle geographische Themen, meist die Verbreitung besonderer geographischer Erscheinungen, behandeln, ausgestattet worden"). However, the financial crisis and lack of data prevented Creutzburg from implementing his ambitious plan for supplementing the usual regional maps with thematic maps, but he was nonetheless able to attempt to map climate and meteorology (although only for the whole earth), and vegetation too, but most of his maps addressed topics of anthropogeography. These include, "for the first time in

* I am thoroughly indebted to Dr. Jana Moser of the Leibniz-Institut für Länderkunde (IfL), in Leipzig, for sending me a high-quality scan of the atlas's preface and table of contents.

a German atlas," "race maps" (*Rassenkarten*) for the earth and continents, and a presentation of "Germanism" (*Deutschtum*) in Central Europe. Throughout, Creutzburg placed "thematic" in scare-quotes to emphasize the novelty of the term. Furthermore, Alfred Hettner (1933), in reviewing the atlas in a leading academic publication, referred to "these 'thematic' maps, as Creutzburg calls them" ("diese 'thematischen' Karten, wie sie Creutzburg nennt.")

All this is to say that the new term had been proposed, at least among central European geographers, as a catchall for a wide variety of maps, but it was initially ignored or rejected by other academics.* It was only much later, when they sought to acquire intellectual legitimacy as *scientists*, that academic cartographers actively embraced the term.

Indeed, Creutzburg was not the first to group together such varied maps into a single category. The credit for that innovation belongs to Max Eckert, when he sought to distinguish map science as a discipline separate from geography. Eckert's pre-war contemporaries were primarily concerned with codifying the two areas of cartographic complexity faced by academic geographers in their studies of regions and landscapes, respectively the definition and selection of map projections and relief depiction (Zöppritz 1884; Gelcich and Sauter 1894). Other manuals also addressed methods of map reproduction and particular issues concerning atlases and wall maps for schools (as Zondervan 1901; see Ormeling 2007, 184–85).†

But Eckert wanted to establish a *science* of cartography that was independent of academic geography. To that end, he argued that regional and topographical maps were not in fact separate but were all "geographically *concrete* maps" because they all "reproduce facts as they exist in nature, such as the distribution of land and water and of heights and depressions." By contrast, he argued,

> geographically *abstract* maps…present, in cartographic form, the results of scientific induction and deduction and, in most cases, can be traced back to the study of the scientist. To this class belong all general economic, commercial, statistical, ethnographic, population, and physical maps. (Eckert 1907, 545; 1908, 346; emphasis added)‡

Eckert held that the major task for map science was the elucidation of the "principles and methods of enriching and changing" the abstract map image, in order "to make the map really useful for scientific and practical aims" (Eckert 1921–25, 2: iii, quoted by Scharfe 1986, 64–65).

* JSTOR also threw up a metaphorical use of *carte thématique* from 1949. It appears in an essay concerning the psychology of memory and might well be dismissed as a passing poetic remark, but it follows other metaphorical references to "geological methods" for making "psychological maps" so the author might have been drawing on cartographic practice (Ruyer 1949, 75).

† The same emphases are evident in Charles Deetz's (1936) manual of cartographic design. I am struck by the manner in which this book languishes in obscurity when it was actually the first cartography manual produced in the U.S. Raisz's *General Cartography* (1938) has been privileged by modern commentators because it dealt with thematic maps (see Edney 2014, 87).

‡ The novelty of the concept of "abstract maps" is perhaps indicated by the error of the translator, not caught by the journal editor, of using "concrete" when "abstract" was clearly intended in the key passage (Eckert 1908, 346).

But as much as he argued that the same techniques should be used for "all fields of the organic and inorganic worlds, if statistics and averages are available at all" (Eckert 1921–25, 2: 135, quoted by Scharfe 1986, 65), he could not break away from the institutional reality that "abstract maps" were produced by a wide array of scholars working across the natural and social sciences (Scharfe 1986). In his major study of *Kartenwissenschaft*, Eckert discussed "abstract" or "applied" ("anweden") maps in general (vol. 2, part 2), but he continued to differentiate between the more specific mapping the inorganic (vol. 2, part 3) and the organic (vol. 2, part 4) worlds. (Pápay 2017 usefully reproduces and translates the tables of contents to Eckert 1921–25.) For Eckert, the diversity and specificity of "abstract/applied maps" continued to undermine the desired unity of such mapping processes. Only within the rapidly expanding academia of the post-war years could academic cartographers on both sides of the Atlantic construct a disciplinary identity for academic cartography as the science of "thematic" spatial information regardless of phenomenon (Wood 2010, 124–26).*

The post-war formation of the academic discipline of academic cartography with "thematic cartography" at its heart was sustained by the imposition of the term and concept onto the past. In particular, Arthur Robinson (1952, 13) argued that "specialty" cartography, the preserve of social and natural scientists, had after 1800 branched out from the "substantive" cartography of the engineers. Moreover, the world war had brought this "substantive" cartography to a new level of achievement, if not perfection, but "specialty" cartography remained rooted in unexamined "convention, whim, and…ill-founded judgment."† It was the task of the new discipline, Robinson argued, to perfect this underdeveloped subject. Robinson sustained his disciplinary vision with a triumphal historical narrative of cartography as the science of the visualization of spatial data and, like Eckert before him, he looked back into the eighteenth and nineteenth century to create this narrative (esp. Robinson 1982; cf. Eckert 1921–25; see Edney 2005).

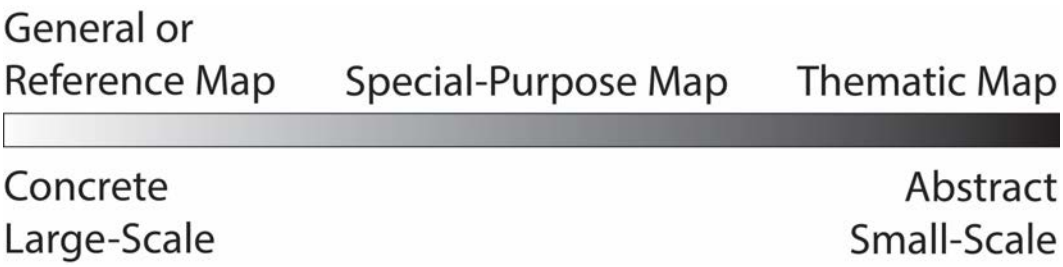
Terminological Problems are Conceptual Problems

For a concept so fundamental to the academic field of cartography, there is remarkably little understanding of just what a "thematic map" is. Eckert admitted that there is no hard and fast means to distinguish concrete from abstract maps: the two merge into each other. For example, if one was to progressively increase the scale of a population map (abstract), it would become a settlement map and thus concrete in nature; conversely, take a physical map of surficial geomorphology and reduce it to

* The pre-war necessary integration of cartography within geography continued to be asserted by post-war Soviet scholars. In this regard, Wolter (1975, 7n9) usefully contrasted Salitchev's (1973) insistence that cartography required a geographical understanding of the phenomena being mapped to Morrison's (1974) argument that the science of cartography rests on thematic mapping.

† Robinson's label of "speciality" maps perhaps stemmed from Erwin Raisz's *General Cartography* (1938). This text is notable as the vehicle in which the Hungarian-trained Raisz introduced Eckert's ideas into the U.S. (Wood 2010, 122).

small scale, and it will "become abstract" (Eckert 1907, 545; 1908, 346). Eckert effectively collapsed a continuum of data abstraction (concrete ⟷ abstract) onto the continuum of map scale (large scale ⟷ small scale):



As a general rule, I find continuums to hide misguided thinking, and this one is no different. All continuums are attempts to summarize phenomena by their form without regard to the processes that produce them. In this cartographic continuum, there is a great need to uncouple data abstraction from map scale.

However, both kinds of data manipulation remain central to the common understanding of "cartographic generalization" (e.g., Darkes 2017, 292–95), although they are, strictly speaking, distinct (Dahlberg 1984, 149). Their conceptual equivalency has led to much confusion. By and large, any map that is clearly and unambiguously concerned with locations is a "general" or "reference" map, while any map that shows a particular theme or subject (or attribute or variable in GIS terminology: Slocum et al. 2009, 1–2) is a "thematic" map. At the same time, smaller-scale maps are generally designed for specific purposes; they are intended to communicate a message of some sort, as emphasized by academic cartographers' many models of "cartographic communication." While concrete topographical maps are made to be generally useful to a wide array of potential users, smaller-scale maps are intended for use by particular groups of users, whether grade-school children, college students, government officials, road travelers, etc. Such maps are necessarily selective in their content, and they emphasize particular themes or categories of abstracted data. In this respect, such "special purpose," "applied," limited purpose," "single-topic," or "statistical" maps are also often considered to be "thematic maps" (Petchenik 1979, 5).

By these lights, anything that is not definitively a "reference" map must be a "thematic map." As two map scholars recently stated:

> Unlike general reference maps, which provide an overview of various phenomena pertaining to a region and are often created by large mapping agencies, thematic maps focus on the distribution of social or physical phenomena at relatively small scales and are typically created by a single individual or a small team of researchers. …Other terms that have been used for thematic map include distribution map, statistical map, and special-

purpose map.

Any map with an overt purpose, any map with a message, any map that has "a theme," and any small-scale map that is not about simply locating places on the earth's surface is therefore a "thematic map." The same commentators noted that while they specifically focused on only certain kinds of "thematic map," the category also encompassed several other kinds of map: "relatively realistic representations of the landscape such as bird's-eye views, panoramas, or virtual environments…. Similarly excluded are pictorial treatments like the superb physiographic diagrams of Erwin Raisz" (Slocum and Kessler 2015, 1500–1, citing Slocum et al. 2009, 371–88, 460–77).

Another recent commentator was evidently surprised that Max Eckert had *not* considered marine charts, i.e., maps made for the specific needs of mariners, to be "thematic maps" in the same way that the commentator and others understand them today (Pápay 2017, 20). Road maps are often treated as "thematic maps," as are any other kind of way-finding maps. By extension, a cadastral map, showing the boundaries of parcels of land for tax administration, is a "thematic map."

Given that four or so decades of the sociocultural critique of maps and mapping have made it clear that no maps are made without a purpose and without some kind of "theme"—even the most "scientific" and general-purpose reference maps produced by government agencies such as the U.S. Geological Survey or the U.K.'s Ordnance Survey—then *all* maps must be "thematic maps." Without a clear definition, whatever conceptual value there might be for academics to use the conception of "thematic map" is utterly lost.

But far from suggesting that this continuum of map types should perhaps be discarded, map scholars have generally sustained it by placing it in parallel with an historical narrative. The continuum of ever-increasing degrees of abstraction, from "reference" maps through "special-purpose" maps to "thematic" maps, is replicated in the apparent historical development first of reference maps, then of special-purpose maps, and finally of "thematic" maps; thematic maps then became the core of modern academic cartography. Henry Castner (1980) argued, for example, that eighteenth-century Russian forestry maps in Russia were the precursor to thematic maps (see also MacEachren 1979; Robinson 1982; Slocum et al. 2009, 20–33). At the same time, a great deal of emphasis has been placed on the

development of particular techniques of data visualization—the isoline, the graduated circle, choropleth shading, the flow line, etc.—as strictly generic strategies divorced from subject matter (e.g., Wood 1994; Friendly 2008; Slocum and Kessler 2015).

The situation is such—"thematic mapping" is so central to the discipline yet is simultaneously so undertheorized—that map scholars have become habituated to just waving away the terminological issues and ignoring the deeper conceptual problems. Consider one recent statement:

> There is no sharp line between the two types (Petchenik 1979) insofar as thematic maps often include basic information typically found on general reference maps. (Slocum and Kessler 2015, 1500)

What surprised me when I read this statement is that, far from demonstrating that there is no sharp line between reference and thematic maps, Barbara Petchenik (1979, 5) in fact argued for "a *fundamental* (and hierarchical) reference/thematic *distinction*" (emphasis added).

But then, Petchenik made her argument from a perspective that emphasized how map readers understand maps rather than how maps are made (see also Petchenik 1975). Her argument was that thematic maps are those maps that permit readers to interrogate them in ways that are quite distinct from reference maps. The former permit intellectual conclusions "*about space*," the latter only permit knowledge about "experience *in space*" (Petchenik 1979, 5, original emphasis). While Petchenik thought it conceivable that one map might be read in either way, depending on the reader, she nonetheless concluded that

> It seems reasonable to think that useful probabilistic statements about the potential of any one map for primarily reference (in-place) or thematic (about-space) purposes can be made. (Petchenik 1979, 11)

Petchenik could see that there *is* a distinction between reference and thematic maps, even if could not suggest how to define the necessary "probabilistic statements."

A Processual Approach to "Analytic" Mapping

A processual approach provides a mechanism for making precisely the "probabilistic statements" suggested by Petchenik. It also discards the continuum and all its confusions and it requires use to ditch the term "thematic map."

From a processual approach we can discern a series of major modes of mapping, which is to say large patterns in the ways in which maps are produced, circulated, and consumed. Each mode embraces more specific kinds of mapping. Geographical mapping, for example, is the mode of mapping the earth and its regions, generally within a framework of cosmographical coordinates (meridians of longitude and parallels of latitude). It is by no means a monolithic whole and there are many different kinds of geographical mapping. An initial statement of a processual approach, for example, noted that the early

mapping of New England has not a single group of regional maps, but at least three kinds: atlas maps; maps in celebratory books; and wall maps. Each kind manifested a different pattern of production, circulation, and consumption. (For more, see Edney 2017).

From this perspective, we can see that "special-purpose" maps are part and parcel of the primary modes. Marine mapping is its own mode. Road and other transportation maps used by the public to get around are specialized forms of geographical maps (see Akerman and Nekola 2016, a wonderful website). More detailed maps, such as the layout of railroad yards or the construction of roads, are part of the modes of place and engineering mapping. (Modes are defined by patterns of circulation, not by the subject matter depicted.) The histories of such mapping need to be told in the context of the parent modes.

From this perspective, we can identify a separate and distinct **mode** of "thematic mapping," which is to say, in Petchenik's terms, mapping "about-space." This is how the topic has been treated in volumes 4, 5, and 6 of *The History of Cartography*. Unlike the presumptions embedded in the Eckert-derived continuum, this mode is not limited to small-scale maps and includes medium- and large-scale mapping, too. What these mappings all have in common is the intent to analyze or explain spatial variation and distribution, and to communicate the results. There is no continuum; there are only independent but interlocking modes. (Think of the rings of the Olympic flag as an analogy.)

But "thematic mapping" comes with all of the baggage and confusions laid out above. It is no longer useful and must be discarded, along with the continuum that sustains the flawed concept. My preference is to label the mode that of "analytic" mapping.* It is mapping that is specifically analytical in nature, that might intersect with other modes, as when modern atlases contain both geographical and analytic maps, but is otherwise marked by distinct patterns of circulation and consumption among natural and social scientists.

Analytic mapping does not have to be quantitative. For example, Levi Yaggy included a phenomenal image in his *Yaggy's Geographical Study* (1887) that very much summarizes the later nineteenth-century arguments that racial diversity and degrees of civilization were determined by the Aristotelian climatic zones (fig. 3).

At the same time, Susan Schulten (2012) traced the development of analytic mapping in the nineteenth-century U.S., a process that entailed both statistical mapping and historical mapping. Yes, making maps of the past is a form of analytic mapping. In this respect, what are often called "historical maps" should be called analytic maps (and thereby we can avoid the semantic confusion between "historical map" as an early map or a map made of the past, a point I know I shall write more about in future).

* I must thank Max Edelson for guiding me to accept "analytic" as an appropriate term for this mode of mapping.

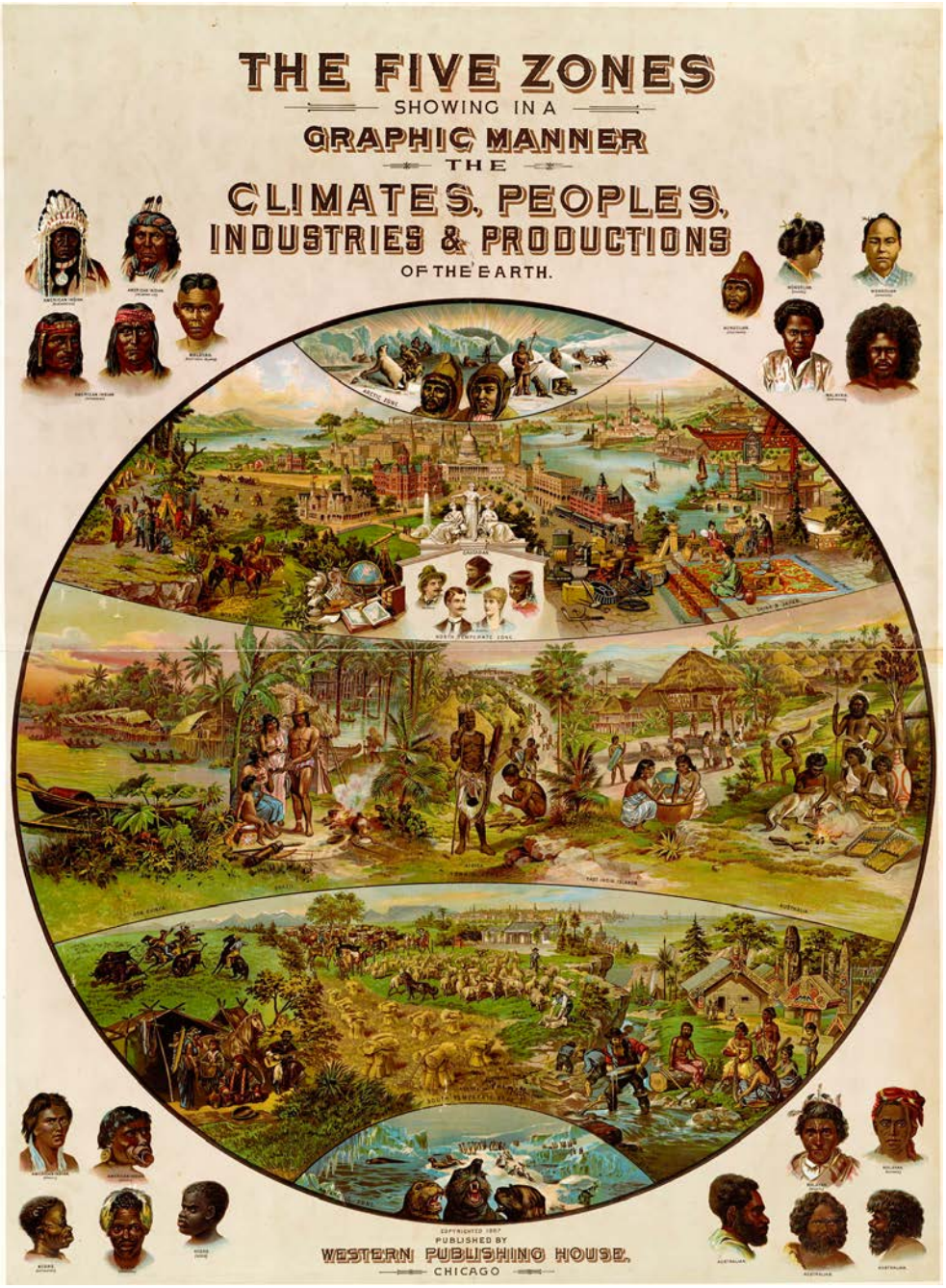


Figure 3. Levi W. Yaggy, "The Five Zones Showing in a Graphic Manner the Climates, Peoples, Industries & Productions of the Earth," from *Yaggy's Geographical Study* (Chicago, 1887). Osher Map Library and Smith Center for Cartographic Education, University of Southern Maine (OML Collections).

The history of analytic mapping can thus be written without imposing ahistorical concepts on the empirical record. We can, in particular, that for much of the nineteenth and twentieth century, there was not a strong division between the mapping of the natural and the human worlds. Yaggy's map, shown above, exemplifies the interconnection of physical and social themes, as does the fact that Eckert (1921–25, vol. 2, part 4) grouped the human world in with the rest of the botanical and zoological "organic world."

What is needed is a concerted history and reframing of analytic mapping, one that explores the rise of a distinct way of conceptualizing the world without reference to the disciplinary desires of academic cartography and that understands analytic mapping as a core element of the modern social and natural sciences (and even, perhaps, humanities: see Moretti 2005).

Any takers?

[update 19 Jan 2018]

A friend emailed me yesterday after reading this blog with the complaint that I was simply renaming "thematic maps" and specifically restricting them to one end of the continuum. All maps, they wrote, are intended to present and understand the world in some way, so that **all maps are analytic**. And a trained map reader can *analyze* any map to draw a conclusion about the nature of the world. Why, then, my friend asked, should I continue to identify a "a coherent class of [such] maps"?

Well, I'm not. I don't recognize any coherent class of maps, whether reference (whatever that is) or thematic, marine or geographical, urban or topographical. What I do recognize is that there are broadly coherent modes of mapping processes, in which people produce, circulate, and consume knowledge about the spatial complexity of the world in broadly similar ways. Within a mode there is a wide variety of map forms — graphic, verbal, physical, gestural, connected by inscriptive and incorporative practices — but all are connected by common approach to the world. Modes are comprised of threads of discourse, that can be readily studied, but even they are heuristic in nature. The only empirically grounded formation is the *precise* spatial discourse whose participants and processes are well identified.

in this respect, what I do see is that there a large number of *precise* spatial discourses in which people in a variety of academic and governmental institutions (although not necessarily so) actively engage in the investigative analysis of phenomena as they vary over space, and they present their results in some form that we take to be a map. Such discourses intertwine in threads of discourse. There's such a thread among epidemiologists who are interested in the mapping of disease, although the precise constituent discourses might vary by the disease(s) being studied, the attempt to relate the disease to environmental or genetic factors, etc. It is all a self-contained group of producers and consumers who circulate their "analytic maps" among themselves. It is an obviously different group of producers and consumers interested in spatial issues concerning bedrock geology. And so on.

As I write, some of my own doubts are crystalizing. I have said that the idea of mapping modes and their constituent threads of spatial discourses are heuristic, except for the well delimited circuits that define precise discourses. The latter have empirical certainty, but are very hard to investigate. The threads and modes are ways to come to terms with major differences in mapping processes when such empirical certainty is hard to come by. So, as a map historian, it seems that we can cut the situation in one of two ways:

> 1) presume that all these various analytical discursive threads are all closer to each other than they are to other discursive threads, so that it makes sense to think of analytical mapping as one mapping mode [with the constant caveat that no mode is ever monolithic], or
>
> 2) presume that each analytical thread is more properly connected to threads in other modes, within which they should be folded for the purposes of map studies, rather than grouped together as a separate mode.

I think my friend would argue (2), but I am still committed to (1). The threads of overtly analytical mapping have so much in common in terms of their circulation/networking that I think it meaningful to identify a mode of analytic mapping. Clearly, there needs to be some careful analyses of analytical spatial discourses and how they relate to others, keeping in mind that there is the distinct possibility that they don't interrelate well.

My apologies if these comments are cryptic ... it's the job of this blog to let me try and work out the underlying points! So please stay tuned!

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A Self-Explanatory Map? Come for the Satire, Stay for the Fun

Originally posted: 16 February 2018

https://www.mappingasprocess.net/blog/2018/2/16/a-self-explanatory-map-come-for-the-satire-stay-for-the-fun

Map scholars are well aware of the fantasies of maps at 1:1 offered by Lewis Carroll and Jorge Luis Borges. Less well known is the remarkable satire on cartography, "Fortifications of Paris," that the humorist Mark Twain (i.e., Samuel L. Clemens) first published in the Buffalo *Express* on 17 September 1870. I first encountered this map, and became rather obsessed with it, when I acquired a modern Penguin edition of Twain's work, which I bought because it included Twain's caustically hilarious review of James Fennimore Cooper's Leatherstocking Tales (Twain 1994). Twain's intent was to mock the maps offered in other U.S. newspapers as they reported the events of the Franco-Prussian War (1870–71). Twain cut the woodblock for the map himself (fig. 1).

The work stands as a complete oddity within Twain's oeuvre, which was otherwise entirely verbal in nature. (Update 15 Aug 2018: a 2013 blog post by Katherine E. Bishop indicates that Twain also drafted a map for inclusion in *Tom Sawyer Abroad* [1894], a map supposedly drawn by Tom himself. So, Twain is known to have made two maps.)

Both contemporaries and modern commentators have addressed the written elements of Twain's work almost exclusively. Even as literary historians and bibliographers have sought to clarify Twain's hideously complex bibliography—made complex by the frequent republication of his sketches, essays, and books in an era of rapid change in both printing technologies and publishing practices—they have paid so little attention to the image that they are quite uncertain about the different versions of the image and which version is authoritative (Michelson 1995, 238n22).

Literary historians thus tend to mistreat the image and to isolate it from its accompanying text. Modern reprints of "The Fortifications of Paris" privilege the text over the image. One modern reprint actively downplayed the map both by rotating it to fit within a column—if it's wrong-reading and weird, why bother at all with its orientation?—and by omitting the crucial first line (Twain 1976). The online version in Cornell University's *Making of America* database of the image as published in *The Galaxy* for November 1870 (**Variant 1.3**) has for some reason inverted the image so as to be white-on-black, as if it were a wood engraving rather than a wood cut; I do not know why this should be so. Bruce Michelson gave the whole work more attention than any other literary scholar but he, or his publishers, nonetheless modified the image: whereas the original floated free on the newspaper page (above), Michelson (1995, 10) gave it a bold, isolating frame that set it off from the analysis, implying a conceptual division of the original image from original text in line with the semiotic distinction commonly, but improperly, drawn between writing and map image.

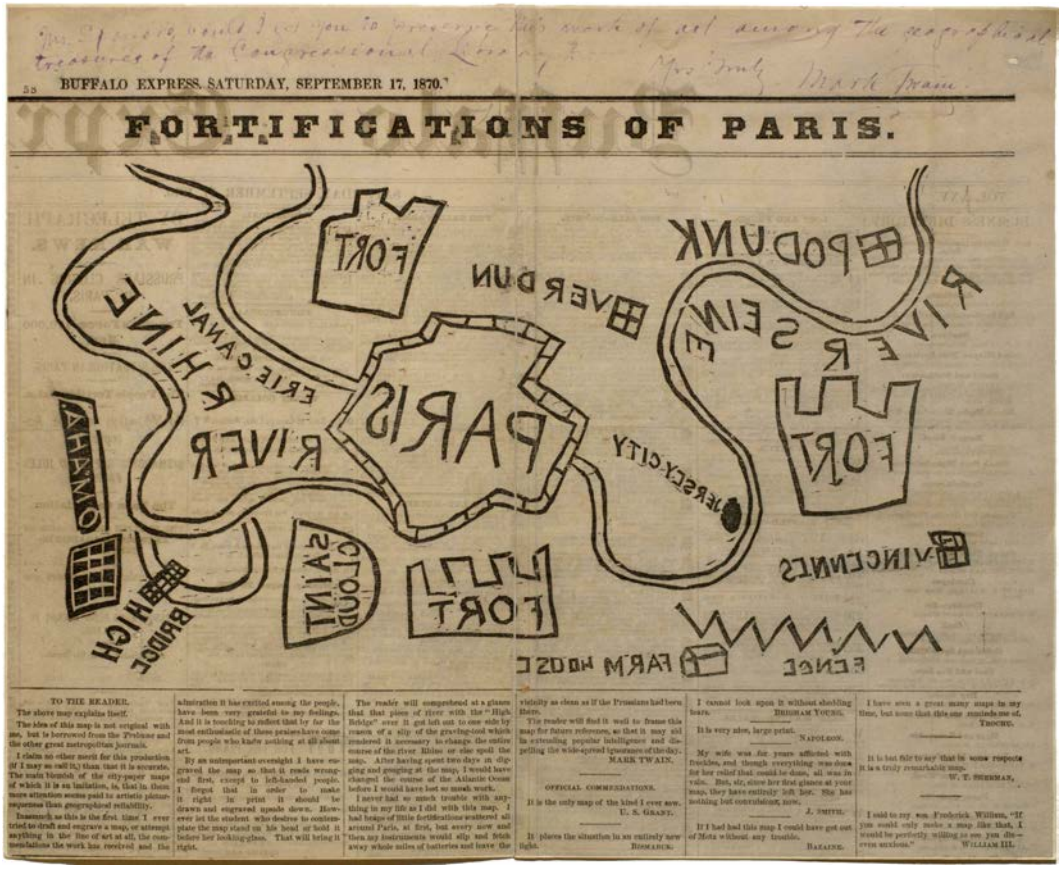

Figure 1. Mark Twain, "Fortifications of Paris," [Buffalo] *Express* (17 September 1870), 2, woodblock, 9 × 12½ inches [23 × 32 cm]). **Variant 1.1**. Twain sent this clipping to his friend, Ainslie Rand Spofford, then Librarian of Congress, with the inscription, "Mr. Spofford, could I get you to preserve this work of art among the geographical treasures of the Congressional Library? Yrs Truly Mark Twain" (Twain 1995, 207; October? 1870). Library of Congress, Manuscript Division, Samuel Clemens Papers.

Yet, as is now well established in map studies, we cannot so easily distinguish the image from the words. Certainly, the satire of the original work relied upon the intertwining of its three elements: the map per se; the explanatory account; and the "official commendations." Moreover, as I explored the history of this work, in order to refine my understanding of its satirical function, I discovered that these three elements were each malleable. As the work spread like wildfire through U.S. newspapers and magazines* in September and October 1870, before falling away just as fast from public attention, both

* Evidence from contemporary newspapers comes from Readex's *America's Historical Newspapers, 1690–1922* (subscription

Twain and the plagiarizing newspaper editors altered its elements. They dropped the map, often replacing it with a verbal description; they expanded the account or dropped it altogether; but they always kept the witty, back-handed commendations. The shifting form of the work permits some understanding of how the map was received and of how the degree to which Twain's contemporaries understood the work's satirical nature.

This essay has accordingly grown from a rather long blog post into a much longer work to present the wealth of information available about the work. It has five main parts: 1) a description and transcription of the work in its two primary incarnations; 2) an assessment of its humor and its satirical intent; 3) the history of the work's creation, including its precursor in one of Twain's earliest humorous sketches; 4) the contemporary reception of the work, and its shifting significance; and 5) the subsequent reproduction of the work in collections of Twain's sketches.

In the process, I describe the several variants of Twain's image, both 1.*x* (Twain's own printing matrix) and 2.*x* (various derivatives). I have not been able to consult an actual impression of every reprinting. At best I have a digital copy from Google Books or some other depository, generally with rather poor metadata. At worst I have a reference to the work being reprinted, but certainty is lacking because of the ephemerality of newspapers and magazines in the nineteenth-century U.S. I will update the following as I am able to confirm details and to examine variant forms of the map in person.

1) Twain's "Fortifications | Map of Paris"

The occasion for Twain's creation of the map was the general public shock at the efficiency and potency of the Prussian army. At Napoleon III's instigation, the French parliament had declared war on Prussia on 16 July 1870, but the Prussians mobilized faster and quickly invaded France. They trapped the main French army under Marshal Bezaine at Metz in mid-August; Napoleon III surrendered at Sedan on 2 September; by mid-September the Prussians were advancing on Paris itself. Metropolitan U.S. newspapers had featured a number of maps of the conflict. Such maps would also have been familiar to those who had not so long before followed the events of the U.S. Civil War (1861–65) through maps in the northern newspapers (Bosse 1993a, 1993b).

Twain's ostensible purpose in creating his work was to mock such maps for their pretty but uninformative nature.* He specifically cited the New York *Tribune's* map of the Parisian defenses (fig. 2). Twain himself produced two versions of the work, the original and a slightly expanded version,

required), the Library of Congress's *Chronicling America: Historic American Newspapers*, and the *NYS Historic Newspapers* databases. Even taken together, these are not comprehensive in their coverage of what was, even in the later nineteenth century, an exceedingly ephemeral form of print.

* The editors of Twain's papers identified some possible models for Twain's satire, in the New York *World*, "The Fortifications of Paris" (11 August 1870, 1; 10 September 1870, 1), and in the New York *Tribune*, "The Defences and Environs of Paris" (13 September 1870, 1) (see Twain 1995, 199n1).

which I describe and transcribe in turn before considering their humor and satire.

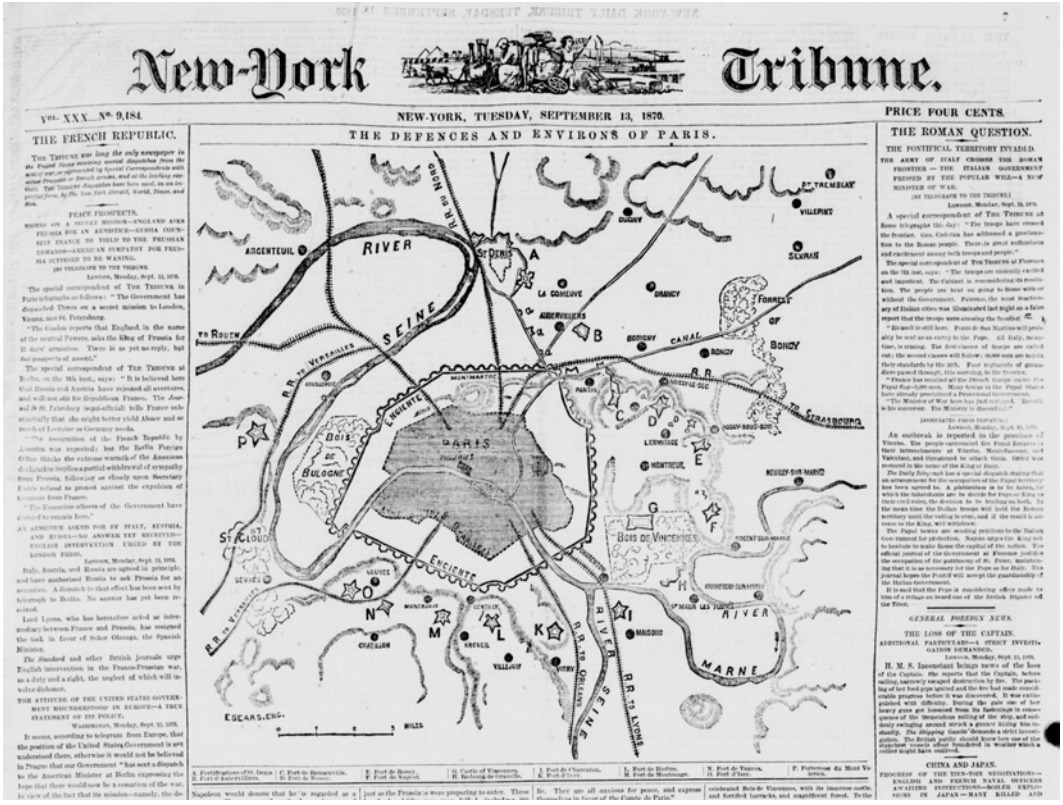

Figure 2. New York *Tribune* (13 September 1870). From Library of Congress, *Chronicling America*.

> **Update** (26 April 2019): Bosse (1993, 37–39) reproduced and discussed a cartoon and a spoof map published in *Vanity Fair* (4 [30 November 1861]: 241 and 3 May 1862 — although I can't find the map in that issue) together mocking the battle maps in the *New York Herald* during the U.S. Civil War.

1.1) Variant 1.1: "Fortifications of Paris"

Twain published his burlesque, under the heading "Fortifications of Paris," in the Buffalo *Express* for Saturday, 17 September 1870 (McCullough 1972, item 44; Camfield 2003, 704). Printed from a woodblock set within letterpress, taking up six of the newspaper's nine columns (see fig. 1). The original is imaged in the *NYS Historic Newspapers* database. The account and commendations read:

TO THE READER.

The accompanying map explains itself.

The idea of this map is not original with me, but is borrowed from the *Tribune* and the other great metropolitan journals.

I claim no other merit for this production (if I may so call it) than that it is accurate. The main blemish of the city-paper maps of which it is an imitation, is, that in them more attention seems paid to artistic picturesqueness than geographical reliability.

Inasmuch as this is the first time I ever tried to draft and engrave a map, or attempt anything in the line of art at all, the commendations the work has received and the admiration it has excited among the people, have been very grateful to my feelings. And it is touching to reflect that by far the most enthusiastic of these praises have come from people who know nothing at all about art.

By an unimportant oversight I have engraved the map so that it reads wrong end first, except to left-handed people. I forgot that in order to make it right in print it should be drawn and engraved upside down. However, let the student who desires to contemplate the map stand on his head or hold it before her looking-glass. That will bring it right.

The reader will comprehend at a glance that that piece of river with the "High Bridge" over it got left out to one side by reason of a slip of the graving-tool, which rendered it necessary to change the entire course of the river Rhine or else spoil the map. After having spent two days in digging and gouging at the map, I would have changed the course of the Atlantic ocean before I would have lost so much work.

I never had so much trouble with anything in my life as I did with this map. I had heaps of little fortifications scattered all around Paris, at first, but every now and then my instruments would slip and fetch away whole miles of batteries and leave the vicinity as clean as if the Prussians had been there.

The reader will find it well to frame this map for future reference, so that it may aid in extending popular intelligence and dispelling the wide-spread ignorance of the day.

MARK TWAIN.

———

OFFICIAL COMMENDATIONS.

It is the only map of the kind I ever saw. U. S. GRANT.

It places the situation in an entirely new light. BISMARCK.

I cannot look upon it without shedding tears. BRIGHAM YOUNG.

> It is very nice, large print. NAPOLEON.
>
> My wife was for years afflicted with freckles, and though everything was done for her relief that could be done, all was in vain. But, sir, since her first glance at your map, they have entirely left her. She has nothing but convulsions now. J. SMITH.
>
> If I had had this map I could have got out of Metz without any trouble. BAZAINE.
>
> I have seen a great many maps in my time, but none that this one reminds me of. TROCHU.
>
> It is but fair to say that in some respects it is a truly remarkable map. W. T. SHERMAN.
>
> I said to my son Frederick William, "If you could only make a map like that, I would be perfectly willing to see you die—even anxious." WILLIAM III

The supposed commendations are mostly from prominent figures in U.S. society or key players in the war itself. In order:

> Ulysses S. Grant, president of the U.S., previously commanding general of the Union army during the U.S. Civil War;
>
> Otto von Bismarck, Prussian chief minister and engineer of the unification of Germany under Prussia;
>
> Brigham Young, president of the Church of Latter Day Saints (the Mormons);
>
> Napoleon III, emperor of France;
>
> The everyman "John Smith," I think;
>
> François Achille Bazaine, marshal of France, then still besieged by the Prussians in Metz;
>
> Louis-Jules Trochu, de facto head of state after Napoleon III's capture at Sedan;
>
> William Tecumseh Sherman, commanding general of the U.S. army; and
>
> Wilhelm I, king of Prussia, with a further reference to his son, the pacifistic but nonetheless able military commander, Friedrich Wilhelm, future Friedrich III; Twain's reference to William *III* is clearly an error.

Variant 1.2. Twain reprinted the entire work in the following edition of Buffalo's *Weekly Express*, on Wednesday, 21 September (Camfield 2003, 704). The reprinting was advertised in the *Express* for 19 September:

> To Be Continued.—As we have been unable to supply the demand for Saturday's issue of the Express, we hereby give notice that the "Map of the Fortifications of Paris," will be published in the *Weekly Express* which will be issued Wednesday morning. (Twain 1995, 199n1)

The *Weekly Express* customarily appeared on Thursdays, so the early printing might manifest the demand for the map. This printing was undertaken as a broadside supplement to the paper (Blanck 1955–91, item 3320). Given the hurried timing, I presume that the map was reprinted from Twain's own woodblock. [I have yet to see this variant.]

1.2) Variant 1.3: "Mark Twain's Map of Paris"

The Prussians arrived at Paris and invested the city just two days later, on 19 September. (The siege would last until 28 January 1871.) At the end of September, Twain prepared an expanded account for publication in the monthly New York magazine, *The Galaxy* (now *The Atlantic Monthly*). He had a regular column or "department" in the magazine, in which he reprinted many of his sketches from the *Express*. For the November 1870 issue—actually published on 14 October 1870 (as advertised on that day in the New York *Commercial Advertiser*)—he also provided what he now called "Mark Twain's Map of Paris" (Camfield 2003, 705).

As reproduced in *The Galaxy*, The map was very close indeed to the original in the Buffalo *Express*. The two images are the same size and have almost identical lettering and line work. But, the later image has slightly cruder shading for Omaha and, most noticeably, a filled square rather than the vertical stroke in the 'P' for "Podunk." Together, these indicate that a stereotype had been made of Twain's original woodblock. (A stereotype is a metal relief plate made from a wood cut or wood engraving, to permit many more copies to be printed, and to be printed simultaneously, than from a single block.) The alteration of the 'P' stemmed either from an error in the stereotyping process or from damage done to Twain's original woodblock during its extensive printing for the *Express*. Finally, a right-reading title was added (fig. 3).

The image was printed as an unpaginated, trifold, fold-out tipped in between the pages of the expanded account. The account was expanded by the addition of three new paragraphs added to the beginning of the account:

> **Mark Twain's Map of Paris**
>
> I published my "Map of the Fortifications of Paris" in my own paper a fortnight ago, but am obliged to reproduce it in THE GALAXY, to satisfy the extraordinary demand for it which has arisen in military circles throughout the country. General Grant's outspoken commendation originated this demand, and General Sherman's fervent endorsement added fuel to it. The result is that tons of these maps have been fed to the suffering soldiers of our land, but without avail. They hunger still. We will cast THE GALAXY into the breach and stand by and await the effect.

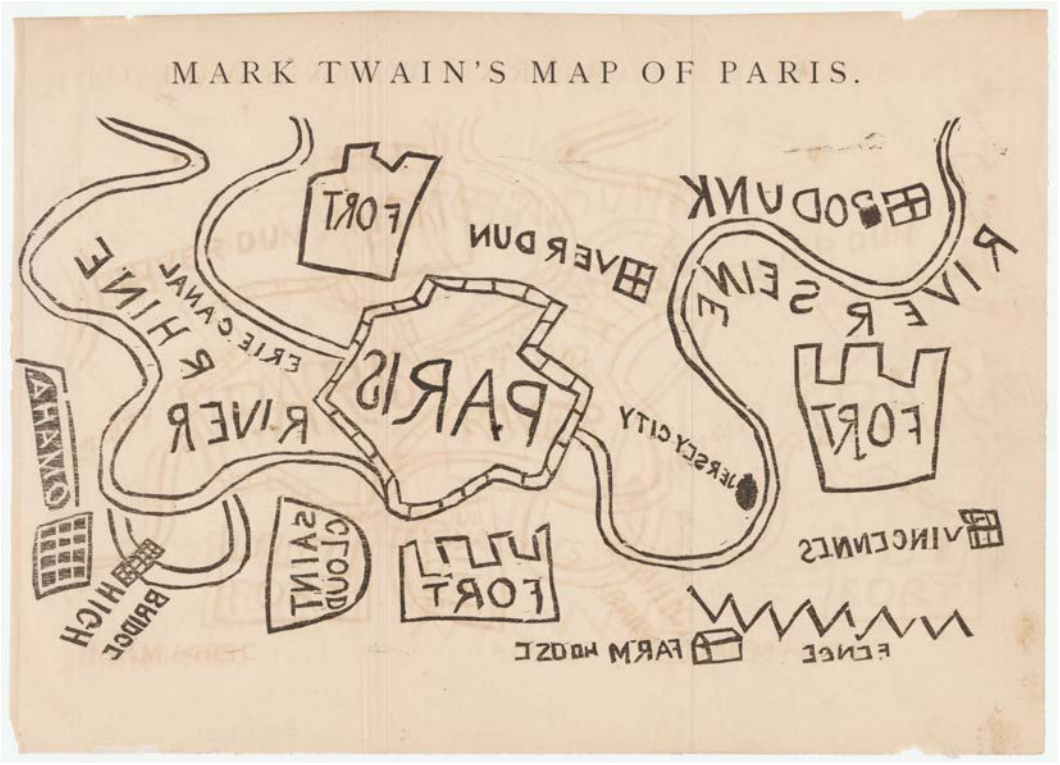

Fig. 3. Mark Twain, "Mark Twain's Map of Paris," from *The Galaxy* 10, no. 5 (November 1870), between 724 and 725. **Variant 1.3.** From PJ Mode's Persuasive Maps Collection (1073): https://digital.library.cornell.edu/catalog/ss:19343171.

> The next Atlantic mail will doubtless bring news of a European frenzy for the map. It is reasonable to expect that the siege of Paris will be suspended till a German translation of it can be forwarded (it is now in preparation), and that the defence of Paris will likewise be suspended to await the reception of the French translation (now progressing under my own hands, and likely to be unique). King William's high praise of the map and Napoleon's frank enthusiasm concerning its execution will ensure its prompt adoption in Europe as the only authoritative and legitimate exposition of the present military situation. It is plain that if the Prussians cannot get into Paris with the facilities afforded by this production of mine they ought to deliver the enterprise into abler hands.
>
> Strangers to me keep insisting that this map does *not* "explain itself." One person came to me with bloodshot eyes and a harassed look about him, and shook the map in my face and said he believed I was some new kind of idiot. I have been abused a good deal by other quick-tempered people like him, who came with similar complaints. Now, therefore, I yield

> willingly, and for the information of the ignorant will briefly explain the present military situation as illustrated by the map. Part of the Prussian forces, under Prince Frederick William, are now boarding at the "farm-house" in the margin of the map. There is nothing between them and Vincennes but a rail fence in bad repair. Any corporal can see at a glance that they have only to burn it, pull it down, crawl under, climb over, or walk around it, just as the commander-in-chief shall elect. Another portion of the Prussian forces are at Podunk, under Von Moltke. They have nothing to do but float down the river Seine on a raft and scale the walls of Paris. Let the worshippers of that overrated soldier believe in him still, and abide the result -- for me, *I* do not believe he will ever think of a raft. At Omaha and the High Bridge are vast masses of Prussian infantry, and it is only fair to say that they are likely to *stay* there, as that figure of a window-sash between them stands for a brewery. Away up out of sight over the top of the map is the fleet of the Prussian navy, ready at any moment to come cavorting down the Erie Canal (unless some new iniquity of an unprincipled Legislature shall put up the tolls and so render it cheaper to walk). To me it looks as if Paris is in a singularly close place. She never was situated before as she is in this map.
>
> MARK TWAIN.

Given that Twain generally submitted his copy for the *Galaxy* two weeks before publication (McCullough 1972), he probably wrote the three new paragraphs at the end of September. The initial reference in the expanded account would thus refer to the original publication of the work, two weeks earlier.

There is no doubt that the republication of the expanded work was highly popular. By early November, the *Galaxy* had to be reprinted at least four times:

> The Galaxy has printed and sold of the November number four editions. The first edition was as large as has ever been called for before during an entire month; but this time the entire edition was sold within five days of its publication [in mid-October], and three times since then the publishers have been obliged to stop all other work to get out fresh editions. This looks like success. (Boston *Evening Transcript*, 8 November 1870, quoted in Twain 1995)

2) Humor and Satire

2.1) Burlesque Humor

The work's humor stemmed originally from its placement in the *Express* as if it were a real and informative map and account of events, set as it was on a page of news rather than among advertisements and commentary (Michelson 1995, 10). The mock, back-handed commendations further

made the claim for realness and authenticity. The account explained away the map's problems as minor technical concerns.

However, the map's crude and infantile execution contrasted with Twain's patently false claims that the map was brilliant, informative, insightful, and self-explanatory. All is just absurdity, with a degree of anti-French sentiment in line with what Twain had already expressed in *The Innocents Abroad* (Harrington and Jenn 2014, 106–7). For one literary critic, the work—or at least the map and the commendations—exemplify Twain's central, anarchic project of subverting and destabilizing anything that might be taken as "serious," from the newspapers themselves, to politicians and generals, to history itself (Michelson 1995, 9–14).

Twain continued the burlesque in the expanded account for the *Galaxy*. This monthly magazine had little concern with news reportage, so the map lost its original, situational absurdity. Even though he had undermined his own conceit, Twain continued to present the map as "only authoritative and legitimate exposition of the present military situation," both using it to explain how the Prussians might assault the city and suggesting that hostilities might indeed be suspended until French- and German-language translations were distributed to the respective sides. The work's recontextualization is evident in the new title. Whereas the work's original title had directed the reader to engage with the subject matter, in the manner of normative maps, the new title redirected attention to Twain and his burlesque. In other words, the new title actively dispelled the direct connection to the territory constructed by normative maps.

2.2) Satire of Cartography

The heart of the satire, the hinge that connects the image to the words, is the opening line of the original account:

> The accompanying map explains itself.

But the map manifestly does not do so. The letters are wrong reading and the reader must actively create a mental mirror image to read and interpret the image. Like all allegorical and satirical maps, its meaning must be actively deciphered by the reader (Peters 2004).

But even once deciphered, the map is not at all understandable: the geography is just wrong. Paris is at the center, surrounded by forts, yes, but it is shown as the confluence of three watercourses: the Rhine, the Seine, and the Erie Canal. Northern France melds with the United States. Podunk—the epitome of minor, insignificant places that are simply not worthy to appear on maps[*]—is as prominent

[*] Since at least the 1840s, Podunk had been used in U.S. popular culture to refer to minor, out-of-the-way places that were just too insignificant to be worth mapping. The first such usage seems to have been in the "Letters from Podunk" first printed in 1846 in the Buffalo *National Pilot*. As Twain himself wrote in 1869, in defending the preaching of Thomas K. Beecher, a friend

as Verdun, Omaha (Nebraska), and St. Cloud (Minnesota); Podunk is shown as being larger than Jersey City (N.J.). At least one contemporary description of the map grouped Vincennes among the U.S. cities, confusing the Parisian suburb with the city in Indiana (*Boston Daily Journal*, 20 September 1870 [below]).

Twain emphasized the map's obscure and not at all self-evident character in the expanded account:

> Strangers to me keep insisting that this map does *not* "explain itself." One person came to me with bloodshot eyes and a harassed look about him, and shook the map in my face and said he believed I was some new kind of idiot. I have been abused a good deal by other quick-tempered people like him, who came with similar complaints.

Furthermore, in the expanded account, Twain set out to explain just how the map "illustrated" the "present military situation" for "the information of the ignorant." By "ignorant" we should understand "those who are sufficiently uneducated to read this map," i.e., every reader. In this respect, he effectively skewered the expectation that maps should be self-evident, that anyone with a modicum of literacy should be able to read them in what David Olson (1994, 168–69) called the "algorithmic" recreation of a work's "literal meaning." In his original account, he offered one effective mechanism (a mirror) and one absurd mechanism (standing on one's head) to "bring" the map "right" and so permit the reader to achieve an unhindered, algorithmic reading.

In an earlier sketch, from 1862, Twain had imagined a map that was so bad that it was no better than tracks left by flies as they buzz around atop a clean sheet of paper (below). That sketch had poked fun at the idea of the normative map. And so does Twain's account and map.

But Twain's reference to the map as being self explanatory redirects the satire from simply mocking the normative map to questioning one of the core beliefs and idealizations that comprises the modern concept of "cartography." By emphasizing the self-explanatory nature of his map, Twain turned from mocking the map to mocking common assumptions about what the map is supposed to be. This is perhaps the first act of cartographic satire.

3) Creating the "fortifications of paris"

3.1) A First Map Satire in 1862

The map of Paris was not, in fact, the first time Twain had burlesqued maps. He had already used the device of an absurd and non-explanatory map in a short sketch he published in the weekly *Territorial Enterprise* on 5 December 1862. (Twain contributed sketches to this newspaper, published in Virginia City, Nevada, and was its city editor, from 1862 through 1865.) Twain's sketch reported some imaginary

who had officiated at his wedding: "They even know [his preaching] in Podunk, wherever that may be. It excited a two-line paragraph there." Interestingly, almost all of the newspapers who described the map's depiction of American cities did *not* mention Podunk!

activities of the territorial legislature, quoting an imagined official record, and specifically addressed a supposed proposal to build a road:

> These grave and reverend legislators relax a little occasionally, and indulge in chaste and refined jollity to a small extent. Col. Williams is engineering a certain toll road franchise through the House, and the other night he was laying before the Committee on Internal Improvements some facts in the case, pending which he had occasion to illustrate his theme with pencil and paper, and the result was a map, which, in view of its grandeur of conception, elegance of design and masterly execution, I feel justified in styling miraculous. Mr. Lovejoy, Chairman of the Committee, captured it, incorporated it into his report, and presented it before the House yesterday, thus:
>
> *Report of the Committee on Internal Improvements*
>
> Map of Col. Williams' road "from a certain point to another place," as drawn by himself, and which was conclusive evidence to your Committee:
>
> Your committee would ask that it be referred to Col. Howard of the Storey county delegation.
>
> [Signed] *Lovejoy*, Chairman
>
> *Ackley*, Secy.
>
> It was so referred by the Speaker.
>
> Col. Howard will report to-day. I have procured a copy of the forthcoming document, and transmit it herewith.
>
> *Report on Williams Map*
>
> Your committee, consisting of a solitary but very competent individual, to whom was referred Col. Williams' road from a certain point to another place, would beg most respectfully to report:
>
> Your committee has had under consideration said map.
>
> The word map is derived from the Spanish word "mapa," or the Portuguese word "mappa." Says the learned lexicographer Webster, "in geography a map is a representation of the surface of the earth, or any part of it, drawn on paper or other material, exhibiting the lines of latitude and longitude, and the positions of countries, kingdoms, states, mountains, rivers, etc."
>
> Your committee, with due respect to the projector of the road in question, would designate what is styled in the report a map, an unnatural and diabolical scrawl, devoid of form, regularity or meaning. Your committee has in times past witnessed the wild irregularity of the footprints of birds of prey upon a moist sea shore. Your committee was

> struck with the strong resemblance of the map under discussion to some one of said footprints.
>
> Your committee, during his juvenile days, has watched a frantic and indiscreet fly emerge from a pot or vase containing molasses; your committee has seen said fly alight upon a scrap of virgin paper, and leave thereon a wild medley of wretched and discordant tracks; your committee was struck with the wonderful resemblance of said fly-tracks to the map now before your committee.
>
> Yet your committee believes that the map in question has some merit as an abstract hieroglyphic.
>
> Your committee, therefore, recommends, the Council concurring, that the aforesaid map be photographed, and that one copy thereof, framed in sage brush, be hung over the Speaker's chair, and that another copy be donated to the Council, to be suspended over the chair of the President of that body, as a memento of the artistic skill and graphic genius of one of our most distinguished members—a guide to all future Pi-Utes. All of which is respectfully submitted.
>
> *Howard*, Chairman and Sole Committee ("Letter from Carson City, 5 Dec 1862, in Twain 2009–11; see also Twain 1957)

Eight years later, when Twain latched onto the war maps being published in the New York newspapers as a suitable subject to be satirized, he redeployed the same formula—an absurd map characterized by means of clever, back-handed compliments—but now with the addition of an image.

3.2) The Personal Context

The creation of "Fortifications of Paris" is inseparable from a period of transition in the life and career of Mark Twain. After a decade as an itinerant journalist, lecturer, and writer of humorous tales and sketches—and having entered his thirties—Twain sought to settle down, marry, and become a writer of full-length books. He had written his first book, *The Innocents Abroad*, which was finally published in July 1869. At the same time, he had been looking to acquire an editorial position in a newspaper as a prelude to marrying Olivia Langdon. Thanks to his future father-in-law, he finally bought a one-third share in the Buffalo *Express* and in August 1869 he settled down in that city as a newspaper-owner/editor/columnist. He married Livy in February 1870, but their early life was beset by tragedy: Livy's father lay ill with cancer for months before dying in August 1870. Then Livy's school friend Emma Nye came to stay to support the grieving household, only to contract a typhoid fever and lie in a stupor in the Clemens' own bed until she died on 29 September. (Steinbrink 1991 covers this entire period in Twain's life in great detail.)

Twain later recalled that during this period of domestic grief he suffered from sudden mood

swings, "from deep melancholy to half insane tempests and cyclones of humor." The manic phases sustained his writing, both of *Roughing It*, the sequel to *The Innocents Abroad*, and of some of his best work for the *Express*. Among the latter was "Fortifications of Paris":

> During one of these spasms of humorous possession, I sent down to my newspaper office for a huge wooden capital *M* and turned it upside-down and carved a crude and absurd map of Paris upon it, and published it, along with a sufficiently absurd description of it, with guarded and imaginary compliments of it bearing the signatures of General Grant and other experts. ("Autobiographical Dictation," 15 February 1906, ¶14, in Twain 2010–15, 1: 362)

Josephus N. Larned, the political editor at the *Express*, gave an further account of the map's preparation in some reminiscences published in the *Express* (26 April 1910) on Twain's death:

> I doubt if he ever enjoyed anything more than the jacknife engraving that he did on a piece of board for a military Map of the Siege of Paris, which was printed in The Express from his original "plate," with accompanying explanations and comments. Half his day of whittling and the laughter that went with it are something that I find pleasant to remember. (Quoted by Paine 1912, 1: 399, and by Twain 1995, 200n1).*

A more contemporary recollection, from February 1871, was provided by another journalist and humorist, Don Piatt, in whom Twain had confided:

> "Only think," said he [Twain], "I knew that confounded thing had to be done, and, with a dear friend lying dead before me [Emma Nye],† and my wife half distracted over the loss, I had to get off my articles so as not to disappoint my publishers, and when I sat down with a board and penknife, to engrave that map of Paris, I did so with a heavy heart, and in a house of lamentation." (Piatt 1871, quoted by Steinbrink 1991, n.8 to chap. 8, and by Twain 1995, 199n1)

Finally, in 1900, Twain noted,

> Map of Paris. Emma Nye lying dead. | Reversing the map was not intentional—it was heedlessness. (Notebook 43, TS page 3, Mark Twain Papers, Bancroft Library, quoted by Twain 1995, 199 n. 1)

* Both Steinbrink (1991, n.8 to chap.8) and the editors of Twain (1995) took Larned's testimony to indicate that Twain had cut the block in the *Express's* offices, contradicting Twain's own testimony. But it is just as likely, given that Twain was unwilling to leave his wife at this time, that Larned visited him at home.

† Steinbrink (1991, 137) thought the person "lying dead" had to be Twain's father-in-law, as Emma Nye lived until 29 September. His father-in-law was however buried in Elmira and was not in the house in Buffalo. The editors of Twain (1995) however suggest that in his memory, Twain associated the map with Nye's death, and so used this formula. It might also be an abbreviated phrase: "lying [as if] dead." Either way, the reference is to Nye.

This last is revealing. It indicates that a core element of the work's surrealism was actually inadvertent. While the small discrepancies in all these accounts indicate the fragility of memory, this admission seems to entail a true recollection. Setting out to carve the block wrong-reading would be an active decision that Twain would likely have remembered. Indeed, given the manic nature of the whole exercise and his lack of artistic expertise, it does seem likely that Twain would have been "heedless" in how he cut the wood. Having had the idea of creating an "absurd" map, Twain seems to have carved it on the fly, as the mood took him, with little planning and without first sketching it out. Even if he had cut the block so as to be right-reading, the map would still have been sufficiently humorous for his needs. But, once he realized what he had done, or had it pointed out to him, Twain incorporated the mistake into his essay.

3.3) Ambitious and unfulfilled plans for chromolithographic posters

Twain was ambitious in trying to persuade others to reprint and sell the work. On 22 September, the day after he first reprinted the work in the *Express's* weekly edition, Twain wrote to his New York publisher, Elisha Bliss at the American Publishing Company:

> Friend Bliss—
>
> My map is attracting a deal of attention. We get letters requesting copies from everywhere. Now what you need is something to make the postmasters & the public *preserve* your posters about "Innocents" & stick them up & if you would put that map & accompanying testimonials right in the centre of the poster & the thing is accomplished, *sure*.
>
> If you want to do this, write or telegraph me at once, & I will have a stereotype made & send to you. (Twain 1995, 198)

Twain responded favorably to a proposal by Louis Prang, a German-born printer based in Boston, to publish a chromolithograph of the work. Twain was pleased that Prang had sought permission before producing a reprint because he had not secured copyright and was very concerned about losing potential income; a separate print would give Twain the chance to claim copyright. Twain had big visions when he wrote to his agent:

> The idea is this: Let this Map boom along & advertise itself all it possibly can, by appearing in the Galaxy, the World, the Boston Sun, & some of Bliss's Am. Pub. Co. posters, & thus advertise itself till it is a great celebrity & everybody anxious to get & *keep* a copy (for papers are always lost or destroyed before a person can cut a thing out,) and then, on top of this great tide of popularity, come out with a nice, picturesque Chromo, *revised, corrected*, certain startling *essentials* added,—portraits of sovereigns & generals, maybe—& some more letter-press description & remarks——and if it don't sell an awful swathe of copies I miss my guess. …

> *I* think there is a deal of money in this thing for the map is celebrated all over the continent, & yet even in Boston where it has been published just ask every man you meet for one day & you will find that he has heard of but not *seen* it. Now do you go to Prang & talk it up & make a bargain with him & draw a contract & send it along—& without the least trouble in the world we shall take in some money. And can't you get out a *German* edition? (Mark Twain to James Redpath, 4 October 1870; Twain 1995)

But crush of other work on *Roughing It*, together with the continuing effects of Emma Nye's death, prevented Twain from further expanding the account, and he wrote to his agent less than a week later:

> Let Prang go ahead with the Map just as it is. One of these days, if the opportunity offers I will try to get up something which can be copyrighted & thus enure to mutual benefit. I wish I had the time to fix up the additions to this Map, for there might be a success made of it—but circumstances have put a veto on it. I hope Prang will make some money out of this work of art for I haven't—& can't, now because of my neglect to copyright it. (Mark Twain to James Redpath, 9 October 1870; Twain 1995)

In the end, the chromolithograph did not appear. Furthermore, if Bliss did make a new advertising poster for *The Innocents Abroad*, incorporating the map of Paris, then no copy is now known.

4) The Work's Reception

"Fortifications of Paris" struck a nerve and was quickly reprinted in several forms in many newspapers in September and early October 1870. A much smaller number of newspapers contained the expanded account, deferring instead to the *Galaxy's* complete reproduction after 14 October. Twain's work struck quickly and was widely appreciated, if only in a partial manner that emphasized the written account and, more particular, the commendations, before equally quickly receding from the public mind.

Only three newspapers republished the entire work: map, original account, and commendations. Most reproduced the account and commendations in three particular permutations: description of the map, plus original account and commendations; description of the map and commendations, no account; and reprinting of only the three new paragraphs of the expanded account. These four groupings are discussed in turn.

4.1) Reprinting the entire work, including the map

As noted above, Twain republished it in the *Weekly Express* (21 September) and then, with the expanded account, in *The Galaxy*, as of 14 October. I have also found references to three other reprints of the entire work, map plus account plus commendations, although I have yet to be able to consult any of the three:

Variant 2.1. Twain, in his letter of 4 October 1870 re Louis Prang (see above), referenced a reprinting of the map in the Boston *Sun*. The editors of his letters identified the issue as that of 25 September 1870 (Twain 1995).

Variant 2.2. Two New York newspapers, the *Sun* and the *World*, contained announcements on Saturday, 1 October, that the next day's *Sunday World* would include a reprint of Twain's work. While the notice in the *Sun* was brief, the *World* devoted several column inches to a vertical banner proclaiming that "Mark Twain's Famous War Map" would appear in the next day's paper, and it further gave a descriptive notice:

> To-morrow's issue of the Sunday *World* will be one of the most attractive numbers ever printed. A feature will be the famous map of the seat of war by Mark Twain, drawn from actual survey in Buffalo. This picture of the fortifications on the banks of the Seine, from a humorous point of view, will appear just in time to relive the soberness of the war news.

The *Sunday World's* reprint included the map and the original account, as indicated by a notice in the New Orleans *Times-Picayune* (9 October 1870):

> The New York World, of Sunday last, publishes a war map, devised and engraved by Mark Twain. As the reader may imagine, it presents the aspect of the most wonderfully original and puzzling pieces of workmanship of the kind ever seen in print. Some idea of its character may be formed from the following explanation "To the Reader," which accompanies it: …

Variant 2.3. The New York *World* (8 October 1870) also carried a notice that Twain's work had been reprinted in the *Comic-Monthly*.

4.2) Reprinting the account without the map

Many newspapers reproduced Twain's work in September and October 1870, but they did so by reprinting only Twain's words, without the image. It is easy to argue that newspapers restricted their reprints to the work's letterpress elements because they did not have the time, the resources, or the space to reproduce the image. But other factors also seem at play, in terms of the preference shown by Twain's contemporaries for the written word, and especially the commendations.

I have identified only one newspaper that sought to emulate the spirit of Twain's burlesque, perhaps seeking to out-do Twain. The *Daily Cleveland Herald* (21 September 1870) provided an elaborate introduction before reprinting the account and commendations. There is no reason to think that this introduction referenced Twain's obscure early effort from the *Territorial Enterprise* for December 1862 (above), but it does suggest a common understanding of birds and insects as creating random patterns that might be read as maps in acts of pareidolia:

> **Mark Twain's Map |** This admirable map of Paris is given in the Buffalo *Express*. It was evidently taken from sound—as telegraphers read the ticks—while forty enthusiastic French men were describing localities. We do not know which most to admire; the map or its explanation as given by the author. The map cannot be copied; it is secured by a right that is more potent than a thousand copyrights, for it is *uncopyable*; the man who should undertake a facsimile would be on his way to a Lunatic Asylum before his task was half done.
>
> We had supposed, until too late to remedy our mistake, that we had succeeded in getting a perfect copy. Our "devil" took a sheet of "print" and our bantams, and placing the print, with some corn sprinkled on it, at the edge of the new Nicholson just bathed in liquid tar, drove the bantams across the blocks. The bantams rallied on the sheet, and by the time the corn disappeared, a perfect map—as near a copy of Mark Twain's as possible—was produced. Just at the finish, and when our bantam cock was giving his periodical half-minute crow, a shanghai rooster burst upon the scene and in the fight—in which the bantam came off victor—the map was rendered unintelligible.
>
> The explanation by Mark Twain is as follows. …

A few newspapers sought to describe the map before reproducing the account and the commendations. The Philadelphia *Evening Telegraph* (19 September 1870) gave a simple introduction:

> **Mark Twain's War Map. | Mark's First Attempt in the Art Line—Official Commendations, etc. |** The Buffalo *Express*, of Saturday, has a wonderful war map, drawn and engraved by Mark Twain, with explanations by the artist. Appended are some recommendations which the work has received. … [full account]

The Washington [D.C.] *Evening Star* (21 September 1870) described the map in some detail, before reproducing the entire explanation and the commendations:

> **Mark Twain's New Map.** | Mark Twain gives in the Buffalo Express a burlesque upon the war-maps just now so common. As a triumph of art this map of the Buffalo humorist is unapproachable. It is entitled the "Fortifications of Paris," but nobody would ever suspect that it had any relation to the French capital if told of the fact. It exhibits the positions of Saint Cloud, Vincennes, Verdun, Podunk, the Erie Canal, High Bridge, Omaha and Jersey City. A peculiarity of the map is that the River Rhine runs directly into Paris, and that Jersey City lies in an elbow of the Seine, almost directly west of Vincennes. Prominence is given to a farm house and the fence in the foreground of the map. … (Washington [D.C.] *Evening Star*, 21 September 1870)*

* The formula in the Washington [D.C.] *Evening Star* (21 September 1870) was repeated in the *Portland* [Maine] *Daily Press* (23 September 1870) and in the Portland [Oregon] *Oregonian* (5 October 1870).

Yet in several instances there seems to have been an editorial preference for the text and especially for the commendations. No less than nine of the twenty newspapers to reprint the account and commendations, beginning with the *Cincinnati Daily Gazette* (20 September 1870), prefaced them with the same, revealing statement:

> **Mark Twain's Map |** Mark Twain publishes in the Buffalo Express his first war map. His explanation is better than the Map. Here it is: … (*Cincinnati Daily Gazette*, 20 September 1870)*

His explanation is better than the map. There was already a sense that what was of most interest was not the map, but the literary sketch.

4.3) Reprinting the commendations, with neither the map nor the account

The sense that Twain's written word was better than his image is further evident in fact that no less than seventeen newspapers failed to reprint the entire account and instead only described the map and quoted the fake official commendations. Most such reprintings included all the commendations; if any were excluded, then it was the obviously absurd commendation by the everyman "J. Smith." Twain's contemporaries would seem to have thought that the lasting value of his humor resided not in absurdity but in the clever phrasing of the commendations.

The formula in the *Boston Daily Journal* (20 September 1870) was repeated in six other newspapers:

> Mark Twain has executed for the Buffalo *Express* a clever burlesque upon the war-maps. It is entitled "Fortifications of Paris," and exhibits the positions of St. Cloud, Vincennes, the Erie Canal, Jersey City, and Omaha. Accompanying it are "official commendations." General Grant says, "it is the only map of the kind I ever saw." Bazaine says, "If I had had this map I would have got out of Metz without any trouble." J. Smith writes that it completely cured his wife of freckles, and Napoleon admits that "it is very nice, large print." (*Boston Daily Journal*, 20 September 1870)†

Two Vermont newspapers—the St. Albans *Daily Messenger* (21 September 1870, repeated 23 September), and the *Bennington Banner* (29 September 1870)—expanded more on the map and how the account

* The formula in the *Cincinnati Daily Gazette* (20 September 1870) was repeated by the *Chicago Republican* (22 September 1870); the *Richmond* [Indiana] *Palladium* (24 September 1870); the *Mobile* [Alabama] *Register* (25 September 1870); the new Lisbon [Wisconsin] *Juneau County Argus* (29 September 1870); the Philadelphia *National Baptist* (29 September 1870); the *San Francisco Bulletin* (29 September 1870); the *Sacramento Daily Union* (1 October 1870); and, with minor changes, the *Yankton* [S.D.] *Press* (19 October 1870).

† The formulas in the *Boston Daily Journal* (20 September 1870) was repeated by the Washington, D.C., *Critic-Record* (21 September 1870); Amherst [N.H.] *Farmer's Cabinet* (29 September 1870); Lancaster [N.H.] *Coos Republican* (4 October 1870); Concord [N.H.] *Independent Democrat* (6 October 1870); and *Pittsfield* [Mass.] *Sun* (6 October 1870).

explained how to read it:

> Mark Twain in the Buffalo *Express* produces a war map that is fully as reliable as many which have been given to the public in the New York dailies, and far more interesting. Podunk, Jersey City, High Bridge, and Omaha all have a place on the map, and the Seine and the Rhine join at Paris with the Erie Canal. In a note appended the artist states that by an "unimportant oversight" he has engraved the map so that it reads wrong end first except to left-handed people; the student who desires to study it may read it standing on his head or holding the map before a mirror. Among the recommendations is one from President Grant, who sententiously says, "It is the only map of the kind I ever saw." Bismarck thinks "it places the situation in an entirely new light." Brigham Young "cannot look upon it without shedding tears." Trochu says he has "seen a great many maps, but none that this reminds me of." Gen. Sherman thinks it "in some respects a truly remarkable map."

A variant statement appeared in the Quincy [Illinois] *Daily Whig* (23 September 1870), sententiously referencing Twain's recently published first book, *The Innocents Abroad*, and his other works:

> **Mark Twain's War Map** [from the Toledo Blade] | Mark Twain has a map showing the fortifications about Paris in a late number of the Buffalo *Express*, in which there are a few slight inaccuracies. For instance, the river Rhine does not flow through Paris and the Erie Canal is not in France at all but is in New York or Pennsylvania or some other American State. Jersey City is a suburb of New York and not of Paris and Podunk is not on the Seine. For an "Innocent" who has been abroad and seen Paris with his own eyes, these errors are, to say the least, exceedingly ludicrous. The effort made to force this map upon an already convulsed public by certificates from distinguished persons, is eminently worthy of the man who wrote the "Jumping Frog" and the paraphrase of that most touching of all deeds, the warrantee deed. To show what things he will resort to, we subjoin these certificates, premising that "J. Smith" is too well known in this community to have any weight in determining a matter of such levity: …

A couple of newspapers copied the introduction to the work offered by the Philadelphia *Evening Telegraph* (19 September 1870) but used it to preface only the commendations:

> **Mark Twain's War Map. | Mark's First Attempt in the Art Line—Official Commendations, etc. |** The Buffalo Express, of Saturday, has a wonderful war map, drawn and engraved by Mark Twain, with explanations by the artist. Appended are some recommendations which the work has received. … (Memphis, Tenn., *Public Ledger*, 27 September 1870)*

* Memphis, Tenn., *Public Ledger* (27 September 1870), repeated by the Little Rock [Arkansas] *Morning Republican* (28 September 1870).

Other reprintings of the commendations were equally brief:

> Mark Twain gives a unique war map in the Buffalo *Express*. It is entitled the "Fortifications of Paris," and exhibits the positions of St. Cloud, Vincennes, the Erie Canal, Jersey City, and Omaha. Accompanying it are "official commendations," as follows: … (*Chicago Tribune*, 24 September 1870).

> **Mark Twain's War Map** | Mark Twain has just completed a war map, and announces it with the following testimonials: … (New Orleans *Times-Picayune*, 25 September 1870)*

> **War Maps** | Mark Twain has recently made a center shot by publishing in the Buffalo *Express* a "War Map of the period." The subject is the fortifications of Paris, and the map looks like it has been designed by a six year old bootblack with his "shine" brush. Still, Paris, the Seine and the forts are all there, and the map is about as successful as the average journalistic diagrams that people waste so much time studying over. The "official commendations" which Twain appends to his map are in his best vein: … (*Urbana* [Ohio] *Union*, 28 September 1870).

> Mark Twain saw that all the papers had maps of the seat of war in France, so he made one for his paper. It shows the city of Paris and its immediate vicinity, embracing part of the course of the Rhine and of the Erie Canal, the location of Jersey City and other important features in the *environs* of the capital of France. With the map, he prints, as is usual with publishers, some of the commendations his work has received. Here are some of them: … [all except for "J. Smith"] (Chicago *Standard*, 20 October 1870)

Indeed, newspapers were still referencing the commendations several months later, suggesting that they had remained in their readers' minds:

> The great Tupper, having written some characteristically stupid verses about the fall of Metz, has received a note of thanks from Prince Frederick Charles, which on considering the subject, reminds one strikingly of the testimonials to Mark Twain's map. (*Milwaukee Sentinel*, 26 January 1871)

> The latest about Vinnie Ream's bust of Lincoln is, that it makes them cry. Cullom went to the artist with tears streaming down his cheeks, and said 'You can see what effect it has on me.' Mark Twain's map had the same effect on Brigham Young. (*Wisconsin State Register*, 11 February 1871)

* New Orleans *Times-Picayune* (25 September 1870), repeated by the Macon *Georgia Weekly Telegraph* (27 September 1870).

4.4) Reprinting the Expanded Account

Once the work, with the expanded explanation, appeared in the *Galaxy* in mid-October (above), many newspapers mentioned its reprinting, but relatively few also reprinted the account. The reluctance perhaps stems from the fact that the map was now copyrighted. Those I've identified gave a brief introduction and then simply reproduced the three new paragraphs. They begin with Twain's own republication of the three new paragraphs in the Buffalo *Express* for Saturday, 15 October 1870 under the title "Mark Twain. His Map of the Fortifications of Paris" (McCullough, 1972, item 48; Camfield 2003, 705), but without the map. (The woodblock had presumably been sent to New York for the production of a stereotype.) Newspapers that followed suit are St. Louis *Daily Missouri Democrat* (19 October 1870); Hillsboro [Ohio] *Highland Weekly News* (20 October 1870); *Wheeling* [W.V.] *Daily Intelligencer* (25 October 1870); *New Orleans Republican* (29 October 1870); New Orleans *Times-Picayune* (30 October 1870); Harrisburg [Penn.] *Patriot* (3 November 1870); and Ravenna [Ohio] *Democratic Press* (3 November 1870).

Some newspapers reacted to Twain's absurd supposition that both the French and Prussians would place hostilities on hold until they could circulate translated versions of the map. Thus,

> An Armistice. Mark Twain's map was one of the wonderful productions of the nineteenth century, and we are not surprised that he wants an armistice declared in France until he can circulate it among the two great contending armies at Paris. (Pottsville [Penn.] *Weekly Miners' Journal*, 22 October 1870)

Similar sentiments were also reported in the *Sacramento Daily Union* (24 October 1870) and the Philadelphia *National Baptist*, 27 October 1870).

The publication of "Fortifications of Paris" in the *Galaxy* substantially popularized the map. It was referenced in a number of accounts through the rest of 1870. The New York *Evening Post* (19 October 1870) used the map as a means to denigrate the apparently poor quality of the maps actually issued to the French army:

> **Mark Twain's War Map in the French Army.** | According to the *Rhenish Courier* the French officers were provided with war maps not unlike that recently issued by Mark Twain. A copy of one of these guides in the campaign "against Prussia" has been forwarded to Berlin from Sedan. The Rhine, judging it by the scale on which the rest of the country is represented, would be nearly five miles wide, and does not rise, as is commonly believed, in the Alps, but proceeds from Lake Constance, which moreover has no tributary from Switzerland. … The artistic execution of the map is on a par with the first attempts at map-making of eight-year old schoolboys, and the *Courier* remarks geography has notoriously always been a weak point with the *Grande Nation*. It is fortunate the French officers had no occasion to use the map. Some of the French papers, indeed, console themselves with the reflection that, disastrous as the war has been, it would have been much worse had the Emperor [Napoleon III] fulfilled "his promise of leading his

> troops into Germany."

This account—which seems to quite misunderstand the nature of cartographic symbolization and simplification—was in turn criticized by the New York *Commercial Advertiser* (20 October 1870):

> **A Big "Thing" in Geography** | Somebody attempting to be more than ordinarily "smart," complains that the war map supplied to the French officers ain't much more reliable than Mark Twain's; and with a triumphant flourish declares that according to this map "the River Rhine does not arise in the Alps, as is commonly supposed, *but proceeds from the Lake of Constance!*
>
> The discoverer of this mare's nest leaves the matter in a good deal foggier condition than he found it, for as the Lake of Constance both receives and discharges the waters of the Rhine at a comparatively short distance from their source, it doesn't seem such a frightful offence to say that the river "proceeds" from it. He ought to hire himself out to Mark Twain, in whose service this sort of captiousness might assume the respectable appearance of a joke.…

Twain's map also served as a byword for (wrong-headed as well as wrong-reading?) ingenuity:

> Like Mark Twain's map of the seat of war in Europe, this brilliant idea would never have been thought of by anyone else. (*Trenton* [N.J.] *State Gazette*, 28 October 1870)

And, in New Hampshire,

> J. G. Edgerley, Superintendent of Manchester schools, opened a discussion on the subject of "Teaching a Profession." … He spoke amusingly of the character of some of the examining committees of teachers—persons who knew about as much of Mark Twain's "War Map of Paris," as they did of Cornell's Guyot's, or Warren's maps. (Concord [N.H.] *Independent Democrat*, 15 December 1870)

The *Galaxy* might have reproduced Twain's map, account, and commendations in large numbers, and evidently did so to great acclaim, but not all reception of the expanded account was positive. The Philadelphia *National Baptist* (20 October 1870) suggested that with the *Galaxy* reprint, Twain was perhaps pushing the exposure of his work too far, and it clearly stated that the words were funnier than the image:

> The *Galaxy*, for November, is early in the field, and looks like an excellent number. Mark Twain's department contains his famous war map. It was very funny at first,—though the "address to the reader" is much better than the picture,—but a "revised edition" of such things is too much like stale soda-water.

5) Reprinting the Map in Collections of Twain's shorter works

The sentiment of this last, admittedly solitary, comment from the *National Baptist* seems to be born out by the subsequent history of further republications of the work (map, account, and commendations together) in book-length collections of Twain's sketches and essays. The expanded account was included in two collections published outside of Twain's control, in Canada and in Great Britain (**variants 2.4, 2.7**). But in another such collection (**variant 2.5**) and in collections assembled under Twain's oversight through the remainder of the century (**variants 2.6 and 2.8–10**), only the original account was reprinted. The decline in the work's cultural relevancy is evident in the manner in which Twain included it in the first issue, in 1874, of an abortive project to publish his sketches in small chapbooks (**variant 2.8**), he excluded it in the following year from his first book-length collection to be published (and later often republished) in the U.S., specifically in *Sketches, New and Old* (New York, 1875).

Several variants of the map soon appeared in book-length collections published in Canada and Great Britain, while the war was still in process, or shortly thereafter:

> **Variant 2.4.** A Canadian collection of Twain's essays, entitled *Mark Twain's Memoranda*, included the expanded account under the title, "Map of Paris" (Twain 1871b, 77–79; see Johnson 1910, 9–10). The map was included, as a foldout placed between pages 80 and 81.

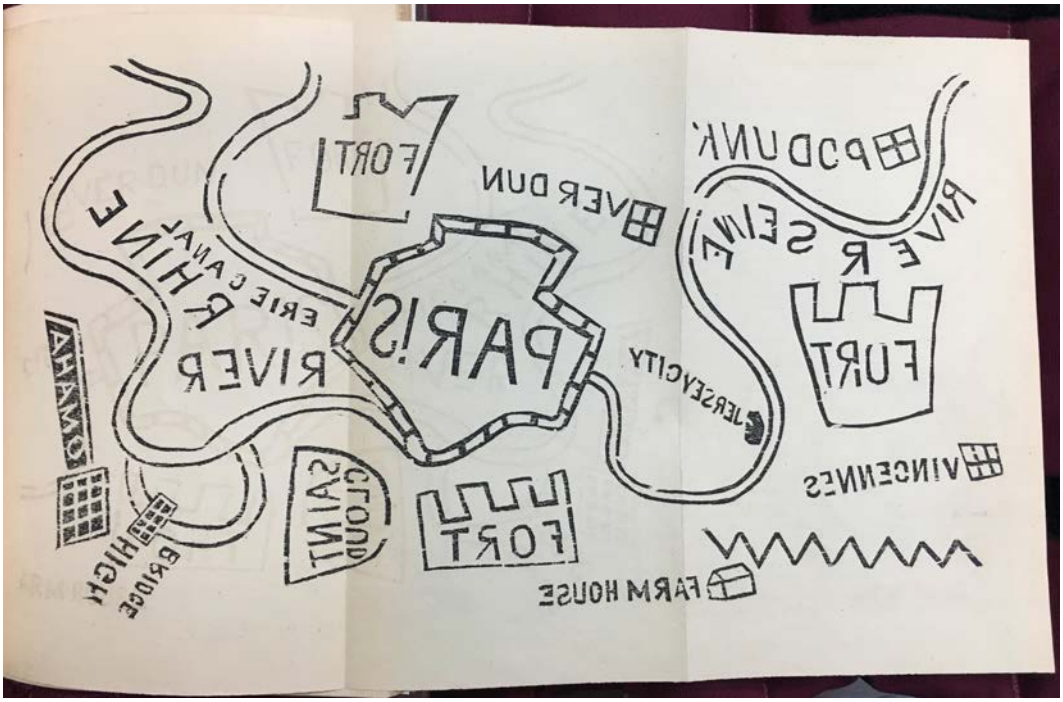

Fig. 4. **Variant 2.4.** Photo Courtesy of Michelle Prestholt, from UW Special Collections (Mark Twain Brownell 101)

The lettering and line work is new, indicating that this is a completely new preparation, which appears to be a lithograph (fig. 4). The map measures 8 × 13 inches (20 × 33 cm), or a reduction to about 85% of the original.

Variant 2.5. A reduced version of the map (fig. 5), with the original account, under the title "Map of Paris," appeared in a collection of Twain's essays published in London: *Eye Openers* (Twain 1871a, 138–42; see Johnson 1910, 12–13; McCullough 1972, item 44). The map was reduced to about 40% of the original, rotated to fit a narrow page, given a neatline, and all the lettering has been neatly done. The butchered 'P' in Podunk indicates that the image was copied from the map in the *Galaxy* (**variant 1.3**), even if the text was not.

Variant 2.6. The following year, in 1872, **variant 2.5** was copied, along with the original account, for another London publication, *Mark Twain's Sketches* (Twain 1872, 169–72; Johnson 1910, 19–21). The line work was further simplified (fig. 6)

Variant 2.7. Another London edition of Twain's essays, *Choice Humorous Works*, by the same publisher as **variant 2.5**, included the map, but now with the expanded account (Twain 1873, 378–80, reprinted in a later edition, Twain 1880; see Johnson 1910, 27–29). While the map is similar to the earlier variant, its matrix was prepared anew (fig. 7)

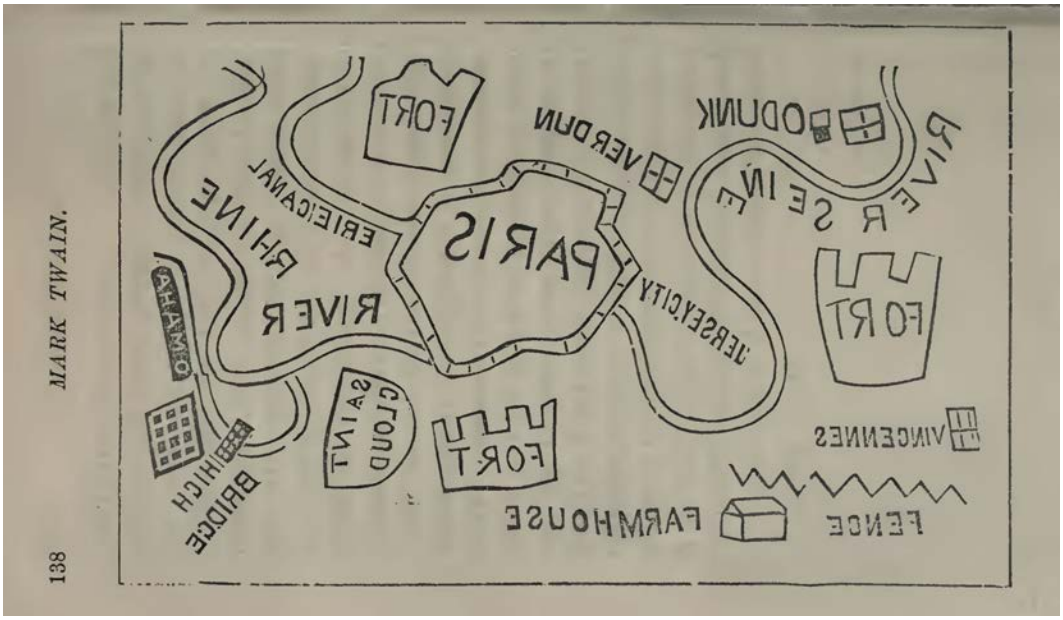

Figure 5. **Variant 2.5.** Reduced version of **variant 1.3** in Twain (1871a, 138), rotated for easier viewing (top at left); reproduced from archive.org. The neatline of the map measures about 8.5 × 13.5 cm (estimated).

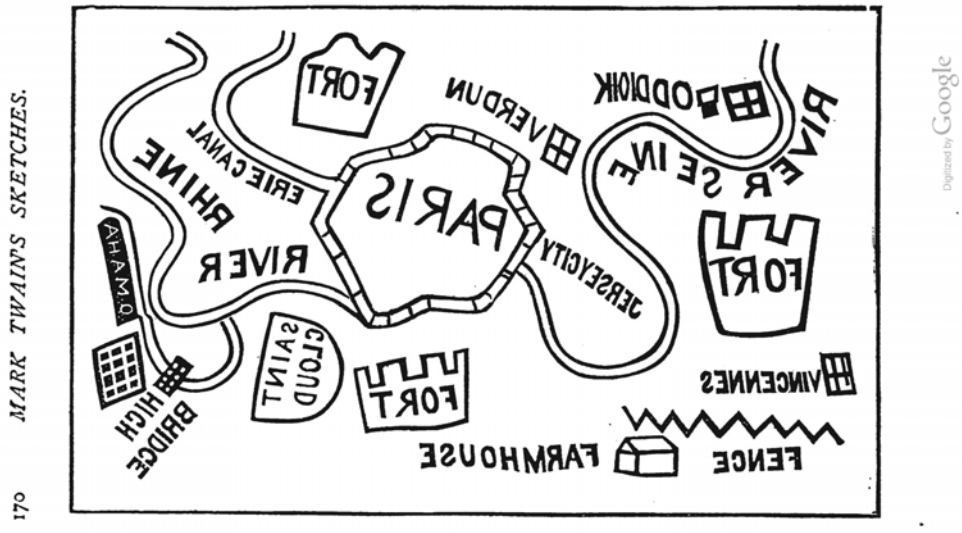

Figure 6. **Variant 2.6.** A copy of **variant 2.5** in Twain (1872, 170), rotated for easier viewing (top at left); reproduced from Google Books.

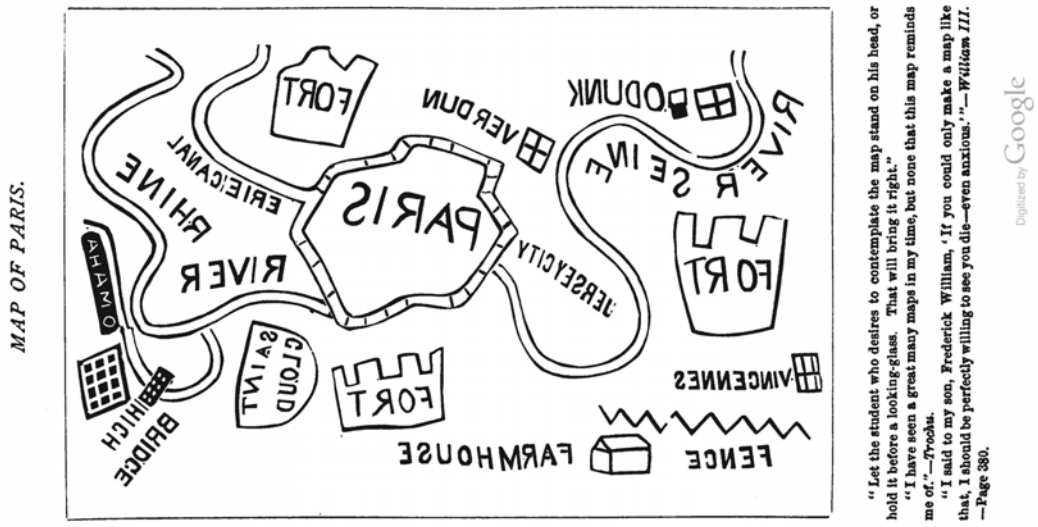

Fig. 7. **Variant 2.7.** Another copy of **variant 2.5** in Twain (1880, opp. 379), rotated for easier viewing (top at left); reproduced from Google Books.

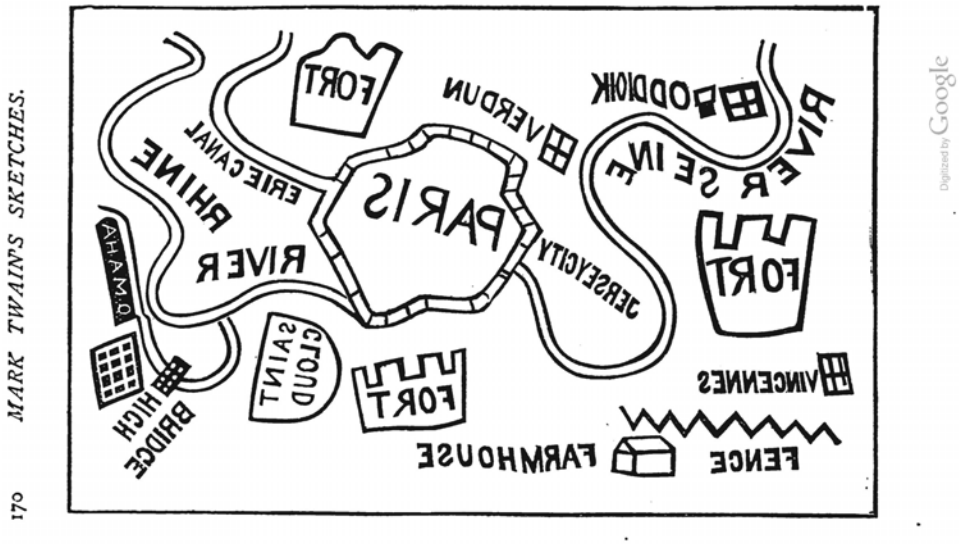

Fig. 8. **Variant 2.8.** Reduced copy of **variant 1.1** in Twain (1872, 170), rotated for easier viewing (top at left); reproduced from a scan of microfilm by Indiana University's Wright American Fiction Project, and used here under fair use.

With the war over, Twain included the map and original account in his own collections of sketches, in the 1870s and then again in 1896, eking out its use even though the immediacy of the events to which it related was well and truly over.

> **Variant 2.8.** Yet another reduced redrawing of the map appeared in Twain's own compilation of some of his essays, in the first (and only) issue of *Mark Twain's Sketches* (Twain 1874, 26–27; see Johnson 1910, 35–36; McCullough 1972, item 44). The account is the original version. The illustrations in this chapbook were drawn by R. T. Sperry, although I see none of his hand in the redrawing of the map. The map has been reduced to about 11.7 × 20 cm, or to about 60% of the original, and it has been given a letterpress title, "Fortifications of Paris." The clean "P" of Podunk indicates that the map was copied from **variant 1.1** (fig. 8).
>
> **Variant 2.9.** A few years later, Twain included the work in his collection of sketches and essays, *Punch, Brothers, Punch!* (Twain 1878, 26–29; see Johnson 1910, 47–49, who also identified several pirated editions published in the United Kingdom). The account is in the original version, under the title, "Map of Paris." The map was printed from a new matrix, reduced to about 40% of the original and rather crudely done. It was set vertically on the page, with a typeset title across its top, "Fortifications of Paris" (fig. 9).
>
> **Variant 2.10.** Twain later incorporated the entirety of *Punch, Brothers, Punch* into an

> omnibus collection of later Tom Sawyer novels, with the work (original explanation) under the title "Map of Paris" (Twain 1896, 405–8; see Johnson 1910, 76–77). The map was folded (trifold) and tipped in, with a typeset title underneath, "Map of Paris" (fig. 10).

The whole conceit of the "Fortifications of Paris" remained a source of reflection in Twain's thought. In his "autobiographical dictations" to his daughter in 1906, continuing directly on from the usually quoted passage about carving the back of a wooden *M* in a manic phase (above), Twain could not resist playing once again with the conceit that the map was read as an authentic rendition of the military situation by contemporaries:

> The Franco-Prussian war was in everybody's mouth at the time, and so the map would have been valuable—if it had been valuable. It wandered to Berlin, and the American students there got much satisfaction out of it. They would carry it to the big beer halls and sit over it at a beer table and discuss it with violent enthusiasm and apparent admiration, in English, until their purpose was accomplished, which was to attract the attention of any

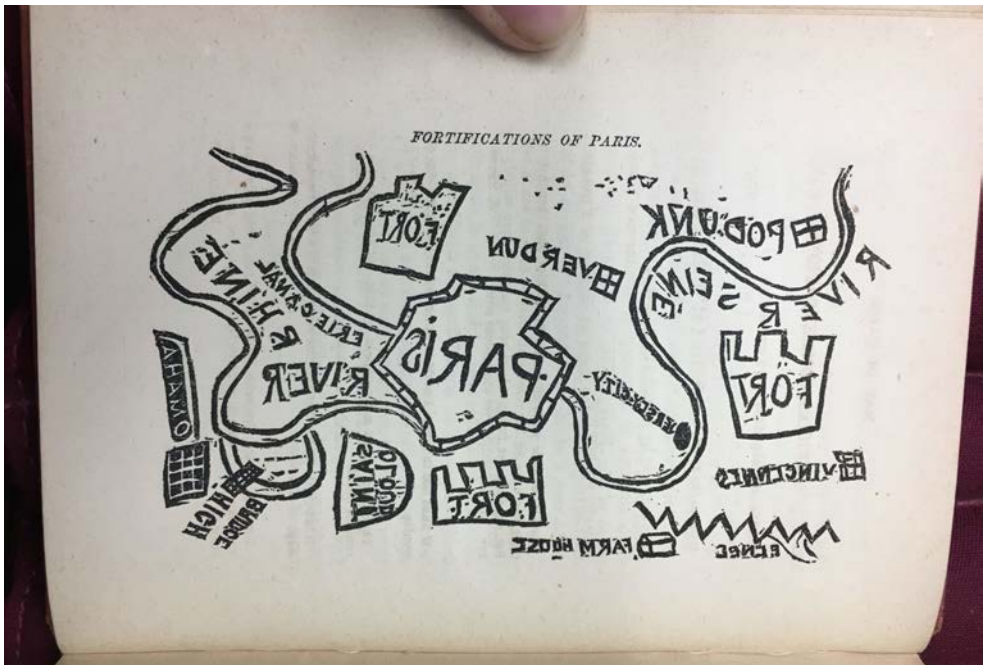

Fig. 9. **Variant 2.9.** Copy of **variant 1.1** in Twain (1878, 28). 2.5 × 4.75 inches (7 × 12 cm). Photo Courtesy of Michelle Prestholt, from UW Special Collections (Mark Twain Bassett 93)

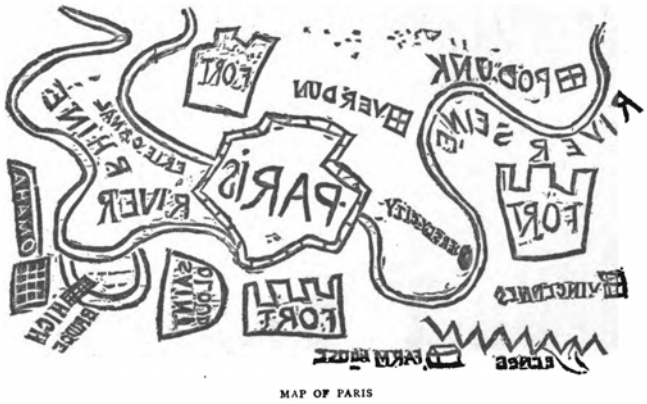

Fig. 10. **Variant 2.10.** Enlarged copy of **variant 2.9** in Twain (1896, 407), rotated for easier viewing (top at left); reproduced from Google Books.

> German soldiers that might be present. When that had been accomplished, they would leave the map there and go off, jawing, to a little distance and wait for results. The results were never long delayed. The soldiers would pounce upon the map and discuss it in German and lose their tempers over it and blackguard it and abuse it and revile the author of it, to the students' entire content. The soldiers were always divided in opinion about the author of it, some of them believing he was ignorant, but well-intentioned; the others believing he was merely an idiot. ("Autobiographical Dictation," 15 February 1906, ¶14, in Twain 2010–15, 1: 362–63)

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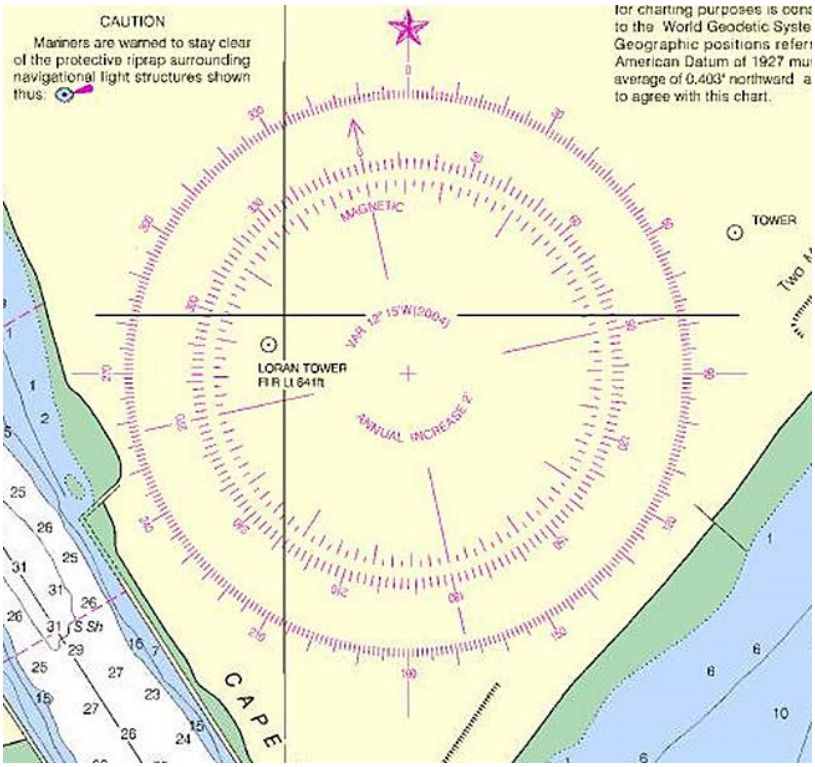
FIRST STEPS TOWARDS A PARTIAL GENEALOGY OF THE COMPASS ROSE

Originally posted: 14 March 2018

https://www.mappingasprocess.net/blog/2018/3/14/first-steps-towards-a-partial-genealogy-of-the-compass-rose

I had meant this to be a simple blog post suggesting how and why compass roses became a feature of early modern regional maps. It's a rather small realization to which I came some time ago, but it has implications so I thought I'd share it here. Yet, once again, I found myself all tangled up in another detail of mapping and map history that has been understudied and taken for granted, so that it is rife with error and confusion.

Let's start with a fundamental question: what *is* a compass rose? A search of the literature and the internet reveals a mess of images ranging from simple north arrows (image at right from from http://more-cliparts.net/cliparts/simple-compass-rose.html), via detailed protractors, as found on modern charts, reading to single degrees from both true (outer) and magnetic (inner) north, to the more traditional



https://celebrating200years.noaa.gov/new_york_charts/compass_rose.html]

compass rose found on early charts and maps, which nowadays appear as some kind of talisman of authority and knowledge on sketchy, popular maps:

https://www.teacherspayteachers.com/Product/MAP-of-the-US-and-COMPASS-ROSE-in-English-2717369

What these different graphic elements have in common is that all indicate direction, albeit with varying degrees of precision (with between 1 and 360 indicated points). They all have this functional core—the "compass"—which is wrapped up in a decorative and stylistic shell, the "rose," which has the tendency to be both round and decorative (see OED "rose *n.*13").

Each aspect has been understood in particular ways by historians. The decorative aspect supports occasional commentaries on the changing style of specific elements, such as when fifteenth-century Portuguese mariners added a fleur-de-lis to the north-pointing index. From this perspective, the compass rose joins the title cartouche as a map element that can be graphically manipulated and decorated without affecting the map's function and utility. In this respect, the style can connote values of aesthetic elegance or commercial worth. However, the sheer variety of forms and styles over time defeats any coherent genealogy. Map historians have little option other than to accept each compass rose as a unique thing. By default, the decorative aspect has no history.

The functional core is consistent and universal. Any device that indicates direction is thus

generically understood to be a "compass rose"; their semiotic value is necessarily only to denote direction(s). From this perspective, the compass rose has a history, but only in terms of how changes in the differentiation of directions has influenced the structure of the compass rose.

The principal moment of change occurred on medieval marine maps, when the wind diagrams integrated within their networks of wind lines were converted to emulate compass cards after the introduction of the magnetic compass to Southwest Asia and Europe in about 1300. The earliest known instance of the altered device was on the ornate world atlas of 1375 by Abraham Cresques (1325–1387), the so-called Catalan Atlas (Wallis and Robinson 1987, 245–46). (This transition has given rise to no small confusion around the term "wind rose.") As the parallel to the magnetic compass was accepted, wind lines were reconceptualized as "rhumb lines," a rhumb apparently being a Portuguese-derived word for a point on a compass and therefore one of the primary directions. On the plane geometry of the medieval "portolan" chart and of the early modern "plane" chart, the two kinds of lines are coincident, but on a projected surface, as on charts made on Mercator's projection, wind lines and rhumb lines (i.e., loxodromes) diverge and are not actually the same. (I said at the beginning that this topic was confusing.)

We might also consider the history of the appearance of compass roses on property maps, especially property maps but also urban, topographical, and chorographical maps, as a function of the adoption during the Renaissance of the magnetic compass in plane surveying. (This adoption was perhaps made independently in different places.) The compass rose *per se* seems to have been dropped in favor of north arrows in the eighteenth and nineteenth century as surveyors increasingly mapped with respect to true rather than magnetic north.

From this strictly functional perspective, the appearance of the compass rose on geographical maps requires some explanation. In particular, the maps' meridians of longitude and parallels of latitude comprehensively defined the four cardinal directions.

In some cases, geographical maps were made to emulate marine maps. This was the case, for example, with Simon de Passe's famous geographical portrait of John Smith and New England, first published in 1616|7 (fig. 1). De Passe's emulation of marine maps was inept (Edney 2010, 2011). To begin with, he used the geographical convention of stippling to denote the sea and to distinguish it clearly from the land; contemporary printed marine maps did not use such stippling. Contemporary charts were drawn with a network of wind/rhumb lines crossing the entire surface, land and sea both, but de Passe drew such a network only over the sea. More important, de Passe drew two networks, not one: the lines radiating out from the decorative compass rose should intersect with the two undecorated "wind roses," but they do not. In other words, the map's compass rose and wind/rhumb lines might have denoted direction but they also connoted marine-map-ness.

In considering this connotation, I realized that compass roses on early modern Dutch and English regional maps, if present, generally occurred as just one or two compass roses, perhaps with radiating wind/rhumb lines, set in and limited to the open sea. The compass roses are not placed in lakes. If

present, the lines do not make a complex network but just one or two sprays, and the lines all end at the coastlines and do not extend over land (fig. 2).

Figure 1. Simon de Passe, *New England/John Smith*, state 4 (1624). Leventhal Map Collection, Boston Public Library, https://collections.leventhalmap.org/search/commonwealth:3f462s64w]

My sense is that map historians have assumed that this feature was an inertial derivation from, and simplification of, the structural symbols on the sea charts from which the coastlines on these geographical maps were ultimately derived. Such an explanation seems to reinforce the modern cartographic ideal and its fundamental presumption that map data always stems from original observation and measurement. In this respect, the compass roses appear to have a strictly denotative character and as such they have not been included in the two remarkable studies of map signs on early modern maps (Dainville 1964; Delano Smith 2007).

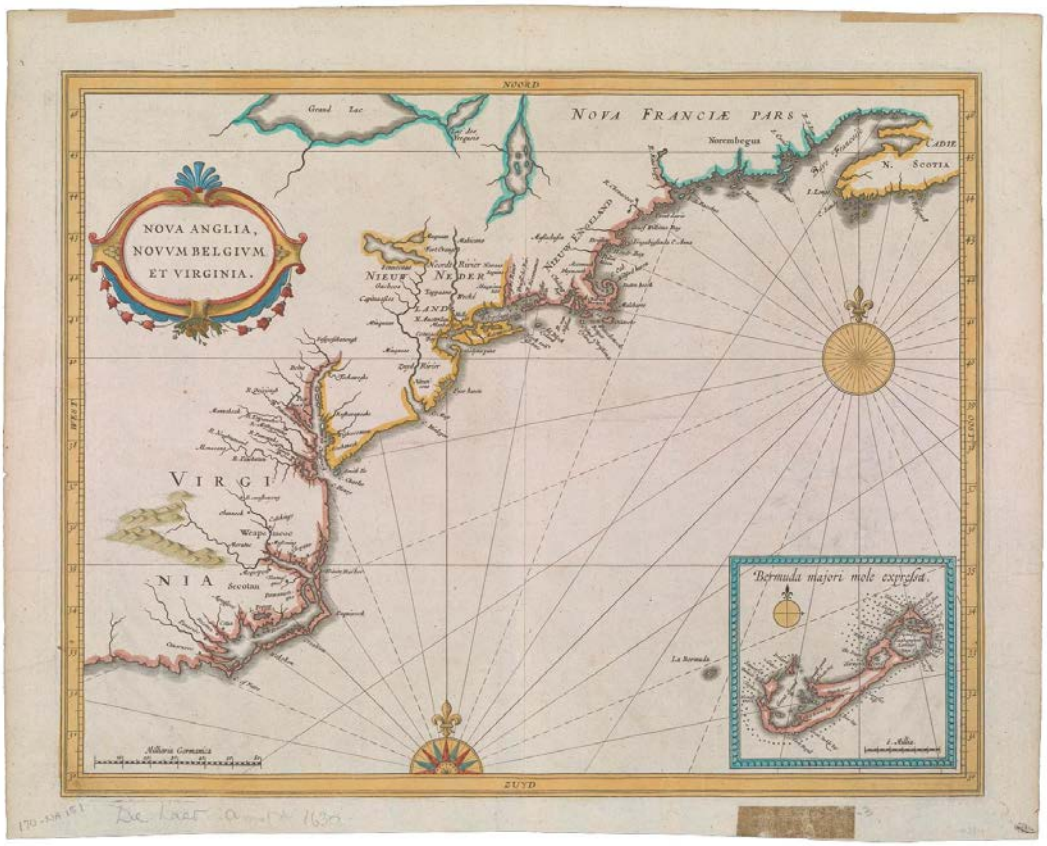


Figure 2. Two compass roses set off the North American coast. Joannes de Laet, *Nova Anglia, Novum Belgium et Virginia* (Leiden, 1630); www.oshermaps.org/maps/1714.0001]

But the sheer conventionality of the single-compass-rose(-and-radiating-lines) and their structural irrelevance to geographical maps based on latitude and longitude suggests that something more is going on. Specifically, it seems that the presence of compass roses (and wind lines) served as a geographical symbol for "ocean-sea"/"not land". The symbol seems to have been a Dutch innovation in the sixteenth century that was subsequently copied (with many, many other aspects of geographical mapping) by the English. The innovation was also adopted by the French (fig. 3).

The realization that compass roses connote some further meaning in addition to denoting direction was not a revelation. After all, as I noted above, the compass rose is a key element on many modern popular and pseudo-antique maps, whether to connote structured knowledge or quaint antiqueness.

Figure 3. Here, a very simple compass rose is set in off the coast of Labrador, amongst many other signs of open sea; a second compass rose, set to the north of Lake Superior, on land(!), seems to belong to the inset of the Gulf Coast, directly above it. Zacharias Châtelain, *Carte de la Nouvelle France* (Amsterdam, 1719); www.oshermaps.org/maps/1827.0001.

But this realization does point the way to how we might construct a genealogy of direction indicators on maps. We cannot continue to treat them all, with their variant forms and stylistic heterogeneity, as being essentially the same. We must first reverse our habitual lumping of all those indicators into a single category and instead discriminate between:

- north arrow, with or without the distinction between true and magnetic north
- cardinal cross: a cross with four points for the four cardinal directions
- wind rose, perhaps labeled with the names of the words or their abbreviations
- compass rose: 8, 16, 32–point figure emulating the card in a magnetic compass

• wind diagram: a complex of lines radiating from a point, their length and shape indicating the frequency and strength of the prevailing winds, as developed in the nineteenth century by Matthew Fountaine Maury

• compass diagram: the indication of 360° in one-degree increments on a modern sea chart

These terms are off the top of my head and I am not wedded to any of them. Alternative suggestions are welcome!

And we need to consider the occurrence of each within the relevant discourses, to establish not only their function use for the consumer but also their connotation of further signification within those discourses. In this way we might be able to trace how certain direction indicators were added to some kinds of geographical maps, but not others. In other words, we must remember that, like all other elements of a map, the direction indicator is just another representational strategy, subject to discursive conditions.

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MAPS, SEMIOTICS, AND HISTORY

Originally posted: 5 May 2018

https://www.mappingasprocess.net/blog/2018/5/5/maps-semiotics-and-history

Back in the 1980s, a pre-*Simpsons* Matt Groening did a series of his *Life Is Hell* comic strip called "School is Hell." The last installment was about graduate school (where I then was). Its last panel featured a small piece of advice: "How to put off finishing your thesis? Read another book! (Repeat as necessary)." So, knowing that *Cartography: The Ideal and Its History* needs to come out in a timely manner, I have avoided reading any new literature that would likely urge me to add further material and commentary. But as soon as I had returned the copyedits, I picked up a recent article that a colleague had just warned me about. And, sure enough, the article demands a response for its wholesale abuse of both map history and semiotics.

Emanuela Casti's "Bedolina: Map or Tridimensional Model?" appeared in the first issue of *Cartographica* for 2018. The title indicates that the topic is one of the petroglyphs inscribed into the rocks halfway up the sides of Valcamonica, in northern Italy, that have been identified as maps (see, e.g., Delano Smith 1982, 13–15; 1987, 78–79). I was astonished that 7.5 of the article's 16 pages of narrative dealt with mapping since the fourth century CE, most in the last 500 years. Why? What could mapping by complex and literate societies have in common with maps hewn by Bronze Age people living in the mountain valleys some 3,000 years ago?

As I read and reread the article and struggled to make sense of it, my response has become something of a rant. But please do read through to the end: Casti's own third-act "reveal" gives her plot as amazing a twist as anything thought up by M. Night Shyamalan. (Yes: the psychiatrist is himself a ghost!)

Note: I refer to Casti (2018) as "the article" and cite specific pages in {..} just to not overwhelm my text.

Reading the article

The article suffers from a difficult translation and the proliferation of an idiosyncratic terminology. It articulates its argument poorly. In all, a certain creativity and flexibility is necessary to get through it, together with three realizations.

First, much of the article rehearses themes and repeats passages, some without acknowledgment,

from *Reflexive Cartography* (Casti 2015).* The book established a complex terminology that is repeated in the article. Yet the book at least had a glossary (the cutely named "glossary/compass") to explain the terms and to guide the reader. The article offers no such assistance and is most emphatically *not* a stand-alone work.

Second, the article pivots on Casti's complaint that the largest petroglyph from Valcamonica (Bedolina rock 1) has only ever been studied from the standpoint of what she calls the "topographical metric." This approach, she maintains, has necessarily limited and distorted previous analyses, if only because it requires the inappropriate reconfiguration of the petroglyph as a flat surface. Casti seeks a more open and less restrictive interpretation. But to make this complaint, Casti first has to explain just what she means by the topographical metric and to indicate why it is inadequate to the task of interpreting Bedolina rock 1. And for this, she must rehash the history of mapping and the nature of maps. Thus the need for the otherwise irrelevant almost-50% of the article.

Third, Casti's conceptualization of the nature of maps, of their functions, and their histories is forced into a bipartite structure in which two cartographic systems are set in opposition to each other. There is some room for exchange or overlap between the two, especially in terms of her vision of map history, but for the most part Casti maintains a strict division. This conceptualization needs some explanation . . .

A binary and oppositional conceptualization of maps

Casti has "elaborated the theory of cartographic semiosis" over many years {30} (see Casti 2000, 2005, 2007, 2015). In her previous work (esp. Casti 2000) she followed academic cartographers (e.g., MacEachren 1995) and adhered to Charles Saunders Peirce's triadic sign model. But in the article, she also praises Roland Barthes' work as "essential" {32n28} and relies extensively on the work of Michel de Certeau. Both of those scholars were indebted to Ferdinand de Saussure's dyadic sign model (Barthes 1972, 1973; de Certeau 1984). Casti is clearly well versed in the theories and debates of semioticians. It was therefore jaw dropping, to say the least, to encounter a statement that makes absolutely no sense:

> Symbols are reduced to signs . . . {22}

How can a symbol be *reduced* to a sign? A symbol *is* a sign.

Let me explain. Peirce defined three primary categories of sign according to the particular relationship between two of the three parts of the sign: the sign vehicle (the graphic mark, vocal

* Casti does broadly cite *Reflexive Cartography* {30n2}, and in a further note {31n22} refers the reader to a range of pages from the book in support of one portion of the article {20–22, derived from Casti 2015, 33–83}. However, at least two passages of the article are very close and unacknowledged copies of sections of the book: the paragraph starting "The term 'cartography' …" {16 = Casti 2015, 8}; and the section on the history of "cartographic metrics" {17–20 = Casti 2015, 213–20}. The article's material concerning the petroglyphs does represent an advance on the book's treatment.

utterance, etc.) and the (real world) referent. (Peirce offered other categorizations of signs based on the other pairings of the three parts, but this classification is the most commonly used.) Thus:

> **icon**: the sign vehicle resembles, imitates, or is otherwise similar to the referent;
>
> **index**: the sign vehicle refers to the referent indirectly, by pointing to it, in the manner of an index finger or of smoke indicating the presence of fire; and
>
> **symbol**: the relationship of sign vehicle to referent is conventional, which is to say it is arbitrary and must be learned, in the manner of human communication (language, etc.).

These are perhaps the most basic terms in semiotics, other than that "sign" itself is an indivisible element of signification (Nöth 1990). Peirceans use these terms precisely. Saussurians avoid them: when analysis focuses on linguistic signs, all signs are arbitrary and are therefore "symbols" in Peirce's terms; "iconity" is imputed and not innate, as it is for Peirce; "indexicality" is a useful but imprecise relationship between signs.*

Casti seems to willfully ignore the truly basic points that "sign" is an utterly generic concept and that "symbol" is a particular type of sign.

Casti instead uses "symbol" in a colloquial and art/philosophical sense. Hers is the "symbol" of "symbolic landscapes" and of "symbolism" in art. Such usage is predicated on establishing at least two levels of meaning, the figurative or real and the emblematic or symbolic. (That is the artistic meaning of figurative, meaning a form that is recognizable as something, rather than its literary meaning of being non-literal or metaphorical.) Erwin Panofsky used the Renaissance codification of symbolic meanings to construe three levels of artistic meaning: the conventional (or figurative; e.g., a spherical object in a frame is a globe); the allegorical (the codified significance of a conventional figure; e.g., a globe signifies worldliness, vanity, or death); and the iconological (the world view constructed by an assemblage of allegorical or iconographic elements). Other art scholars—famously caricatured in the character of Robert Langdon in Dan Brown's *The Da Vinci Code* (2003)—are less structured, but all perceive a difference between real things and implied meanings. Casti follows suit.

For Casti, symbols constitute one of two cartographic "communication systems," that of *analog* communication. They are analogic because they consider "objects as they are in reality, understood as a continuum" {16}. Moreover, symbols contribute to one of two "essential functions" of maps, that of *conceptualization*. Maps conceptualize the world because "they tell us how it 'works'" {17}.

By contrast, Casti uses "sign" to refer specifically to a graphic mark on a map whose meaning has been precisely codified and, preferably, explained in a legend. ("Through the legend, every sign acquires a univocal and self-contained meaning" {22}). Signs constitute the other cartographic communication system, that of *digital* communication; they are digital because they "*differentiate* the qualities of the object

* Thus, Turnbull's (1993) "indexicality" is different from that of Wood and Fels (2010).

(an object differs from another because it is located at a given point or because it is endowed with features that set it apart from others)" {16}. (Within the terminology of academic cartography, signs are products of the classification and symbolization (ahem) phases of generalization.) Signs contribute to the other essential function of maps, that of *description*. Description "aims at rendering features perceived through a first-hand experience of the real world" {17}.

To be clear, Casti does not directly say, "symbols = analog = conceptualization" or "signs = digital = description." But as she works through her ideas about the nature of maps, and especially as she explains the topographical metric, one set of terms piles up in one conceptual heap, the other in a second.

Casti expanded upon the implications of the distinction she draws between symbols and signs in the rest of the sentence that began with that jarring act of reduction:

> Symbols are reduced to signs and communication is limited to a surface level, which narrows the scope for an understanding of the world capable of appreciating the many facets of the whole, typical instead of symbols. {22}

The context for this statement is the development or formation of the topographic metric for maps. For Casti, this metric includes only signs that are so semiotically limited ("reduced") that they restrict ("narrow") the scope of interpretation of the map to only the "surficial" meaning of the physical landscape itself. The metric thus denies and precludes the reader's interpretation of "deeper" meanings {22} about the "many facets of the whole" world, both physical and cultural. Such deeper meanings are only communicable with uncodified symbols that conceptualize a "worldview only partially modeled on canons of real-world mimesis" {17}.

Casti explained some of the mechanisms of modern maps made on the topographical metric {20–22}. Such maps are "representations of the territory," and by "representation" Casti understands "mimesis." They are, she says, the "archetypical mode of cartography." And here I agree with Casti, in that the ideal of cartography has generated a certain understanding of "the map" that I have come to think of as the "normative map," although I argue that the normative map is a simulacrum (an image of something that does not exist) and not a valid descriptor of the actual character of all modern maps.

By contrast, other cartographic metrics produce not mimetic representations but "symbolic mediations" that are unrestricted in their interpretations. They depict the "symbolic essence of the world" and understand the "world to be a symbolic gesture"; they are complete and full {16, 22}. At least in the article, Casti is unclear about how symbols actually function. At best, Casti implies that if signs are actively encoded (and codified in legends) then symbols must be organic in their formation; symbols have "values" that are "not tied exclusively to the material sphere" {23}.

Just to really confuse things, Casti further states that "cartographic representation" across all the different metrics is a unique form of semiosis because it entails "isomorphism" (i.e., similarity of structure/order with the world) which is maintained by two "overlapping structures." One structure is

the "'map base' . . . governed by a geometric code" (whether or not Euclidean), the other is the "*symbolic*" structure comprising "the set of codes—numerical, figurative, lexical, or chromatic—used to specify" map features. So, all maps depend on the codes established between marks on the map and things in the real world, just that topographical metrics restrict those codes to a limited range of meaning {23}. Indeed, it is foundational to Casti's model of cartographic semiosis that every map has two layers—"the layer of the map base and the symbolic layer"—that can be "pulled apart" and analyzed separately to reveal "the two phases of spatialization and figuration" {26}.

Casti thus creates an opposition between, on the one hand, the figurative realm of spatial fact and, on the other, the symbolic realm of deeper and more authentic cultural meanings. As we will see, some metrics are mixed, but the topographical metric is concerned solely with the figurative realm/layer: the figurative realm becomes mimetic representation and the symbolic realm atrophies into insignificance.

Casti does not say outright that maps made on the topographical metric are "bad," but she certainly buys into the "maps-are-bad" critique (Brückner 2008, 30). She uses terms that carry shades of negativity and inferiority when referring to "topographic maps based on Cartesian logic": they are "neither the only possible maps nor the best"; their signs possess only "univocal meaning"; they are "abstracted" and "incomplete" {esp. 17, 22}. And she concludes her discussion of the inherently conceptualizing cartographic metrics by noting how they all came to a sad end at the hands of modern science:

> All this evokes, in contrast, the devastating semiotic effect topographic metrics have had on territory, in virtually effacing the transmission of its social meaning. {20}

Once upon a time there were all these wonderful maps that permitted rich, deep, social and cultural interpretation of territory, but the development of topographic metrics "devastated" that richness by removing the possibility of any such interpretation ("effacing the transmission of . . . meaning").

So, let's turn to Casti's map history.

An historical narrative of mapping

Casti's symbol/sign duality is the basis of a grand narrative of map history, although this narrative requires Casti to permit a degree of intersection between the functions of description and conceptualization, and between the analog and digital communication systems. Her narrative rests upon the various cartographic "metrics" that she establishes on the principle that, historically, each society has a dominant spatiality:

> The history of cartography shows that several different metrics were developed over time. And these metrics, which shaped cartographic representation, are in fact declinations of a given concept of spatiality. They derive from different concepts of space in different cultures . . . {17}

She proceeds to outline six different metrics and spatialities as revealed by the historical record {17–20}:

> 1) the "*ecumenical space* of Greece, when the world was identified with inhabited territory." This metric is not further explained.
>
> 2) the "*creationist* space embraced in the Middle Ages, when the world was conceived in terms of a divine plan." This metric is exemplified by the thirteenth-century Ebstorf world map, with its vignettes of Christ's head, hands, and feet.* In addition, Fra Mauro's ca. 1450 world map, south-oriented and with a Mediterranean derived from medieval sea charts, represents a transitional moment as it blended the medieval, creationist metric with the presentation of information from travellers and mariners; Fra Mauro himself sought an empirical statement. Casti accordingly states that Fra Mauro's map is simultaneously part of the *areal* metric.
>
> 3) the "*reticular space* typical of the Roman period, which privileged distance based on the system of roads devised for imperial control." This metric is exemplified by the Peutinger map, the twelfth-century scroll of Roman origin that famously shows the topological network (the reticule) of most of the roads of the Roman empire in a topographically distorted image.
>
> 3) the "*hodological* notion, attested by nautical maps and based on the actual plotting of linear space along sea routes." (Hodology is the study of pathways.) This metric is exemplified by a sixteenth-century chart of the Atlantic basin by Battista Agnese (see Huntington HM 27, fol. 5v–6r), with an apparent emphasis on the routes along coastlines.
>
> 5) the "*areal* view of space in the Renaissance, as dominion over territory sanctioned by seignories was coupled with extensive territorial surveys"; and
>
> 6) "*topographic* space, developed around the time of the Enlightenment, as exact measurements became the standard for confirming the boundaries of national states."

Note that both the Peutinger map and Agnese's chart are grounded in experience and knowledge and as such also intersect with an areal metric.

Casti skips over any examples from the Renaissance of any strictly *areal* metric and plunges directly into the discussion of the modern *topographical* metric, the apparent creation of Enlightenment. Note that in this section she does not reproduce any exemplar maps.

> (tangential rant) The failure to reproduce any maps is unfortunately a common strategy among scholars who seek to characterize the nature of "the map." Without specifying the

* The journal has horribly squashed the reproduction of the Ebstorf map, turning the circle into a squashed oval. The author should have objected to the page proofs.

> maps under discussion—whether road maps, analytic maps, territorial maps, hydrographic maps, world maps, etc.—these scholars exploit preexistent concepts of "the map." Regardless of how maps manifest great variation in form and function, they are implicitly all the same; any map can serve to characterize maps, so no map needs to be specified. The lack of specificity enforces the reader's collusion: "we all know what maps are," proclaims scholars, even as they are defining them, "so we don't need to be specific or show what we mean." The hegemony of the normative map is perpetuated; the ideal of cartography is sustained.

For Casti, the topographical metric is a combination of "Cartesian logic" and "Euclidean geometry"; it abstracts the world through measurement and semiotic codification, all "divorced from any social interpretation." Driven by modern statist concerns—the state having become a "territorial actor"—the topographic metric is all about reproducing the physical world *in parvo* and limiting the potential interpretation of maps to strictly surficial meanings. The semiotic violence perpetrated by the topographical mode continues with its "annihilation of the third dimension and flattening of the earth" {21}. Somehow this statist perspective also generates "a national consciousness" but the discussion is so brief as to be impenetrable, at least in the essay. It would seem that Casti's tangent re nationalism is the mechanism by which she can combine what for me are quite distinct mapping modes within the big umbrella of the topographical metric: smaller-scale regional mapping and larger-scale topographical surveys.

Flaws . . .

Casti's account of early and modern maps constitutes a seductive narrative of declension: humans made rich, polyvocal maps that operated at both surficial and deeper levels of meaning. Then, over time, those maps grew increasingly factual, their signs functioning only to differentiate one location from another, addressing only the map's isomorphic relationship to the world, and lacking any capacity for symbolic interpretation. Casti's narrative emulates those in a number of works by geographers and philosophers who take the ideal of cartography at face value. I think here of David Harvey, for example, who asserted that the modern endeavor of cartography comprises a single process that ever since the Renaissance has "treated" space "as the dead, the fixed, the undialectical, the immobile" (Harvey 1989, 204). (I am still amused that the maps Harvey reproduced to exemplify the more authentic "sensuous" maps of older periods were actually from the later Renaissance.) Casti's location of modern cartography's origin in the Enlightenment draws on the historical myth of the Enlightenment Project that sought to disenchant the world by disenchanting the technologies of knowledge production (Horkheimer and Adorno 1972). In her article, Casti drew extensively on Michel de Certeau's *Practice of Everyday Life* and especially on his arguments that the only authentic means to experience and understand a city is to walk through it, to resurrect the itinerary mode that he asserted had been swamped and dispelled by Renaissance maps (de Certeau 1984, 120).

Like these other arguments, Casti's relies on an unthinking equivalency between the geometry of the map and the supposed "spatiality" of a society. Casti's different metrics are not derived from a careful analysis of the different ways in which people have thought in different societies about space and spatial complexity, but stem from an opportunistic selection of images that she claims characterize how the originating society thought about spatial relationships. Each metric is hegemonic.

The empirical record, however, is full of variety and variation. Many societies have made different kinds of maps to show the same thing. For example, the Greeks mapped the *oikumene* (ecumene) both in the circular *periodos ges* consumed by the general populace and in the maps structured by latitude and longitude produced by astrologers and philosophers like Claudius Ptolemy. Furthermore, each society made different maps in quite different styles reflecting markedly different spatial conceptions, all at the same time. The Roman reticular Peutinger map thus contrasts strongly with planimetric city maps and planimetric cadastral plans.

Casti can only acknowledge these variations as indicating transitions between periods/metrics. The most recent transition, in process today, shifts us from the topographical metric to the postmodern and necessarily fragmented understanding of the modern urban environment (as per Harvey 1989 and de Certeau 1984):

> For de Certeau experiencing a city forces the subject to abandon topographical space, to deny the exclusive assertion of its material status to go 'beyond,' to recover the cultural dimension of territory. {20}

Such arguments represent a drastic simplification of how people think, and have thought, about space and spatial complexity, a simplification that is grounded in a fundamental misconception about the difference between cognitive and social conceptions of space. This is the individualistic preconception, one of the many preconceptions engendered by the ideal of cartography: specifically, maps are presumed to be direct replications of the mind of the map maker. Forget the fact that, from a semiotic perspective, the externalized map is necessarily a social construct—because semiosis is ineluctably social, as each assemblage of signs is created by one person to be read by another—whereas the internal, cognitive map is a neurobiological construct. The failure to appreciate this difference is the core of the misidentification of the wall mural from neolithic Çatalhüyök to be a map. The failure is also the cause of easily made and apparently persuasive arguments that paint the history of cartography both in overly broad strokes and as a declension from some pre-scientific past when maps were authentic creations of the human mind to the present when science has ordered and sterilized the modern mind.

But then, I find it very difficult to take seriously any map history that blithely rehearses the tired old canard—a truly zombie myth—that the medieval church insisted that the world was flat: "the Venetian planisphere is the work of a monk [Fra Mauro] who must follow the dictates of the Church, according to which all theories concerning the spherical shape of the Earth were to be rejected as heretical" {17}. This is absolute and complete rot. Casti cited David Woodward's (1987b) essay on medieval world maps from volume one of *The History of Cartography* with respect to the Ebstorf map

{31n9}, but she clearly hasn't read the huge quantity of evidence marshaled in that essay about the widespread medieval acceptance of the earth's sphericity (see also Edson 1997, 2007 on medieval *mappaemundi*, Russell 1991 and Garwood 2007 re the history of the myth of the medieval flat earth, and Cattaneo 2011 re Fra Mauro, Ptolemy, and the study of geography in fifteenth-century Venice).

Casti's historical narrative is a tremendous oversimplification that relies for its effect on readers' sharing the hegemonic precepts of the ideal of cartography. Many of its details are wrong. (The Ebstorf map was in fact destroyed during WW2, not just damaged as Casti states; the image reproduced in the article, and in the earlier book, is a color drawing made after the war based on rather poor monochrome photographs taken before the war. Triangulation became widespread not in the later seventeenth century, as claimed, but only after 1800. Agnese's map is not actually a map of the world, as it was labeled. And so on.) There is much greater variation in the historical record than Casti lets on. Fundamentally, *all* maps are open to "symbolic interpretation." And Casti provides no mechanism for the changes between metrics, other than changing cognitive spatial structures (not a thing) and the rise of some monolithic Science (also not a thing).

I doubt Casti cares about these flaws. Her historical narrative is not intended to actually serve as history; it is not intended as an explanation or characterization of how and why people made maps in the past. Casti does not engage with the maps she does reproduce, even to the point of failing to credit their sources; they are of interest to her only to the extent that they demonstrate different "spatialities." Like those other scholars who have advanced cartographic narratives of cultural declension, hers is strictly a rhetorical device, one specifically intended to sustain and justify an overwrought theory of "cartographic semiosis."

To the extent that I am able to understand Casti's theory, I find it to be thoroughly wrong-headed. Casti's conception of maps and mapping seems to have ossified in about 1980. In 1978, Jürgen Schulz had pioneered the application of Panofsky's iconology to a map, in his interpretation of Jacopo de' Barbari's incredible 1500 view of Venice in six sheets (Schulz 1978; see also Howard 1997; Romanelli, Biadene, and Tonini 1999). To validate this first iconological analysis of any cartographic work, Schulz needed to establish that Jacopo's view was as much an iconological work as any work of art. And to do that, Schulz had to explain at length that early modern maps fell into two categories:

> One consists of maps and plans of a narrowly cartographic content, the function of which must have been simply to report geographical and topographical facts. The other comprises maps and views with an ideal content, material that must have had a didactic intent. Drawings of the second group sometimes make use of data drawn from those of the first, and vice versa, so that cartographically the two groups are interrelated, but in function the differ clearly. (Schulz 1978, 442)

At this very early stage in questioning the normative map, Schulz distinguished between "narrowly cartographic" works, such as sea charts, planimetric urban plans, or regional maps, which were all concerned with spatial facts, and didactic or idealized maps that were more about communicating values

and beliefs. Jacopo's view of Venice was one of the latter and was therefore amenable to iconological interpretation. Sound familiar?

But very soon thereafter, in his own first forays into cultural interpretation, Brian Harley seized upon Schulz's work and, in adapting the idea of iconology, argued that *all* maps, even the "narrowly cartographic" ones, were amenable to an iconological analysis (Blakemore and Harley 1980, 76–86; Harley 1983, 1985; see Edney 2005, 72–78). As map scholars turned to map interpretation, they have largely discarded iconology *per se* and have instead posited that maps have a single mechanism of semiosis (not Casti's two, one for signs, the other for symbols). Denis Wood and John Fels' (1986) early and influential reading of a modern road map established this fundamental point. It is now central to the arguments of critical cartographers that the meaning of any map is constructed by the reader (Dodge, Kitchin, Perkins 2009).

Casti remains committed to outmoded conceptions of "maps" as stand alone and self-contained works whose meanings are determined in large part by their creators, such that their semiotic structure limits how they are interpreted (see Casti 2000, 10). In the article, she continually refers to maps, regardless of metric, as being "autonomous." In this respect, there is absolutely no room in analysis for the contexts of map production and consumption:

> Among these theories, cartographic semiosis, designed to investigate the constructive and communicative working of maps, has shown that the basic purposes of a map remain essentially the same, quite independent of the context in which the map was produced. {15}

This quote is either a really trite statement grandly expressed (all maps can have two functions, description and conceptualization) or an incredibly narrow intellectual proposition. Casti elsewhere denied that analysis of maps as objects has relevance to their interpretation. In *Reflexive Cartography* she stated with respect to the "object-based perspective" on maps and map history, a perspective concerned with the material context of production, that

> World-famous researchers, united by a common stock of special skills in the history of cartography, operated in this area without in fact contributing, except in a few isolated cases, to a critical assessment of maps.

Their studies were thus "marginal" to Casti's own (Casti 2015, 10, 10n13). She further noted,

> I believe cartographic features such as watermarking [sic] and heraldry, which were recovered and deemed relevant to cartographic interpretation, should in fact be referred to the competence of experts in the arts and archival systems. (Casti 2015, 12n20)

Neither comment is explained or justified with examples. I read these negative commentaries as being directly targeted at David Woodward, who engaged in detailed studies of the production of maps in sixteenth-century Italy, including several about paper watermarks (Woodward 1987a, 1990, 1996, 2001). Such studies were crucial for his reconstruction of the conditions of the Italian map trade and the

manner in which those conditions constrained and enabled cartographic representation (Woodward 2007). The interpretative analysis of early maps in fact demands such foundational information.*

Not that Casti seems really interested in interpreting early maps, beyond using them to demonstrate the validity of her model of semiosis. Her goal is not to pursue historical enquiries but to sustain the supposed exceptionalism of cartography as defined by the normative map. Casti proclaims that maps work differently from other semiotic systems; they are special. This position is the inevitable outgrowth of the misguided notion that maps possess a distinct and unique "cartographic language." This conviction is misguided for many reasons, not least the fact that mapping uses multiple strategies—gestures, words, physical installations, rituals, numbers, graphics—according to the conventions of their parent spatial discourses. Maps are not bounded by their frame but conceptually integrate with other kinds of texts within the same discourses. Maps are not self-contained and static things that fix space but open and dynamic elements of wider circuits of communication. The paradox of Casti's model of semiosis is that she argues for the representation in maps of authentic, deep meaning about how the world works, but seeks to do so through a static and unliving medium.

An accumulation of flaws: Bedolina rock 1

Finally . . .

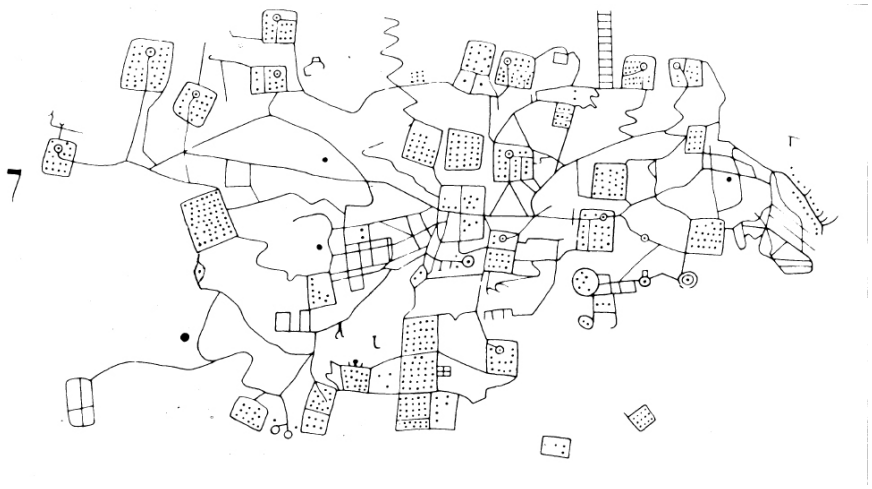

Figure 1. Line drawing of Bedolina rock 1, with earlier and later figures removed; see Delano Smith (1982, fig. 1b)

* Full disclosure: David Woodward was my graduate advisor.

What strikes me about Casti's analysis of Bedolina rock 1 (fig. 1) is that it rests on assertions derived from her grand model of cartographic semiosis and its underlying foundation of the history of cartography. Because modern society is pervaded by the topographical metric, we are generally

> led to neglect the existence of a double communicative level, of signs—symbols that can be read beyond their strict isomorphism with material reality and depending on iconic goals that could differ between the single maps. {23}

More particularly, the petroglyph has been interpreted entirely through the lens of the topographic metric. Therefore, Casti states, "all the hypotheses advanced so far lack hard evidence or solid arguments: the Bedolina map has yet to be thoroughly deciphered" {26}.

Given that the topographic metric is a function of modernity and modern science, it cannot be relevant to something created 3,000 years or more ago. The petroglyph must therefore have had a symbolic function. Casti's task is therefore to establish that symbolism:

> My assumption along these lines is that this engraving is a *map that represents the Camuni territory within a cosmogonic view*. {23, original emphasis}

Casti seeks to interpret the petroglyph as a "cosmogonic view" by imposing lessons about the nature of maps derived from the non-topographical metric maps she has discussed, by distinguishing the two layers in the petroglyph that her model requires: the figurative and the symbolic. The figurative, isomorphic base of "spatialization" is formed from the rock, whose surface undulates in three dimensions and thereby, Casti argues, establishes the map's isomorphism. She then describes the elements of the petroglyph, its lines and enclosures. All well and good: the idea of reading the petroglyph in three dimensions is indeed a new insight and, dare I say, a new contextualization for reading it.

But as Casti works to reveal the petroglyph's symbolic meaning, she makes a startling admission that two previous studies (Delano Smith 1987; Casey 2002) had in fact held out the possibility that the petroglyph might have symbolic as well as figurative meanings {26}. She thus undermined her own justification for undertaking her study, that no one previously had examined the petroglyph except through the lens of the topographic metric.

Casti then revealed her intellectual *pièce de resistance*, and in the process demolished both her own overwrought terminology and her flawed conception of the nature and history of maps and mapping. In referencing a "winding course" carved on the petroglyph that looks like a path with a hairpin bend as it ascends a steep hill face, she tried to explain how the carved line is not just part of the three-dimensional layer of figuration, it also belongs to the second semiotic phase of creating the symbolic layer:

> For, despite its iconic simplicity, the line can be read both as a sign and as a symbol, if it is connected to the two levels of reading: *denotative* and *connotative*. At the first level [figuration], the line undoubtedly refers to practices concerning orientation and mobility.

> At the second level [symbolism], it could convey either symbolic meanings coming from socially constructed values, or performative meanings that refer to empirically verifiable truths.[note 54] {27, original emphasis}

In note 54, Casti returned to demonstration mode by once again referencing modern maps that she admits are irrelevant to a prehistoric petroglyph:

> More specifically, in the field of cartography lines refer to descriptive–functional meanings at the level of denotation (the path of a river, a road, a sea route). At the connotative level, they recall either symbolic meanings (an ascension line in medieval cosmographies, for example) or performative meanings (a boundary in the sense of a threshold, be it territorial, political, sacral, or other). And of course lines [rely] on additional codes to guide readers (colour, for instance: blue for rivers, black for routes, and brown for paths). All this entails a cartographic dimension that would not apply to rock engravings. {33n54}

Talk about conceptual whiplash!! Here we are—almost at the end of an article dedicated to demonstrating that maps possess two layers of meaning (surficial figuration and deeper symbolism), which meanings are expressed through different degrees/ways of encoding signs as opposed to symbols, which meanings contribute to two distinct communicative functions of description and conceptualization, which are historically present or absent in different metrics that manifest different conceptions of space, one of which (the topographical) is entirely lacking in symbolism, all in order to distinguish mapping from any other semiotic system—and Casti explodes it all by admitting not only that one graphic element on a map can denote (figuratively) and connote (symbolically) at the same time but also that such symbolization goes on even in modern maps supposedly based on the topographical metric.

Wow. Just, wow. I'm stunned.

Why not just use the Barthean model of denotation and connotation from the start? It is simple in principle but sustains highly complex interpretations. It is the foundation of most sociocultural map interpretation since Harley. It is tried and tested. It works.

For Barthes, there are only signs (and they are all dyadic: signifier/signified). Meaning is interpreted by the reader, according to discursive context and conventional codes (mapping processes). Maps are not autonomous, self-contained things. "Cartographic language" is not exceptional, but one more semiotic system that integrates with others. There is no single spatiality in any given culture that defines some "metric." There is no grand historical declension as maps grew culturally sparse and empty of personal significance in the face of the rise of modern science.

Casti's sudden resort to an entirely different and contradictory semiotic system reveals that her entire model of cartographic semiosis is fundamentally flawed. Rather than investigating how maps work, Casti effectively admits that she has created a complex system specifically to justify and validate the ideal of cartography. Her scholarly process has not been to work from empirical evidence about

map signification but to deduce a semiotic model from the ideal's hegemonic belief system. The process of deduction has required her to mangle basic semiotic concepts so thoroughly that we cannot explain away the resultant intellectual mess on poor translation. Casti's entire intellectual structure collapses.

It should be no surprise that when Casti does actually try to interpret a map, she cannot reach any conclusion. It is not that she proposes two or three interpretations for Bedolina rock 1, which she cannot then choose between. No, she cannot attempt any interpretation at all for the petroglyph's putative *cosmogonic view*. She ends up repeatedly emphasizing the three-dimensional figuration of the petroglyph and is indeed quite unable to articulate any further symbolic meaning. She concludes that the petroglyph should be called a "relief model" and not a "map" {30}, an artificial constraint on "map" that again demonstrates the incapacity of her model of semiosis. And she concludes:

> Whatever the message it was meant to convey, the Bedolina map/relief model tells us that its engravers thought it crucial and indispensable for it to be rooted in the morphology of the valley and its landscape. {30}

I suffered through sixteen pages of academese for this? An utterly inconclusive interpretation ("whatever the message it was meant to convey") and a commentary on the physical nature of the petroglyph that could have been explained in a few pages and without the huge, flawed, so-called historical analysis.

Unlike Casti's model, Barthean map interpretation requires placing maps into their appropriate contexts, to consider similarities and differences with other maps produced within the same spatial discourses (or interrelated threads of such discourse). To suggest how map signs might connote requires knowledge of their context and that is what is missing for prehistoric cultures; it is what makes the identification, let alone study, of prehistoric maps so difficult. Is the petroglyph a map at all?

9 June and 18 August 2018: minor updates to correct language and ensure all quotes are properly indented.

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SQUARING THE CARTOGRAPHIC CIRCLE

Originally posted: 24 May 2018

https://www.mappingasprocess.net/blog/2018/5/24/squaring-the-cartographic-circle

I just received a really silly book that I am compelled to discuss:

> Groarke, Paul Vincent. 2018. *How to Draw a Simple Map of the Earth: A Philosophical Examination of the Unmappability Thesis*. np: rebelliON booKS.

It's not very long, with just 106 small pages, excluding an appendix that largely repeats the text, and including many pages of diagrams. It's self-published so I didn't know quite what to expect. I began skimming through and found myself fascinated by the author's attempted critique and remedy. I just had to write up my immediate reactions. The book is deeply misguided and, in the process, it reveals the functioning of some deeply rooted convictions of the ideal of cartography. Let me first explain the argument and then I will turn to the ideal. (I place page references in {..}.)

A Supposed Refutation of the Unmappability Thesis

I am not going to go into great detail, as the book does not deserve that.

In style, this is very much a work that hopes that if an assertion is repeated enough times, readers will be persuaded. The core assertion, restated over and over, is that there is a thing that Groarke calls the "unmappability thesis":

> The UNMAPPABILITY THESIS holds that it is not possible to map the surface of a spheroid accurately in 2-dimensions. {12}

Groarke insists that this is a basic tenet of "the literature" of mathematics and cartography but, as he gives no citations to any of the literature, it is impossible to know what portions of the literature of cartography (at least) he has read. He also insists (repeatedly) that it is the job of philosophy to evaluate such basic axioms, not through the application of formal logic but rather through some kind of empirical evaluation. He also sustains a difference between idealism and pragmatism, he being a pragmatist {29}.

From his pragmatic position, Groarke argues against the "divisibility fallacy." This is the fallacy that underpins Zeno's paradoxes: you know, the ones where it's impossible for an action to be completed, say for a runner to finish a race, because the actor must first undertake half of the action, which first requires half of that first half to be completed, and so on. For mapping, this is tantamount to claiming that slicing a curve into ever smaller portions will always produce a curve. (Groarke calls this the idealist position.) But just as the runner has a length of stride that pragmatically overcomes the

ever smaller distances left to be travelled, so too "at some point" the subdivided curve "yields a line without a discernible curve." The "pragmatic conclusion" is that "such a line" is "hypothetically—i.e., theoretically—curved, but physically—i.e., empirically—straight." Groarke's system thus depends upon the willingness of the individual human to see no difference between an arc and its chord {29}.

Groarke undermines his claim to philosophical rigor by admitting in several places {e.g., 19, 23} that he had thought, as soon as he had learned of the unmappability thesis, apparently almost viscerally, that the thesis is in fact incorrect. He also states incorrectly that the unmappability thesis is only "a conjecture, which derives its authority from the brute fact that no one has been able to draw an accurate 2-dimensional map of the earth's surface" {20, also 30, 31}. By such an "accurate" map, Groarke means a map of the entire earth that is at once conformal and equal area.

> Quick aside, why the "thesis" is not simple conjecture: in any map projection, one can define the scale factors at any point (the rate at which scale is changing) along both the meridian (fm) and the parallel (fp). For a map to be conformal (shape preserving), the ratio between the two scale factors at every location on the map must be the same: fm ÷ fp = 1. For a map to be equal-area, the product of the two scale factors anywhere on the map is constant: fm × fp = 1. The only way for both properties to be valid for every point on a map is if fm = fp = 1 uniformally for all points, i.e., scale is always constant, which means that the original surface is completely flat.

Most of Groarke's book is an explanation of how to make a world map that is both conformal and equal area. And he does so by, supposedly, mapping each small place (not point! {34}) as flat (i.e., the plane tangent to the earth at any point). Each place is supposedly separately projected, and he refers accordingly to the work as the ubiquitous projection, justified in his introduction by references to some philosophical principle of ubiquity. He fails to see the mathematical impossibility of his claim because he rejects the use of differential calculus as it "resists philosophical scrutiny" and is too "abstract" {37}; he even recasts fundamental mathematical issues that are manageable through the application of the calculus to "linguistic issues" {34}.

But Groarke's actual process is actually quite different and quite idiosyncratic. He takes small portions of an equal-area sinusoidal projection of the world and somehow reconfigures them to be like a conformal Mercator projection, and then reassembles all the small portions as a map "without distortion" (fig. 1). Groarke's terminology is confusing to say the least, the diagrams are very small and difficult to read, so it is not exactly clear just how he undertakes the reconfiguration and reassembly. And I completely lost the thread in the section entitled, "Squaring the Map" {72ff}. But it is clear that his methodology is to take small sections of only the continental coastlines from one projection and reconfigure them on another, as in the image above. He claims it is an intuitive process: "The map essentially put itself together" {48}.

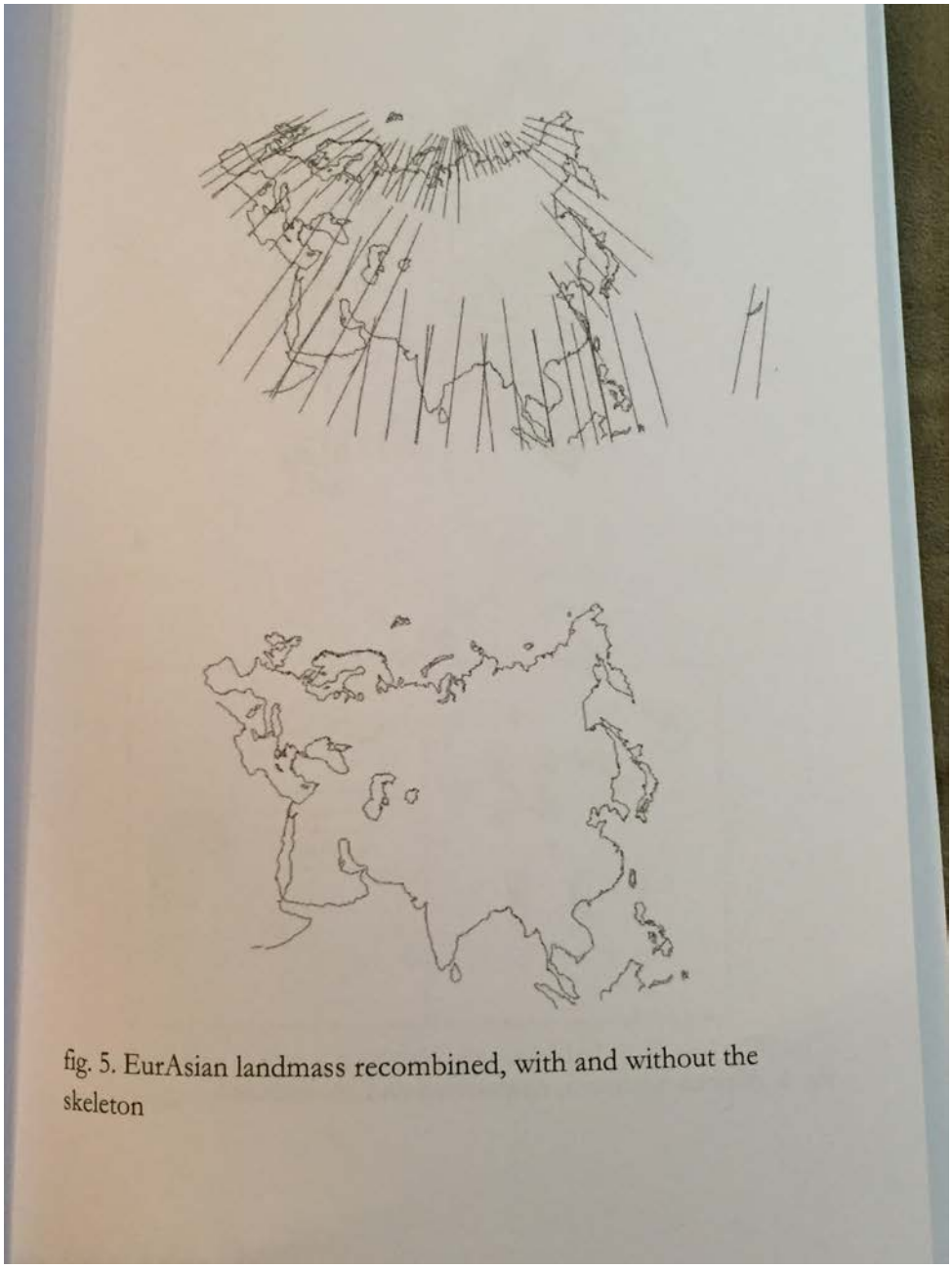


Figure 1. Groearke's fig. 5, showing the reassembly of Eurasia. I really don't understand the placement of the "skeleton"; why do the lines (meridians?) not align as they seem to be on the diagrams provided for other continental outlines. Groarke does not provide enough explanatory detail for his work to be undertaken and verified by others. Reproduced here under academic fair use.]

There is no demonstration that the process *actually* preserves equal-areaness and gains conformality, beyond his assertions. Moreover, Groarke admits that his map of continental coastlines would indeed reveal "interruptions and conflations" if the continental interiors and seas were also mapped within and between the coastlines, but he blithely states that "those kinds of inaccuracies can clearly be corrected by projecting the areas in which they occur, independently, and reassembling the map" {58}. Overall, Groarke's claim for having made a distortion-free map is dramatically overblown. He has done nothing of the sort.

Some of the Ideal's Preconceptions, Revealed

The ideal of cartography comprises many preconceptions that determine how scholars and the public understand maps and mapping. Not least is the conception that there is a universal and singular endeavor of cartography. The preconceptions are ubiquitous and largely taken for granted. Many scholars are breaking away from those preconceptions, but they nonetheless remain bound to others. What intrigues me about Groarke's work is that he baldly states some of the ideal's constituent convictions: in the context of his entirely misguided exercise, those convictions readily appear to be the nonsense that they are.

Groarke is especially indebted to the ideal's observational preconception, which among other convictions holds that all maps are necessarily grounded in observation and measurement and that the default map, indeed the first map, is a fine-resolution plan of the environment as experienced by the individual. Thus:

> In many ways, we experience the surface of the earth as a flat planar surface. It is accordingly unclear why it is impossible to map it in two dimensions. {19}

A further element of that preconception is the conflation of the act of observation to survey a map, and the act of looking at a map:

> Philosophically, a map generally has a point of origin—essentially a starting point—which represents the place [we] stand, notionally, in looking at a map. … The telling observation here is that the maps are accurate at the point or line of origin. This is enough, in itself, to defeat the unmappability thesis. {35}

At the same time, the ontological preconception holds that just one geometry underpins all maps, which is necessarily the same as the geometry of the world. Groarke refers to the manner in which one can consider the world to be a series of places joined by vectors, like a survey plan, and the goal of the map is to recreate those places and vectors {40, 73}. Any and every map:

> The properties of the local maps—here distributed along the shorelines—remains the same, whether we are dealing with a local map or a global map. … Philosophically, this is what we want in a map. {59}

This conviction is evident in Groarke's refusal to worry about how to define when the arc and the chord of the curve combine: "There is no need to set out exact conditions under which the curve is no longer discernible, which will vary with the circumstances" {29}. As an idealized process, cartography is independent of scale. Groarke can therefore treat any portion of the world to be a flat place regardless of size: the survey of a place, or a very long chunk of a continental coastline (that's already been projected). What Groarke takes to be a well thought-out "philosophical pragmatism" is just another unexamined set of beliefs about the supposed nature of cartography.

These points are rarely so openly stated as in Groarke's book, but they are nonetheless common in the cartographic literature. "Maps" are held to be a universal and unambiguous category of phenomena, definable by certain criteria: based on measurement and observation, having both ontological and pictorial relationships to the world (even if those two relationships can be contradictory), *etcetera*.

Groarke's entire project rotates around one of the several paradoxes innate to the ideal. (I discuss the background in chapter 5 of my forthcoming *Cartography: The Ideal and Its History*.) I refer specifically to the ambiguity of map scale, which is at once a feature of all maps even if it is highly variable on some maps. The idea of map scale as a universal attribute of all maps developed only in the nineteenth century. In 1802–3, Pierre-Alexandre-Joseph Allent, creator of the numerical ratio (what in English has come to be called the "representative fraction"), admitted that the ratio of map distance to ground distance was perfect for maps and plans of precise areas where the world might as well be treated as flat, and that the same ratio was a permissible approximation for more regional maps of territory (at scales in the order of 1:50,000–1:100,000). But, Allent averred, the ratio was quite meaningless for maps of extensive regions and of the whole world, because scale varied across the surface of such maps. Yet by 1900, even the grandest professors of geography thought that *every* map must have the representative fraction. In the post-war era, academic cartographers saw the representative fraction as the single metric that defines the very nature of a map.

Map scale can be understood as a defining characteristic of "the map" only if all maps are indeed grounded in detailed observation and measurement, in plane surveys where the ratio is valid. Thus Groarke's insistence, indeed his visceral certainty, that it is should be possible to map three dimensions onto two "without distortion":

> I was troubled by the sweeping nature of the blanket statement that it was not possible to map the surface of a sphere accurately in 2 dimensions without distortion, which goes against the evidence of our senses. It was easy to see the distortion on global maps, but the distortion disappeared as you reduced the size of the area that was mapped. I wondered whether there was any meaningful distortion in maps of local areas. {30}

Conversely, working from the local to the global, if maps are accurate "at their point of origin" then they should be accurate all over {35}.

What Groarke makes explicit is a position left implicit by most map scholars: *all maps must be the*

same. Faced with a profound difference, Groarke tries to rescue the ideal by demonstrating the error of the cartographers. He should have turned his philosophical gaze instead on the entire ideal. Breaking with the ideal requires us to celebrate rather than explain away the differences between maps. There is more than one way to conceptualize the world: early peoples as well as modern peoples made world maps as well as local maps, and the two are quite distinct. (There are many other kinds of maps.) There are a whole series of maps of places, properties, and landscapes that rely, even today, on plane geometry in ways that are fundamentally distinct to the cosmographical geometry of latitude and longitude that underpins regional and world mapping. Only within the high idealizations of the twentieth century have projective geometries been deployed to yoke the other geometries together, to give the impression that there is just one geometry to cartography.

Groarke's insistence on the unitary nature of "the map" demonstrates that cartography is a myth. There are multiple mappings and the definition of "map" is utterly ambiguous.

update: *I modified some of the language, nothing much (25 May and 29 November 2018).*

A Flat Earth?

Originally posted: 28 June 2018

https://www.mappingasprocess.net/blog/2018/6/28/a-flat-earth

To be clear at the outset:

- I do not subscribe to the flat Earth.
- I will **never** subscribe to the flat Earth.
- Do not waste your time trying to persuade me to subscribe to the flat Earth.
- I will not answer any questions concerning whether or not the Earth is flat.

My interest in the resurgent belief that the Earth is flat began in September 2015, when a student asked me how he might persuade a flat Earther friend that the Earth is in fact (almost) spherical. In looking for good, simple proofs of the spherical Earth and in trying to find out how flat Earthers explain solar eclipses and hurricanes, I ran into a vast online array of texts and videos that argue for the flat Earth. Each is fascinating and compels attention, like a car wreck.

Arguments for the flat Earth should insult the intelligence of any rational thinker. I *know* that the Earth is almost spherical because of scientific endeavors carried on for over two thousand years. I do

not have some "elite intellectual agenda" that must be sustained, even at the cost of lying about the Earth's shape, because doing so brings me some big bucks (!) and institutional security. This is not my personal opinion or belief; it is established science, repeatedly validated and affirmed in innumerable ways. To *believe* that the Earth is flat is an act of personal faith that affirms ludicrous conspiracies (up to and perhaps including the non-existence of Australia), inane interpretations of natural phenomena, and outright mendacity.

I am not interested in rebutting arguments for the flat Earth. Life is too short and my sanity too limited to rebut each and every one of the "proofs" advanced by flat Earth "theorists." Others have already done so. Nor am I interested in rehashing over two thousand years of science to prove the Earth's (almost) sphericity.

What I am interested in is the complexities of the flat Earther "movement," if something so fragmented and dispersed can be called such a thing. The following is a guide to some of the more substantial resources that I've encountered as I have tried to understand how and why people deny the Earth's (almost) sphericity. I will add to this account if I encounter further appropriate pages, should I ever let myself go down the rabbit hole again.

This is therefore only a guide to dealing with the phenomenon of a resurgent belief in the flat Earth:

- a quick guide to the printed literature on the history of flat Earth beliefs,
- some commentary on the communities of flat Earthers, especially as they are distinguished from creationists, and
- a few references to rebuttals of flat Earthers' arguments, leaving perhaps the best for last.

Print Literature on the History of Flat Earth Beliefs

The basic starting points in peer-reviewed literature are:

Garwood, Christine. *Flat Earth: The History of an Infamous Idea*. London: Macmillan, 2007.

- a very thorough account of the development and persistence of flat Earth beliefs in the nineteenth and twentieth centuries.

Russell, Jeffrey Burton. Inventing the Flat Earth: Columbus and Modern Historians. New York: Praeger, 1991.

- a detailed study of the utterly mistaken belief that Columbus set out to prove that the earth was spherical, with much on the medieval acceptance of the spherical Earth.

A stalwart of the skeptic community, Robert J. Schadewald (1943–2000), wrote many pieces on flat Earthers; his collection of books, pamphlets, and clippings on pseudo-science—totaling 880 volumes and 56 boxes—is now in the special collections department

of UW–Madison's Memorial Library. (Road trip?) Some of his own essays were transcribed by now emeritus professor of physics at Lockhaven University, Donald E. Simanek, with Schadewald's permission. These can be accessed via Simanek's "Bob Schadewald's Corner"; most of these pieces were reprinted (self-published through Xlibris) by Schadewald's sister Lois as *Worlds of Their Own: A Brief History of Misguided Ideas* (2008). In addition to three essays already reproduced by Simanek, this collection includes the essays: "It's a Small Flat World"; "He Knew Earth is Round, but His Proof Fell Flat"; and "When the Earth Was Flat in Zion." Finally, Schadewald had a book on the flat Earth movement almost complete at the time of his death. It was lightly edited and self-published by Wendy Schadewald as *The Plane Truth* (2015); the link is to an open-access online version. It is, however, not as rigorously structured as an academic like me would prefer. Garwood's book is much better and for me the preferred starting point; use Schadewald's work for "color."

The Flat Earth community

Writing in the *Guardian*, "Flat-Earthers are back: 'It's almost like the beginning of a new religion'" (20 January 2016), Beau Dure usefully traces the schisms in the flat Earth community. Reference might also be made to the Wikipedia page on Modern Flat Earth Societies.

The modern flat Earth societies have all very much been personal concerns, in that they have been organized around key individuals and their fortunes (and journals and newsletters) have tended to wax and wane along with the lives and energy of those key persons. Samuel Shenton created the "International Flat Earth Research Society" in 1956, in Dover, Kent (UK). The society waned as Shenton's health suffered through the 1960s until his death in 1971; at that point, his anointed successor, Ellis Hillman, wound up the society and gave Shenton's library and papers to the Science Fiction Foundation (founded 1970); the entire SFF Collection is now housed at the University of Liverpool, although there is no mention of Shenton's papers on the university's library website.

But just before or after Shenton's death, he or his widow was contacted by Charles Johnson; Shenton's widow sent Johnson some parts of Shenton's collection and archive, and Johnson adopted Shenton's mantle. Johnson quickly reestablished the "International Flat Earth Research Society" in Lancaster, California. The earliest issue of Johnson's *Flat Earth News* appeared in 1976, running through 1994. But a fire destroyed Johnson's own archive and mailing list, and then Johnson's failing health ensured that the society was moribund by his own death in 2001.

In the Internet age, new societies have developed around websites. A new society—now officially rather than just colloquially named the Flat Earth Society—was revived in 2004 by Daniel Shenton (no relation). It maintains an impressive website, https://theflatearthsociety.org/, which includes a forum for discussions and a wiki as well. It includes an extensive collection of PDFs of books, pamphlets,

newsletters, etc. (including many of Schadewald's more sympathetic essays).

In 2013, however, dissenters split off to form the Flat Earth Society (same name) but with a new website: https://www.tfes.org. Like that of the other society of the same name, this website has a library of material (much overlap), a forum, and a wiki. In both cases, the forums are intended as sites to debate particular points about flat versus spherical Earth, but I have found them unsatisfactory: each debate seems to quickly devolve into claims that the other side is being disingenuous. Both wikis are really overgrown FAQs.

A further group split off, calling itself the International Flat Earth Research Society, arguing that the existing groups were only fronts ("controlled opposition") by non-flat Earthers who sought only to make real flat Earthers look silly. The core difference of opinion would seem to be over whether the flat Earth is static or moving. Thus, Alan Burdick, in May 2018, quoted the organizer of the 2017 International Flat Earth conference:

> "More people are waking up," [Robbie Davidson] said. Davidson was careful to note that the conferences are unaffiliated with the Flat Earth Society, which, he said, promotes a model in which Earth is not a stationary plane, with the sun, moon, and stars inside a dome, but a disk flying through space. "They make it look incredibly ridiculous," he told me recently. "A flying pancake in space is preposterous."

This further group has apparently had a hard time of things, but seems currently to exist through a forum at http://ifers.123.st/. At the same time, the original founder of IFERS, a yoga instructor, has gone on to create http://www.atlanteanconspiracy.com. This website is offered with a tagline redolent of modern pseudoscience and the nastier conspiracy theories—"Exposing the 'Global' Conspiracy from Atlantis to Zion"—and includes much about yoga and spiritual science.

The Internet also enables individuals to collect and present an array of content. Some sites can be large, but they lack the forum and communication components of the societies. They are run as personal testaments not as sites to gather the like-minded. A couple of examples:

> The Biblically Flat Earth is an attractive website and "resource center," complete with a collection of scans of key books and pamphlets. The pull-down menus across the top of the page include "Maps": a single click takes one to a gallery of azimuthal map projections; click and hold pulls down a menu with just one item on it, specifically Urbano Monte's 1587 manuscript world map on an azimuthal projection, recently acquired and digitized by David Rumsey, which this site's creator incorrectly glosses as "Another ancient map, with more land, mythical creatures and a Circling Sun."
>
> Testing the Globe contains a number of links, but also videos of the author's attempts to test the Earth's sphericity.

In this modern age, conferences (or "cons" for short) have proliferated, including those for flat Earthers. I noted the 2017 conference above, and there's a 2018 follow-up planned in Denver, Colorado.

(The cons have very similar websites and seem to be interconnected institutionally, and certainly feature many of the same speakers, but they are each a distinct commercial entity.) The first British conference, in April 2018 in Birmingham, was the subject of analysis of tensions in the power/knowledge dialectic by Harry Dyer, a lecturer in Education at the University of East Anglia: "I watched an entire Flat Earth Convention for my research – here's what I learnt" (2 May 2018).

See also Alan Burdick's "Looking for Life on a Flat Earth," in the *New Yorker* (30 May 2018), which begins with an attempt to launch a human in a homemade rocket far enough to see the supposed disk of the earth and so disprove NASA, airlines, and everyone else who has engaged in an epic, centuries-long conspiracy to obscure the fact of the flat earth—a conspiracy in which both sides in the Cold War participated, I should add, despite profound ideological differences on almost every other topic under the Sun—and then continues with the November 2017 conference, etcetera, to again wonder about the mindset of flat Earthers in our post-truth world.

It seems that there is also a flat Earth museum on Fogo Island, Newfoundland. It has a FaceBook page. Road (and ferry) trip, anyone?

Creationism vs the flat Earth

One does not have to be committed to Biblical literalism to think that the Earth is flat, but a commitment to the literal truth of the Bible underpins the main works in support of the flat Earth. The nineteenth-century assertions of a flat Earth were grounded in a Biblical literalism and rejection of modern life (and evolution, etc.) by certain Protestants. (This also relates to interpretations of the Qur'an.)

Flat Earth beliefs thus cause a certain problem for other Biblical literalists—notably the creationists—who accept that the Earth is indeed spherical, or at least curved. One compromise between the two positions is Orlando Ferguson's "Map of the Square and Stationary Earth" (1893) in which a curved Earth rises from a depression in an otherwise flat and stationary square. An alternative perspective has been to argue that flat Earth theories were specifically created to appeal to Christian fundamentalists so as to discredit them and therefore their skepticism of Darwinian evolution (as argued in 2008 in the *Journal of Creation*).

More recently, a researcher and author for Answers in Genesis has sought to distance creationism from flat Earth theory. Dr. Danny R. Faulkner holds a PhD in Astronomy from Indiana University (1989) and has written a number of blog posts on flat Earthers on the AiG website. The summary of what seems to be his first blog on the subject, "Is the Earth Flat?" (24 May 2016), states:

> Popular today due to Internet videos, the idea of a flat earth lacks both biblical and scientific support and shows a faulty understanding of history. Flat-earth arguments are generally a misrepresentation or misinterpretation of the evidence. Both science and the Bible confirm beyond doubt the earth is a sphere.

In November 2017, Dr. Faulkner attended a conference of flat Earthers: "What I Learned at the First Flat Earth International Conference" (17 November 2017). He admits his disappointment:

> I had expected that I would hear and see information about flat-earth that I hadn't encountered already, but that wasn't the case. Many of the presentations largely were personal testimonies of how people had come to believe in flat earth. Hence, I didn't learn much about the flat-earth model that I didn't already know. However, I did learn much about the flat-earth movement itself. In conversations and in the presentations, I learned how people came to lose jobs, friends, and even family members once they, in their own words, "came out of the closet about flat earth." Therefore, many of the people in attendance clearly viewed the meeting as a safe refuge where they could meet ostracized people like themselves.

When presenters did make arguments, Dr. Faulkner found them weak and readily refutable. (My irony meter has swung all the way to 11, but Dr. Faulkner's seems stuck at 0.)

> [**24 Jun 2019:** Dr. Faulkner has further elaborated about both the theological and critical faculties of flat Earthers in a further post, "Reflections on the Flat-Earth Movement" (22 June 2019), in which he promises a forthcoming book; more particularly, he offers 20 sociological observations about flat Earthers.]

> [**31 August 2020:** Dr. Faulkner's book was finished—*Falling Flat: A Refutation of Flat Earth Claims*—and published by Answers in Genesis in 2019. He has also posted other essays of relevance to this topic: is belief in a flat earth necessary for salvation (27 April 2020) and an essay on the history of the idea of geocentrism, a tenet promoted by flat earthers (29 August 2020).]

Conspiratorial Tendencies

While the original flat Earth societies were undeniably driven by a concern for Biblical literalism, a concern that does seem to underpin the proliferation of the online videos that purport to "prove" the flat Earth, I must agree with Skeptoid (27 November 2012) that the resurgence is also driven by the same sociological morass that supports conspiracy theories generally. The idea that the Moon landings were faked was first proposed in 1976; only in 1980 did Charles Johnson argue that they were faked to hide the reality of the flat Earth, and since then great conspiracies involving NASA, Soviet and European space agencies, etcetera etcetera, have been par for the course for flat Earthers. In "What Flat Earth Memes Tell Us about Conspiracy Theories" (30 June 2017), Michael Rothschild explained the schisms among flat Earthers in terms of their adherence to religious beliefs or general social paranoia:

> While the official Flat Earth Society is devoted almost entirely to backstopping flat earth beliefs by way of the Bible, the numerous other flat Earth Facebook groups like "Flat Earth Society," "Official Flat Earth and Globe Discussion" and "Flat Earth - No Trolls,"

> are just as likely to spend their time pushing random memes, general conspiracy theories, and blanket questioning of accepted scientific principles as they are to discuss whether the Earth is flat or round.

Rothschild further found that flat Earth commentators tend to be strongly anti-Semitic. But also the critics, too. Conspiratorial and anti-Semitic tendencies are evident in claims that the entire flat Earth movement is a "psychological operation" ("psy-op"):

> The Flat Earth fad is a "conspiracy theory" designed to distract, divide and discredit those who understand modern society has been enslaved by the Judeo Masonic (Satanic) conspiracy. It creates cognitive dissonance, and makes us question all our assumptions, *especially those which are True.* (Henry Makow, 3 February 2016)
>
> [**14 Oct 2018:** It has become common, it seems, to present flat Earth theorists as motivated strictly by conspiracy. A CBS news report—prompted, I think, by the release of the film, First Man, a biopic of the life and career of Neil Armstrong—quoted the attribution by a "national security expert" of the belief as strictly a function of anti-intellectual "snobbery" and a collapse of both authority and education. As quoted in a secondary report at DailyKos, which includes the requisite video,
>
> > But national security expert Tom Nichols told CBS News that the Flat Earth trend is part of a bigger problem. "People have lost faith in experts," he said. "We've developed a kind of reverse snobbery that says, if you have a great deal of education, if you're at a well-known institution, by definition, you must be a liar."
> >
> > "Younger people will say, 'The internet is a big library,'" he continued. "That's wrong. The internet is a big dumpster. There's no guarantee that anything you find on it is true."]
>
> I'm going to stop here, because this way madness lies … follow such lines of reasoning and all truth and certainty just evaporates.
>
> **[1 Sep 2019:** a study by scholars at the LSE argues that belief in FE among Filipinos is conspiratorially motivated and religiously based. Interestingly, their social media groupings have incubated a variety of "fake news" with a markedly right-wing political bias.]
>
> [**14 Nov 2019**: *The Guardian* in the UK wrote a brief exposé of FErs in Brazil, who exhibit the same kinds of religious and conspiratorial tendencies as their US brethren, and who plan on a conference in São Paolo in the summer of 2020. Fortunately this will not be held at the same time as the ISHMap conference in the same city!]
>
> [**21 January 2020**: *The Guardian* comes through again with a piece on the Spanish soccer team, Flat Earth FC, that promotes the philosophy of FEerism. The piece does not refer to religion, but rather to the role of Spanish soccer teams as political forces. With video, under the title, "The ball is round but the earth isn't?"]

Rebuttals of flat Earth theories

In case anyone is still interested. At least one book has been published to rebut the "proofs" of the flat Earthers:

> Brooks, Gordon S. *The Earth Is Not Flat*. n.p.: n.p., 2016. ** a self-published analysis of, and rejoinder to, the flat Earth phenomenon; the associated website has some good explanation of tests to prove the sphericity of the earth: http://embracetheball.blogspot.com/.

Given that the resurgence of flat Earthers seems to have been driven by YouTube videos (many with high production values), the rebuttal of the "proofs" advanced has also been a YouTube phenomenon. I like a short series by VoysovReason:

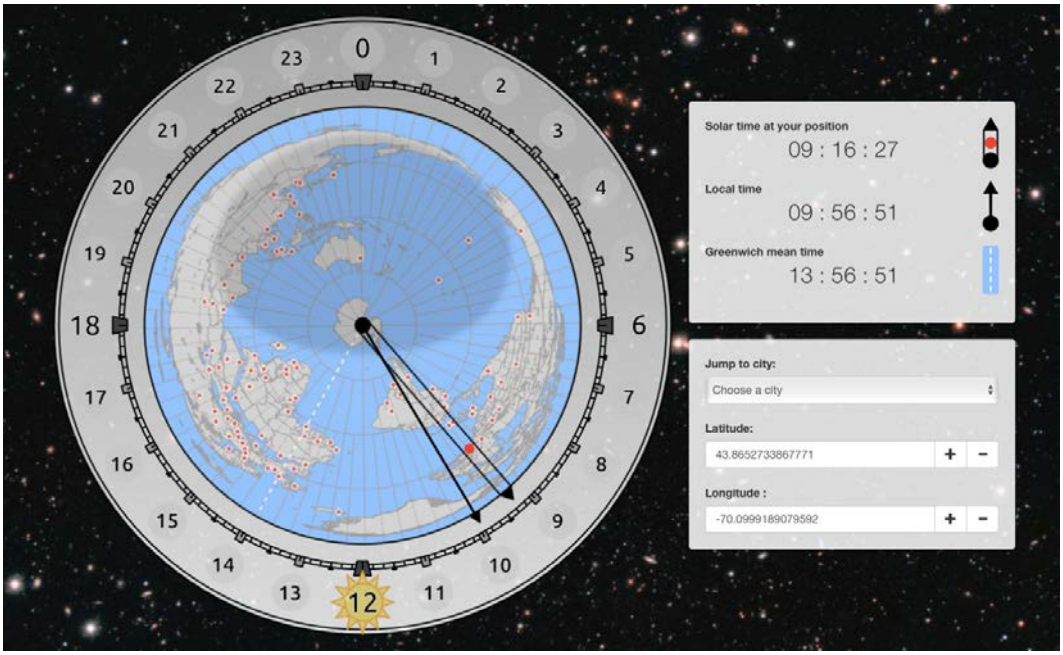
> Proving the Earth is not Flat - Part 1 - The Horizon (11 June 2016)
>
> Proving the Earth is not Flat - Part 2 - The Stars (18 July 2016)
>
> Proving the Earth is not Flat - Part 3 - The Moon (8 October 2016)
>
> Proving the Earth is not Flat - Part 4 - Easy Experiments (4 March 2017)

See also the commentaries at https://flatearthinsanity.blogspot.com/.

My favorite debunking of flat Earth theory is by Vsauce: Is Earth Actually Flat (4 December 2014). It includes a wonderful simulation by Yeti Graphics of how gravity would work on a disk-shaped Earth. Very cool! Of course, to sustain a flat Earth, many flat Earthers dispute even that there is a natural force of gravity … and are then led into paroxysms of stupidity to account for gravity and its effects (such as the trajectories of artillery shells).

Update 5 July 2018: An anti-flat earth "flat earth" map

A new *chronoscope*—i.e., a map illuminated so as to show the constantly changing areas of day and night—has been published online. The chronogeoscope is particularly remarkable for its azimuthal equidistant projection centered on the south pole, so Antarctica is tiny (comparatively) and placed in the middle of the map. This projection was made because, seen "from below," the earth moves in a clockwise direction:



A screen capture of the Chronogeoscope, 5 July 2018

I am amused by this projection, as it seems to replicate the world image sustained by the flat Earthers, but does so from an entirely new perspective.

I should add that if one centers an equidistant, equalarea, or conformal (stereographic) projection on Hawaii, then Africa becomes a great landmass surrounding the entire earth!

Update 3 Sep 2018

I love this French cartoonist who occasionally translates his work into English. Here's his wonderfully different take on the flat earth (31 Aug).

Update 20 December 2020

Dan Olson, "In Search of a Flat Earth" (11 September 2020), both very simply debunks the flat earth with a simple demonstration and explores the evangelical Christian agenda of FEerdom that underpins their conspiracist rhetoric. For that matter, see Olson's "That Time Geocentrists Tricked a Bunch of Physicists" (20 November 2020).

A PARTIAL, ESSENTIALIST, AND INCORRECT ETYMOLOGY FOR "MAP"

Originally posted: 29 November 2018

https://www.mappingasprocess.net/blog/2018/11/29/a-partial-essentialist-and-incorrect-etymology-for-map

Here's an instance of a rather contorted and essentialist definition of "map." Even though the definition seems to be in line with post-1980 conceptual developments in map studies, it can only be valid if considered from the ideal of cartography that remains very much in force.

Specifically, Emanuele Frixa (2018) contributed an essay on geographical approaches to a collection on "representations of origin of place"; the theme is an intriguing one, addressing as it does a combination of sense of place, personal origins, migration, children's acculturation, and the construction of "home." Within this broad concept, Frixa argued that maps are one means by which children can imagine and remember a distant home. In doing so, he ends up grappling with the (to me) fundamental realization that the ideal of cartography obscures the different ways in which humans think about and represent spatial relations. Unfortunately, Frixa only remains on the cusp of developing a processual approach to mapping because he remains bound to an essentialist definition of "map."

It is this definition that drew me to his essay in the first place. His essay popped up during an insomniac online search for recent literature. I was immediately drawn to the abstract, in which Frixa stated that he had taken "inspiration from the etymology of the map—that is to say 'an object used to carry things'" (Frixa 2018, 49). Given that this etymology seems to have nothing in common with how map historians have understood the word's etymology, I was intrigued. The specific passage of interest is as follows:

> The word map comes from the Latin *mappa*—though its origin is Phoenician; it was used by Quintilian to mean the tablecloth or napkin used by guests to wrap up left-overs to be taken with them. It is on these linen cloths—more resistant than paper—that for centuries terrestrial space was represented. Though the material used for maps has subsequently changed, the word has remained the same to this day.
>
> The original meaning of the term—a piece of cloth used to take things away—is important, because it is precisely this kind of action that defines the representation of places of origin. Through their spatialization on paper and with the aid of memory that preserves some of the features of the places of origin, these maps become "objects which have the properties of being *mobile*, but also *immutable*, *presentable*, *readable* and *combinable* with each other." (Frixa 2018, 51, quoting Latour 1990, 26)

Frixa thus construes *map* to be a universal term, utilizing both form and function in an essentialist definition. Generally, definitions of maps have been either formal, addressing the characteristics required for a map to be a map (scalar, relationship to the world, etc.), or functional, addressing what

people do with maps (navigate, visualize the world, etc.). In my experience, such definitions are either/or, one or the other. At best, as with the definition of "map" offered in volume 1 of *The History of Cartography*, one element dominates ("facilitates a spatial understanding of things, concepts, conditions, processes, or events") while the other is proffered only briefly ("graphic") (Harley and Woodward 1987, xvi).

Frixa's unique combination of form and function curiously propagates a strictly Anglophone idealization of maps. He gives no hint that almost every other European language derives its equivalent to *map* from a quite different Latin root: *carta* or sheet of paper. His etymology of "map" is only valid if: first, we somehow ignore the complexity of the different terms used in medieval and early modern Europe before *carte*, *Karte*, *map*, etc. eventually stabilized semantically in the eighteenth and nineteenth centuries (Krogt 2015, 124–27); and, second, we privilege the English *map* as the only authentic term across a couple of millennia.

The ahistorical etymology further ignores the complexity of the development of the word *map* in medieval and eventual specifically English usage. Frixa is correct that English *map* derives from the Latin *mappa*, meaning a tablecloth, napkin, but also a signal flag. The general supposition is that as larger cloths were used as one support for paintings and drawings, *mappa* began to be used as early as the twelfth century for graphic works, perhaps with the sense of display, made on any support (vellum, papyrus, paper, wood, walls, etc.). The slippage in usage could well have been earlier: the OED (art. "map" n1) states that the "post-classical Latin *mappa* is attested from the late" fourth century "as a term used by land surveyors, though its exact interpretation is not clear." The shifting pattern of usage, from material to the kinds of images prepared on that material, was not limited to *mappa*. A variety of other words were adopted for maps and images produced on other support materials, as *carta* (paper) or *tabula* (wood panel), with usage further slipping so that the terms were applied to any such image, regardless of support. In fact, the medieval *mappa* extended to cover non-graphic works, as when *mappamundi* was used for prose or poetic descriptions of the world {Woodward, 1987, #678@287}.

It also seems as though medieval French acquired *mappe* only after the Norman invasion, so the word was not part of the Anglo-Norman lexicon (OED art. "map" n1). *Mappa* presumably came into English through scholarly Latin. By the early sixteenth century, the words *map*, *card* or *chart*, and *plan* or *plot* were variously used in English for works that we generically call "maps" today; by the eighteenth century these had stabilized into *map* for images describing the world or large *regions*, *chart* for an image of the seas and lakes, and *plan* for an image prepared from direct observation and measurement. Only in the nineteenth century did *map* acquire its idealized, universalist conception as any and all images that depict the world or part thereof (Edney 2019).

So, yes, *mappa* was used by some Latin authors to refer to a linen cloth in which leftovers could be taken away, but that was only one particular usage and it was moreover one whose connotations did not carry over into medieval usage, let alone into its early modern usage. Frixa's etymology is misguided.

Frixa's etymology thus appears as an instance of confirmation bias, of selecting data that supports

a predefined conclusion such that contradictory evidence is ignored or played down. That predefined conclusion is that there is a universal category of things that are unambiguously identifiable as "maps," and always have been. Each map is self-contained and stable, a position stemming from the material preconception. At the same time, the etymology allows Frixa to intertwine these long-established elements of the ideal of cartography with newer elements drawn from the post-1980 sociocultural critique of maps. In particular, the supposed connotation that maps are about *taking* resonates with sociocultural arguments that maps are inherently bound up within a variety of unequal power relations. There is, furthermore, a paradox in Frixa's reference to Bruno Latour's concept of the immutable mobile: while that concept is itself dependent on the ideal's material preconception, it is integral to Latour's argument that the difference between modern European science and pre-modern or other scientific traditions is not that Europeans in the early modern era somehow all acquired a new rationality that henceforth distinguished them from non-Europeans, but that Europeans developed new *practices* that took their investigation of the world in new and productive directions. In this respect, the immutable mobile is a modern phenomenon, which Frixa now suggests was characteristic of cartographic science over millennia.

Overall, Frixa ran afoul of a partial and ahistorical etymology to create an essentialist definition that construes the map to be an unchanging and universal thing, in line with the ideal of cartography. The sociocultural critique is denied and undermined. The history of maps is forced once again forced into an intellectual straightjacket. The ideal persists.

p.s. my reliance on the OED is provisional; the size and complexity of the endeavor, and the difficulty of keeping every single entry updated ("Card *n*2," which includes that word's mappy meanings, has not been updated since the first edition, in 1888), so that the historical information is understandably often old-hat and not to be blindly trusted.

p.p.s. the cover image for this post is of napkin and mappamundi; alas, the lunch was excellent and there were no leftovers.

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A Misunderstood Quatrain

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https://www.mappingasprocess.net/blog/2018/12/15/a-misunderstood-quatrain

> So Geographers in *Afric*-Maps
> With Savage-Pictures fill their Gaps;
> And o'er unhabitable Downs. [*o'er*, over; *Downs*, dry hills
> Place Elephants for want of Towns.
>
> Swift (1733, 12, lines 179–82)*

This quatrain is almost certainly the most famous English-language poem in map history. John Andrews (2009, 416) was right to have called the quatrain an "overworked phrase." It has permeated writing on map history since the 1930s.

The source is the poem, *On Poetry: A Rapsody*, by Jonathan Swift (1667–1745), published in London and Dublin in 1733 and repeatedly thereafter.† Swift was an Anglo-Irish churchman who in 1713 became dean of St. Patrick's cathedral, Dublin (in the Anglican Church of Ireland). His satirical works, like *Gulliver's Travels* (1726), might have become humorous children's tales, but in his day they were read as vicious political and religious commentaries.

Other portions of *On Poetry* are routinely rehearsed by literary historians, but I don't think that any have flourished to the same extent among historians generally. Consider the following:

> To Statesmen would you give a Wipe, [*give a Wipe*, clean a bum
> You print it in *Italick* Type.
> When Letters are in vulgar Shapes,
> 'Tis ten to one the Wit escapes;
>
> But when in CAPITALS exprest,
> The dullest Reader smokes the Jest; [*smokes*, gets
>
> Swift (1733, 8, lines 95–100)

* Elias, Fischer, and Woolley (1994) explained the poem's subtle and significant modifications at the hands of Swift and later editors, notably the posthumous addition of some forty new lines that Swift had originally omitted, because they had attacked the king; see Just (2004, 51–55) for the initial determination that the poem was indeed deemed libelous and that only Swift's popularity in Dublin had prevented his arrest. The line numbers used here are those provided by Elias, Fischer, and Woolley (1994) for the complete text, also used by Just (2004); in the original edition published by Huggonson, the quatrain comprises lines 176–79. The quatrain itself was not modified in later printings.

† A personal bête-noir: the careless use of the modern spelling of "rhapsody" in the work's subtitle, even in entries for the 1st edition in library catalog.

These six lines are overtly rude and satirical, like almost all of the poem. They clearly do not present an accurate depiction of actual typographic practices: they have been neither read nor quoted as such. Rather, they are part and parcel of Swift's complaints that hack writers emphasize the outward form of a poem rather than its content (Just 2004, 39–40). Lacking any sense of verisimilitude, these and other stanzas are not repeated *ad nauseum* by bibliographers, typographers, and any other lay or academic historians of the book.

But Swift's four lines about geographers and their maps of Africa seemingly have none of the cynicism or obvious scurrility that characterize the rest of poem. They appear to modern eyes to be truthful, not satirical, and they are accordingly read in isolation as an historically valid critique of actual mapping practice.

But should they be?

(Hint: no. The widespread acceptance that the quatrain directly addressed maps and mapping is yet another unwarranted assumption fostered by the narcissistic ideal of cartography.)

Literality and Interpretation

Responsibility for isolating the quatrain from the rest of Swift's work perhaps lies with the British geographer James Rennell who in the late eighteenth century was a prominent member of a group advocating for the exploration of the interior of (northern) Africa. For the first proceedings of the Association for Promoting the Discovery of the Interior Parts of Africa, published in 1790, Rennell provided a new map and a brief account of its construction. In the latter, Rennell was dismissive of the unaesthetic and inelegant uniformity of the arid and semi-arid regions of northern Africa:

> But the Public are not to expect, even under an improved system of African Geography, that the Interior Part of that Continent will exhibit an aspect similar to the others; rich in variety; each region assuming a distinct character. On the contrary, it will be meagre and vacant in the extreme. The dreary expanses of desart which often surround the habitable spots, forbid the appearance of the usual proportion of towns; and the paucity of rivers, added to their being either absorbed or evaporated, instead of being conduced in flowing lines to the ocean, will give a singular cast to its hydrography; the direction of their courses being, moreover, equivocal, through the want of that information, which a communication with the sea usually affords at a glance. Little as the Antients knew of the Interior Part of Africa, they appear to have understood the character of its surface; one of them comparing it to a leopard's skin. Swift also, who loses no opportunity of being witty at the expence of mathematicians, diverts himself and his readers both with the nakedness of the land, and the absurdity of the map-makers. <quatrain> (Rennell 1790, 215–16)

For Rennell, Swift's comments were both correct to characterize the African interior as arid and uninhabitable but also sarcastic of geographical practice. As European interest in Africa expanded to

encompass more tropical regions, and there developed a greater appreciation of the variety of ecosystems than Rennell's, the isolated quotation became a commentary on geographical practice.

As a geographical commentary, Swift's quatrain has been broadly deployed in one of two ways, either as a literal account denoting a common mapping practice, or as a satire whose connotations demand interpretation. The quatrain has long been "canonical" for Africanists (Herbert 2001, 41), for whom it stands as a humorous and therefore effective description of the poor state of European knowledge of Africa during the early modern era and of how that ignorance was covered up (e.g., Wilson 1882, 494; Thomas-Stanford 1912, 134; French 1934; Riddell 1994, 86; McNulty 1995, 10; Wan 2014). From this foundation, the quatrain has been further deployed to emphasize the manner in which Europeans progressively mapped Africa in the nineteenth century as an integral part of the imperial project of bringing light to the so-called Dark Continent. This usage has occurred in works written both from a pro-imperial perspective (e.g., Earl Mountbatten in Anon. 1955, 398) and from one critical of imperialism (e.g., Mazrui 1969, 675; Baesjou 1988). The quatrain inevitably crops up in the relatively few general accounts by map historians of the regional mapping of Africa (e.g., Wallis 1986).

Swift's elephants have also sustained an academic morality tale. The seeds for this lie in the quatrain's apparent contrast of early modern and modern mapping: Henry Yule (1871, 1:172) quoted the quatrain in arguing that Marco Polo told a story to obscure the fact that he had not actually entered Samarkand; Edward Everett Hale (1882, 190) similarly used the quatrain as part of a general commentary on the general habit of covering up gaps in knowledge, specifically within a dialogue about the varying depictions of the Nile on early maps that served as a prologue to a summary of the modern exploration of the river. In more recent scholarship, the quatrain has become popular as a metaphor for all the clichés and presuppositions forced on scholarship in general by a lack of hard evidence (Herbert 2001; Alexander 2013) and as a reminder to scholars that "complacency about the knownness of the world is unfounded" (Seager 1985, 9). Finally, in a more postmodern take, the morality tale has been turned around, in that the quatrain suggests that those clichés and presuppositions were not logical interpolations of limited data but are manifestations of the imperialistic imposition of European desires and fascinations onto Africa (McLaughlan 2012, 103, esp. re nineteenth-century writers).

These literal and interpretive deployments of Swift's quatrain also characterize its use by dedicated map historians. However, in interpreting the quatrain, map historians have pursued not a morality tale but an idealized narrative of the history of cartography.

Literal Readings by Map Historians

The literal reading of the quatrain as a generic, but curious, statement of an habitual mapping practice can be found as early as 1844, when a commentator wrote on the local history of the area that became Piccadilly, in London:

It was long before Portugal Street was obliterated from our maps, or the figures of deer

were banished from the Green Park: <quatrain>. (Anon. 1844)

One of the first dedicated historians of cartography to draw upon Swift's quatrain was Edward Luther Stevenson, in his 1921 account of early globes. In writing about the technique of globe making, he commented on the similarity of the look of terrestrial globes to plane maps:

> In their general features, differences can hardly be said to exist between plane maps and globe maps. In the matter of adornment there is similarity; each following the practice of the time when constructed. As pictures and legends hold a place of prominence, particularly on mediaeval maps,[note 21] so even to the close of the period we have had under consideration, that is, the end of the eighteenth century, these adornments have place on globe maps, sometimes few, sometimes many, the same, if in picture, exhibiting the inhabitants of land and sea, if merely a legend, giving information of geographical importance on the terrestrial globe and of astronomical importance on the celestial, these legends being often placed in an artistic cartouch. (Stevenson 1921, 2:207–8)

Stevenson's note 21, in the middle of this passage, further added:

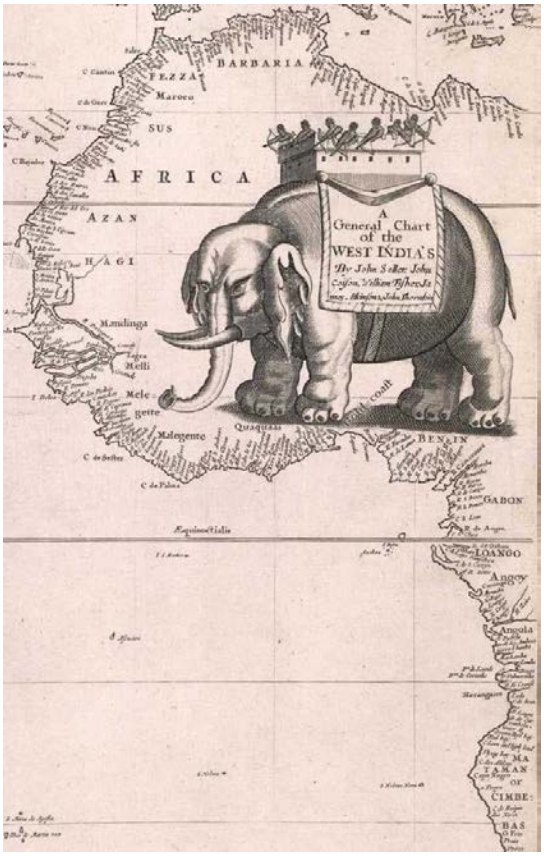
> 21. Pictures are a particularly striking feature of the cloister maps of the middle ages. The idea of such adornments may have come down from Greek or Roman days. Plutarch tells us in his 'Theseus' that "Geographers crowd into the edge of their maps parts of the world about which they have no knowledge, adding notes in the margins to the effect that only deserts full of wild beasts and impassable marshes lie beyond." Jonathan Swift, humorously referring to maps of the early period, writes <quatrain>. The early map makers as illustrators should be an interesting theme for a special monograph. (Stevenson 1921, 2:218n21)

I give these passages in full to indicate that, for Stevenson, Swift's quatrain described a common, although perhaps not standard, practice stretching from antiquity (Plutarch) until at least the end of the eighteenth century (the end of time period covered by Stevenson). The generic nature of the situation was reinforced by Stevenson's failure to provide a dated citation to Swift's poem. The quatrain's import—and humor—appeared timeless. In this respect, Swift's quatrain has often been simply dropped into map histories as humorous leavening (e.g., King 1996, 57; Holt-Jensen 1999, 3; Headrick 2001, 96; Colley 2014, 149; Brooke-Hitching 2016, 8; Van Duzer 2017).

Almost immediately—starting with a review of Stevenson's book (Pearson 1922)—historians omitted the allusion to Plutarch and took the quatrain at face value, as a description of common practice and of map makers' *horror vacui* (e.g., Curnow 1931, 9). The quatrain was sufficiently well known in 1937 that Leo Bagrow could simply refer to it *en passant*, as "Swift's epigram," in his editorial to volume 2 of *Imago Mundi*; John Andrews would do the same, seventy years later (Andrews 2009, 416). Literal interpretations of Swift's "apparent truism" (Reinhartz 1997, 96) are common in the literature: map makers filled in the blanks as a matter of course (e.g., Jervis 1936, 43; Bagrow 1951, 199; Bagrow 1964, 215; Ristow 1967, 16; Tyner 1987, 458; Nobles 1993, 13–15; Carroll 1996, 77; Jacob 2006, 160 and

380n29; Just 2004, 112–13).

Some map historians have so completely accepted the truth of Swift's observation that they have identified specific maps as having suggested the quatrain to Swift. Helen Wallis (1978, 37), followed by Philip Burden (2007, no. 475), tentatively selected a chart of the Atlantic and the West Indies by John Seller, first published in ca. 1676 and thereafter reprinted several times. Seller placed the map's title in a large, African elephant cartouche set in the middle of the western Sahara



Detail of title cartouche on John Seller, *A General Chart of the West India's*, from Seller's *Atlas minimus* (London, ca. 1676): James Ford Bell Library, University of Minnesota; oSe 1675. See http://gallery.lib.umn.edu/exhibits/show/bell-atlas/item/1041.

Later commentators have been less tentative: see the proclamation in the New York Public Library's map division's twitter feed (29 November 2017). In an alternative suggestion, it was Abraham Ortelius's map of Prester John's empire in the *Theatrum orbis terrarum* (after 1572/3) that induced Swift's quatrain:

Abraham Ortelius, *Presbiteri Iohannis, sive, Abissinorum imperii descriptio* (Amsterdam, 1579) (Van der Krogt 1997– , 3: map 8720:31): Osher Map Library and Smith Center for Cartographic Education, University of Southern Maine; Osher Collection. See http://www.oshermaps.org/map/310.0001

An undated entry in the Strange Maps blog, no. 434 took its image of this map from the Princeton University Library website and concluded with a note that a now-deleted page at that website had stated that "[t]his is certainly one of the maps that Swift had in mind when he wrote" his quatrain. Swift is known to have owned a late edition of the *Theatrum*, so this second identification has some degree of plausibility (Just 2004, 112).

But such a close relationship of the poem to any particular map is probably overstated, given that there is a very long tradition of showing elephants on maps of Africa, going back into the medieval period (Van Duzer 2013, 400). In fact, Seller derived his work, including the elephant cartouche, from an earlier, Dutch chart of the Atlantic by Jacob Aertsz. Colom (1655: Burden 1996, no. 312). From this perspective, the depiction of elephants on maps of Africa is in fact a truthful statement, a record of an element of the lands being mapped (George 1969, esp. 21).

The Narrative of Cartography's Enlightened Reform

The mocking tone of the quatrain (Oberhummer 1909, 567) and its allusion to Plutarch's critical comments has permitted a more figurative reading by map historians. In this interpretation, the quatrain is quite divorced from the parent poem, with its critique of poetry, and instead serves to *specifically* deride contemporary mapping practices. The implication is that Swift actively championed the eighteenth-century "reform" of cartography.*

We can see this interpretation in, for example, Brian Harley's argument for using "the term 'silences' … rather than the somewhat negative 'blank spaces' of the older literature," which he bolstered by noting that "the negative—even derisory—attitude towards blank spaces on maps was already well established by the eighteenth century [as] most famously" illustrated in Swift's quatrain (Harley 1988, 58 and 72n13). From here it is a small step to dismissing map decoration has having no "real value":

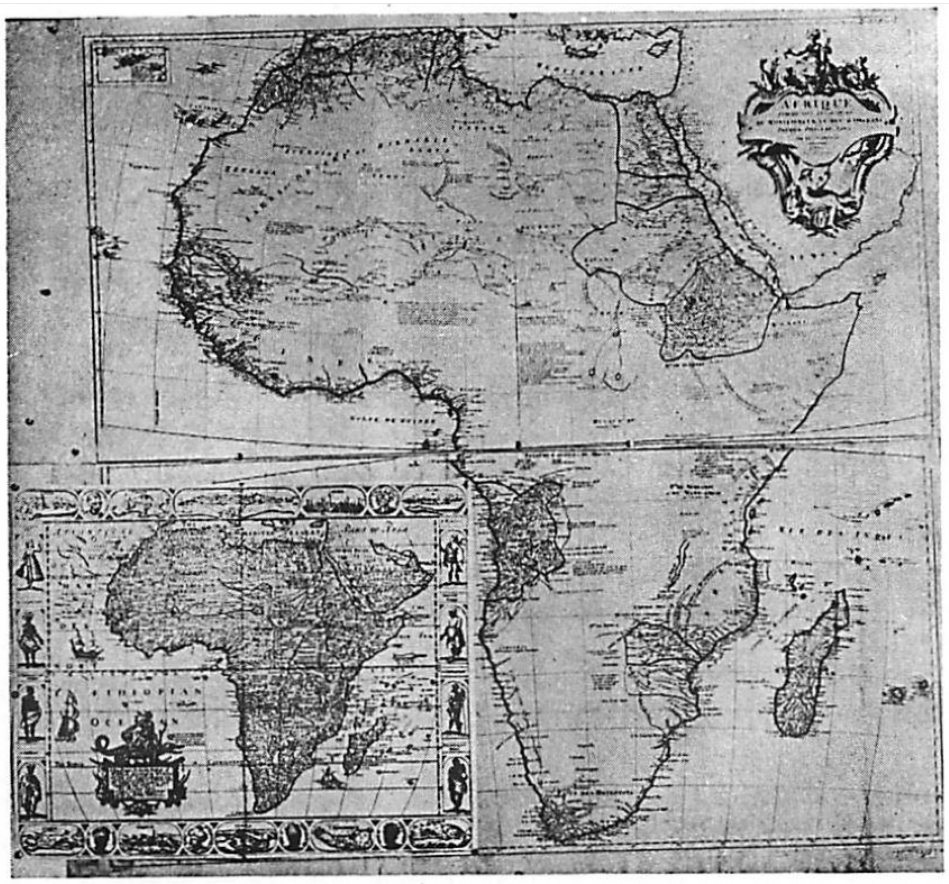
> Faced with a paucity of such data, mapmakers relied upon the ingenuity of their engravers to fill out their maps with decorative additions as trade caravans or wild animals, which may have added piquancy to the map but little else of real value. Such sharp practices evoked the following jibe from the even sharper pen of the satirist Jonathan Swift: <quatrain>. (Aijazuddin 2000, 4)

Such an almost willfully decontextualized interpretation of the quatrain was first made in the late 1930s by Erwin Raisz, the Hungarian-born geographer and map maker at Harvard University. Raisz was concerned, like W. W. Jervis (1933) had been just previously, to imbue the history of cartography with the perspective of academic cartographers working in Anglophone universities. In particular, Jervis and Raisz each reconfigured the existing master narrative of cartographic progress by adding the transformation of cartography from an "art" to a "science." This narrative became so dominant in the post-war era (thanks in large part to Brown 1949 and Crone 1953) that it can seem like the history of cartography was always written this way (Delano Smith 2001). But the narrative was very much the creation of Raisz through his interpretation of Swift's quatrain.

Raisz laid out the new narrative in the first part of his manual on map design and production, *General Cartography* (Raisz 1938, 1–70), replacing the long-standing recognition that cartography had changed during the eighteenth century (because of industrialization and absolutism) with the new position that the enlightened, pan-European Age of Reason had *caused* cartography to change. A skilled map maker, Raisz objected to the "indiscriminate" manner with which Renaissance geographers had filled in empty spaces on their maps; to this end, he quoted Swift's quatrain (Raisz 1938, 41). Raisz further used the quatrain as the lynchpin for a demonstration of cartography's necessarily *scientific*

* Raisz's interpretation of Swift as actively criticizing contemporary mapping practices has led to the quatrain bearing extensive evidentiary weight, as when Geoff Armitage and Ashley Baynton-Williams (2012, 143) extrapolated to claim that "Swift's satire underscores his interest in educating the geographically illiterate."

revolution. With the quatrain in mind, he contrasted an early seventeenth-century Dutch map with a mid-eighteenth century French map of Africa:



Raisz (1938, 46, fig. 21): an overlay, with an approximately consistent degree of reduction, of two maps of Africa. In the foreground is Robert Walton's 1658 map of Africa (Betz 2007, no. 88), a close derivative of a later state of Nicolaus Visscher's map originally published by Pieter van den Keere in 1614 (Betz 2007, no. 55); Raisz misidentified it as the work of Jan Jansz. (Johannes Janssonius). The background is J. B. B. d'Anville's *Afrique* (Paris, 1749) in four sheets.

The difference between these maps, Raisz claimed, was manifest in their form. The Dutch had been interested only in selling maps for "monetary profit," but d'Anville and his colleagues were motivated by "scientific reputation" (Raisz 1938, 45). Raisz understood the baroque decoration of early modern geographical maps to be the product of an imbalance between cartographic art and science; the relationship had been even more imbalanced in the production of earlier, medieval maps, which seemed to lack any scientific foundation at all. For Raisz, cartographers finally attained the proper balance when the Age of Reason extirpated cartography's overtly artistic and unscientific elements.

Swift's quatrain thus became emblematic of a new scientific ethos for all cartography that took hold in the eighteenth century. And, in this respect, it has been widely quoted. It did sterling duty in Ronald Rees's essay on how "science" claimed "cartography":

> Mapmaking as a form of decorative art belongs to the informal, prescientific phase of cartography. When cartographers had neither the geographical knowledge nor the cartographic skill to make accurate maps, fancy and artistry had free rein. The mapmaker's dilemma and the customary solution to it were the target of Jonathan Swift's satire in a much quoted quatrain … (Rees 1980, 62)

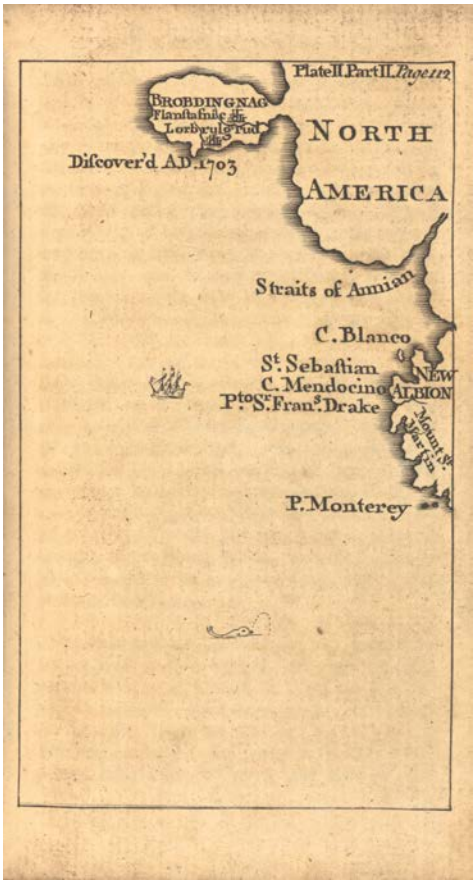
Norman Thrower (1972, 74; 1996, 110) proposed Swift's quatrain as an overt reaction to, and rejection of, the "conjectural information" and "imaginary cartography" of pre-Enlightenment map makers in the face of all the new technologies and science of cartography. Winfried Nöth (2007, 42–43) placed Swift among the "rationalists and empiricists" who "were the first to object to this type of design of new geographical realities without empirical evidence." And Raisz's comparison of decorative Dutch maps and d'Anville's 1749 map, hinging on the quatrain, has been rehearsed by Lucy Chester (2000, 257), Isabelle Surun (2004, 118–21), and Éloi Ficquet (2010, 415). Indeed, d'Anville's 1749 map has become the graphic emblem of cartography's new scientific ethos, more than any of his other works, or those of Guillaume Delisle before him. The communal fixation on this map is specifically a result of Raisz's reconfiguration of Swift's poem.

An Opposite, Anti-Modern, and Anti-Geography Interpretation

Raisz's cartographic interpretation of the quatrain requires an image of Swift as a champion of a new, improved cartography, but this very much runs counter to Swift's well-known intellectual character. Swift's satires targeted many of the debates then raging through the Anglican church and English culture more generally. He was very much an "Ancient" devoted to Classical learning and distrustful of its rejection by those "Moderns" who sought to create new moral principles grounded in reason and natural philosophy. Thoroughly conservative, Swift clung hard and fast to a timeless moral philosophy. Thus, in *A Tale of a Tub* (1704) he criticized both sides in an argument that had roiled the Church of Ireland in the 1690s, between two priests who had each sought to apply reason to the refinement of Anglican Protestantism, albeit to different ends (Craven 1986).

This anti-modern attitude has been the core of several readings of Swift's quatrain, readings that attract attention based on their apparent sophistication. Nonetheless, these readings still depend on Raisz's supposed Enlightened reformation of cartography and as such tend towards a circular logic.

Frederick Bracher (1944) argued that Swift dismissed all map making, whether old and baroque or new and plain, as being *too rational*. Bracher's particular concern was Swift's role in the creation of the four maps in his *Gulliver's Travels* (1726), each of which depicted one of the mythical lands that Lemuel Gulliver had encountered:



"Brobdingnag," from Jonathan Swift, *Capt. Lemuel Gulliver's Travels into Several Remote Nations of the World*, in *The Works of Dr. Jonathan Swift*, vol. 2 (London: C. Bathurst, 1751). P. J. Mode Collection of Persuasive Cartography, Cornell University; 1024.02. See https://digital.library.cornell.edu/catalog/ss:19343158

All four maps in the first, 1726 edition of *Gulliver's Travels* were made by tracing a portion of a known coastline from Herman Moll's *A New & Correct Map of the Whole World*, first published in about 1707 and still in print in 1755 (Armitage and Baynton-Williams 2012, 130–49), to which was then added Swift's fictional lands (Bracher 1944, 59–60; Reinhartz 1997, 95–96; Didacher 1997, 179–80). But the book was printed in London and the maps were created when Swift was in Dublin. Bracher posed several questions:

- were the maps complete fabrications added by the publisher, Andrew Motte, without Swift's editorial intervention?
- had Swift suggested them, but they were executed without his oversight?
- had Swift actually drawn them himself?

Bracher thought that Swift himself could not have been involved in the original creation of the maps. To begin with, Swift himself had "so scornfully" noted the maps' "lies and errors" that contradicted the geographical clues that Swift gave in the text—which had been enumerated by Moore (1941)—even

though those clues were themselves contradictory. Moreover, Bracher (1944, 73) argued,

> the voyages represented increments in that kind of "modern" knowledge, so dear to members of the Royal Society, which, while increasing man's knowledge of the external world, was blandly indifferent to his moral improvement. Swift did not take geography more seriously than was necessary to satirize it; his carelessness with geographic details in *Gulliver* provides additional evidence of his contempt for natural, as opposed to moral, philosophy.

Furthermore, if Swift was only ever disdainful of geography, then his reference in the book to the geographer Herman Moll as "my worthy friend" could only have been facetious (Bracher 1944, 60). (Moll and the pirate/explorer William Dampier, on whom Gulliver was in part modeled, were the only two real people identified in *Gulliver's Travels*.) Bracher's overall conclusion was that Swift kept the maps in the first Dublin edition of the book, over which he did exercise control, for which he incurred the extra cost of having new plates engraved, because, Bracher (1944, 74) averred, if "the inaccuracies of the maps bewildered and irritated the reader, so much the better. [Swift] was not one to worry about misleading the amateur geographers in his audience."

Bracher's depiction of Swift as anti-modern and anti-geography, which did influence at least one later map historian (Woodward 1978, 190–92), was in some respects justified. Anna Neil (2002) suggested that Swift's "distrust of geographical projects" stemmed from his conservativism and found expression in the opposition to "British mercantilist imperialism" that permeated *Gulliver's Travels*. She could thus observe more particularly that the quatrain in *On Poetry* directly argued

> that "savagery" is an invention of geography. Swift attacks geography as fraudulent learning, as a science that is always trying to cover the gaps and inconsistencies that it inevitably confronts by insisting on the barbarousness and barrenness of those regions about which it has little or no knowledge. Like the gaping lines of bad modern poetry, geographers' texts are filled with fantastic figures that expose their authors' want of knowledge more than they reveal the real character of the places and peoples they purport to represent. Formally linked by the couplet structure to such "gaps", the "unhabitable downs" are just as probably a convenient cartographic fiction as a reliable depiction of little-explored parts of the world. Rather than accounting for some existing geocultural reality or providing reliable documentation about the kind of human beings to be found in a continent as enormous and unexplored as Africa, Swift points out, "savage pictures" are in fact the product of a dangerous modern ambition to map the entire globe fully and systematically. (Neil 2002, 83)

While the questions Neil raises about imagination and fiction are crucial in reading the quatrain (below), her overall reading can only make sense if one adheres to the modern idealization of cartography and the geographical dimension it anachronistically imposes on the debates between progressive Moderns and conservative Ancients.

By contrast, evidence adduced well after Bracher wrote suggests that Swift was indeed Moll's friend. Not only did they move in the same circles when Swift was in London, Swift was perhaps not fundamentally dismissive of maps and map making (Reinhartz 1997, 89–96). Independently, Nicole Didicher (1997) noted that the frontispiece portrait of Gulliver was actively intended to be paradoxical, so why not the maps as well? After all, Swift was satirizing contemporary travel accounts, at a time when travelers' accounts and their maps were not automatically trusted as truthful. While literary scholars (other than Bracher and Moore in the 1940s) have ignored the maps in the book, even as they study the book's other imagery at length, Didicher argued that the maps should be treated, just like those other images, as being part of the book and therefore as expressions of Swiftian satire. If Swift did not collaborate on the maps, he at least approved of them, right from the start.

Didicher properly avoided the intellectual trap of evaluating maps strictly by their geographical accuracy and of presuming that such accuracy is the only standard by which others in the past evaluated maps (at least once cartography was supposedly infused with a scientific ethos). Swift might have been a culturally conservative Ancient, opposed to the newfangled morality of the Moderns, but to argue that he understood maps as necessarily and properly "scientific" in nature is to buy into Raisz's reconfiguration of the history of cartography.

Swift was not committed to maps as being necessarily factual and correct and plain in style. How then should we read his quatrain?

Rereading Those *Afric*-Maps and Their Elephants

Certainly, we can no longer read the quatrain as emblematic of some supposedly new scientific ethos in mapping. In painting their picture of the scientific reformation of cartography, Jervis (1933), Raisz (1938), and their post-war popularizers (Brown 1949; Crone 1953) all conflated the development of a plain style with several other, distinct trends in mapping sciences, such as the solution of longitude, geodetic measurement of the earth's size and shape, and the first successful implementation of statewide, triangulation-based, territorial surveys. Each of these trends has its own historical trajectory, driven by its own set of causes, within particular modes of mapping; the trajectories do not neatly align (see Edney 2017). To yoke them all together as a function of the Age of Reason—which itself dissolves into multiple, divergent strands as soon as it is scrutinized in any detail (see, e.g., Withers 2007)—is to accept unquestioningly the modern myth of cartography as a universal endeavor that has followed a single, common trajectory (at least across the Western world).

Careful analysis of the historical record readily demonstrates that each of the elements contributing to the supposed scientific ethos followed its own trajectory. In the case of the graphic rhetoric of world and geographical maps (note the specification of the mode), decorative elements persisted not only until the end of the eighteenth century, as Stevenson (1921) had noted, but beyond even into the twentieth century (Stone 1988; 1995, 226; Andrews 2009, 416). Raisz was correct to

suggest a connection between decoration and commerciality, because commercial geographers have continued to use decoration, to different degrees and in different ways, in accordance with shifting trends in fashion and design; plain style, in this respect, is a function of specific commercial discourses, not a scientific ethos. We must recognize that even "mere" decoration on maps always does cultural work beyond the simple prettification of an image (hinted at by Just 2004, 112, drawing on Barber 1990). Moreover, the form and cultural significance of decoration on maps has varied considerably over time; detailed genealogies are needed to trace their shifting functions and connotations.

To read Swift's quatrain without imposing unwarranted assumptions about Swift's regard or disregard of geography, maps, and science, we should start by remembering that it was just one small part of a much larger work. Swift's *On Poetry* was a cynical, satirical account of how a talentless hack might achieve success as a published poet and attract the political attention necessary to be appointed poet laureate. As with so much else, Swift took an established trope or time-honored tradition, in this case the *ars poetica* or manual explaining how to write poetry, and inverted it to powerful effect (Just 2004, 35, 37). At the same time, Swift structured the work as a rhapsody, which was understood in the eighteenth century to mean a series of parts in sequence but with no necessary connection or coherence (Just 2004, 57–59). The result is not an attack on poetry, but rather on the cynical and abusive practices of critics and politicians that abase and cheapen poetry.

The poem's six sections are as follows, marked by changes in voice, by lines:

1–70) an apparently disinterested observer laments the poor situation of poetry within British culture;

l71–292) "an old experienc'd Sinner" gives cynical advice to the "young Beginner" on how to succeed commercially and politically as a poet (but not how to write good poetry);

293–418) another disinterested observer provides a detailed account of contemporary poets and poetry;

419–60) a digression on the nature of kings (the primary section omitted from initial printings because of their libelous character);

461–516) the "old experienc'd Sinner" returns with examples, for the benefit of the "young Beginner," of panegyric odes, the premiere poetic form for attracting political and financial patronage; and

517–47) a final mockery by the Sinner of excessively laudatory poesy produced by hack writers.

The quatrain on *Afric*-maps falls in the middle of the second section. It is the climax of a long series of couplets identifying many ways in which ambition leads the inexperienced poet to produce aesthetically unpleasing work as they press ahead with their poetry. After all, as Swift had already established, in the lines quoted above re typography, the form of the printed poem was as important as the actual lines in attracting patronage. So, should the fledgling poet wish to persevere, then reflect on style and the

comments of critics on initial efforts:

> But, first with Care employ your Thoughts,
> Where Criticks mark'd your former Faults:
> The trivial Turns, the borrow'd Wit;
> The Similes that nothing fit;
> The Cant which ev'ry Fool repeats,
> Town-Jests, and Coffee-House Conceits:
> Descriptions tedious, flat and dry,
> And introduc'd the Lord knows why.
>
> Swift (1733, lines 149–56)

After a series of comments about hiding the victims of one's wit behind initial letters, Swift launches into a sequence of tortured similes for poetical missteps, culminating in the quatrain:

> Or, oft when Epithets you link,
> In gaping Lines to fill a Chink;
> Like Stepping-stones to save a Stride,
> In Streets where Kennels are too wide: [*kennel*, surface drain
> Or, like a Heel Piece, to support
> A Cripple with one Foot too short; [*Foot too short*, meter
> Or, like a Bridge, that joins a Marish. [*marish*, marsh
> To Moor-lands of a diff'rent Parish:
> So, have I seen ill-coupled Hounds
> Drag diff'rent Ways in miry Grounds:
> So, Geographers in *Afric*-Maps
> With Savage-Pictures fill their Gaps;
>
> And o'er unhabitable Downs
> Place Elephants for want of Towns.
>
> Swift (1733, lines 169–82)

The quatrain functions in this position, capping a list of poetical flaws, because of its overt parallel to Plutarch's life of Theseus, written ca. 75 CE*. This was one of Plutarch's pairings of biographies of comparable Greeks and Romans and he introduced it by explaining his decision to address the mythical founder of Athens as a logical parallel to Romulus, mythical founder of Rome:

* A recent, literal reading of the quatrain did mention the quatrain's connection to Plutarch, but incorrectly thought that the actual criticism came from "[John] Dryden's introduction to his [1683] translation of Plutarch's *Theseus*," so that the criticism was entirely modern and the literal interpretation justified (Monga 2003, 414–15). Dryden's translation, edited by Arthur Hugh Clough in 1911 is available at http://classics.mit.edu/Plutarch/theseus.html.

> Just as geographers…crowd on to the outer edges of their maps [πιναχων, *pinakōn*] the parts of the earth which elude their knowledge, with explanatory notes that "What lies beyond is sandy desert without water and full of wild beasts," or "blind marsh," or "Scythian cold," or "frozen sea," so in the writing of my *Parallel Lives*, now that I have traversed those periods of time which are accessible to probable reasoning and which afford basis for a history dealing with facts, I might well say of the earlier periods "What lies beyond is full of marvels and unreality, a land of poets and fabulists, of doubt and obscurity." (Plutarch 1914, 3)

That is, like ignorant history, ignorant poetry relied on invention, extravagance, and fable. Swift's elephants were not decorations added to fill in or obscure gaps of knowledge about the interior of Africa, but emblems of the doubts and uncertainties that arise when fictions replace empirical truth. They are indicative of the false and forced connections decried by Swift in the immediately preceding couplets—the stepping stone placed within a too-wide sewer, the bridge between two communities and two landscapes that are otherwise quite different and unrelatable—or the crutch inserted solely to support an argument. These points are the same as those of the academic morality tale that the quatrain has at times illuminated, as discussed towards the head of this essay, about the clichés and presuppositions to which scholars revert when they lack hard data (Herbert 2001; Alexander 2013).

Yet there are, of course, elephants in Africa. Swift's parallel with Plutarch would have been stronger had he written about, say, unicorns rather than elephants (not that any geographer depicted unicorns on African maps). By referencing an actual geographical practice, Swift's quatrain has permitted modern commentators already predisposed to maps to read the quatrain as being literally, not figuratively, about maps and mapping. In a culture imbued with the ideal of cartography, the quatrain appears to be the one portion of *On Poetry* that is factual and not satirical. Despite the initial "so," which should redirect the reader's attention to the omitted stanzas that precede the quatrain, it is legitimately divorced from the rest of Swift's poem and considered in isolation. And once isolated and propped up by the ideal, the quatrain has supported a large burden of cartographic interpretation.

There *are* limits to mapping. And this is one. The ideal's narcissism might insist that any reference to maps must be read as being about maps, but this is manifestly not the case here. The quatrain appears within one of the resolutely satirical sections of *On Poetry*, and is uttered by an "old experienc'd Sinner." The quatrain referenced a common geographical practice not to establish a factual critique of maps but to make a satirical point about poetry.

We map scholars simply need to get over ourselves.

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THE FIRST INTERNATIONAL MAP OF THE WORLD?

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The inestimable Barry Ruderman has once again (see here) sent me down a bit of a rabbit hole, discovering a wondrous mapping failure that frankly boggles my mind with its sheer audacity. Some might say, chutzpah. Specifically, Barry led me to an attempt to create a systematic atlas of the world at a scale greater than Philippe Vandermaelen's *Atlas universel de géographie* (1825–27) at 1:1,641,836 (see Delaney 2011; Silvestre 2016) and even the International Map of the World, begun in the late nineteenth century at the height of Western imperialism (see Nekola 2013; Pearson and Heffernan 2015; Rankin 2017), but without having lined up any of the intellectual and financial resources that could reasonably be expected to be necessary for such an endeavor.

> As a seasonal greeting, Barry sent some friends a tidied up version of the following quote:
>
> It may be further considered, that large maps joined together, are exceedingly unweildy [sic] and troublesome—if hung up they are speedily discouloured [sic] with smoke or flies, and if rolled up (especially if not lined with linnen [sic]) are quickly torn to pieces. (Colles 1794, [ii])

This succinct explanation of the high mortality of wall maps comes from the introduction to Christopher Colles' *Geographical Ledger and Systematized Atlas*. Colles was a creator and promotor of big projects, none of which really got off the ground, and he would eventually die in penury. US map historians know Colles for his 1789 atlas of forty strip maps covering the roads of the eastern country (Ristow 1961). His later work is much less-well known, for the simple reason that it was massively over-ambitious and failed abysmally. It is known in barely a handful of copies, all of which are substantially incomplete (Griffen 1954, 170, 178–82).

The *Geographical Ledger* was stunningly audacious. I am not even sure that Colles actually appreciated just what he was doing. He prefaced the work with an eight-page introduction that began as a twofold complaint about the distortions inherent in commonly used map projections (Mercator's and the stereographic) and the problems of handling and keeping large maps; this led to his description of the *Ledger* itself as a series of standardized map sheets, each accompanied by detailed typeset indexes; the few maps and indexes completed and published were of eastern North America. I can't find any online images of the finished sheets, so I include here one reproduced by Walter Ristow (1961, 80) from the Library of Congress copy (fig. 1).

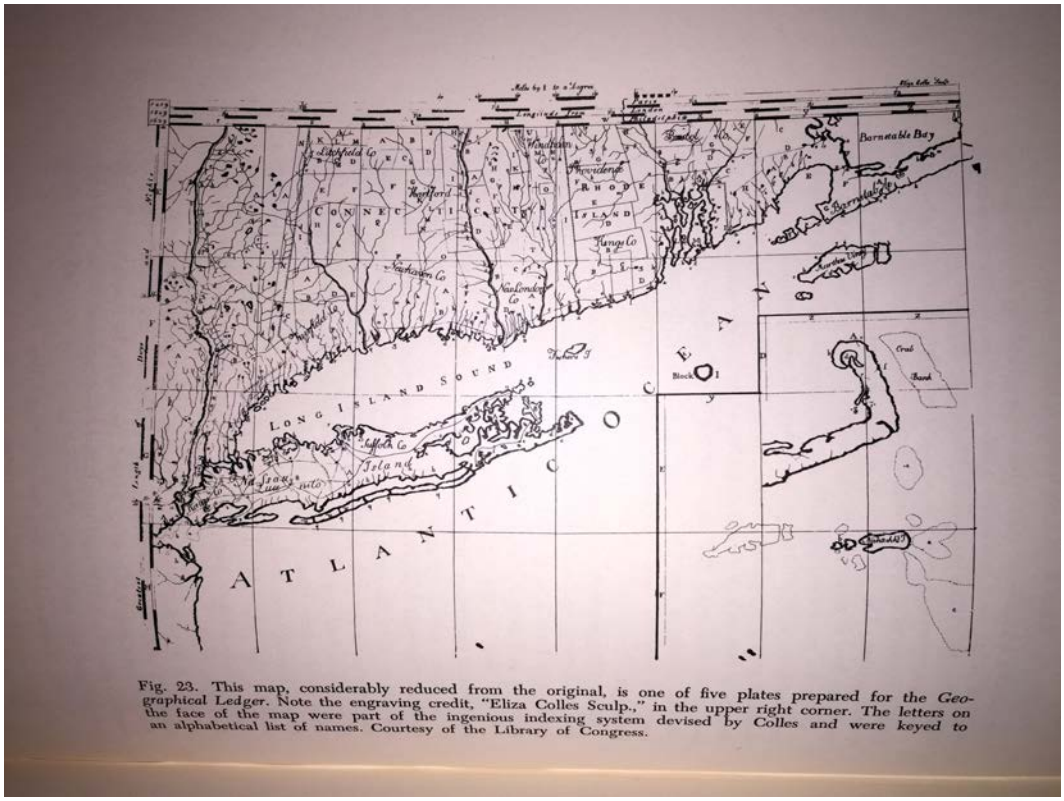

Fig. 23. This map, considerably reduced from the original, is one of five plates prepared for the *Geographical Ledger*. Note the engraving credit, "Eliza Colles Sculp.," in the upper right corner. The letters on the face of the map were part of the ingenious indexing system devised by Colles and were keyed to an alphabetical list of names. Courtesy of the Library of Congress.

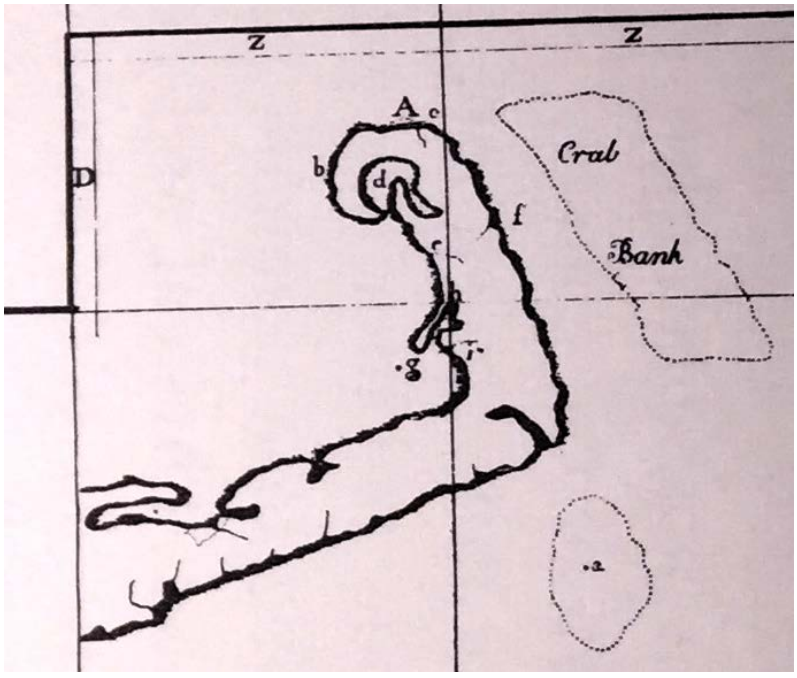

Figure 1. Sheet 1549 of Colles' *Geographical Ledger* (1794), engraved by Eliza Colles.

Figure 2. Detail of sheet 1549

Each sheet would cover two degrees of latitude by four degrees of longitude, at about ten miles to the inch (1:633,600). Rather than cramming in many toponyms, Colles used abbreviations keyed via a reference system to the detailed typeset indexes. In the detail of sheet 1549, particular places on Cape Cod were indicated by letters—A, b, c, d, e, f…—within squares Dz (fig. 2).

Colles further offered a detailed explanation of his own projection—actually three projections, a cylindrical projection for the tropics, conical for the temperate zones, and azimuthal for the polar caps—that would map the entire world with minimal distortions (Snyder 1993, 74). And at the end of the introduction he segued into presenting the larger project of the *Systematized Atlas*. His business sense was naive:

> As a great number of foreigners are continually arriving in this country, it appeared feasible to me, that the maps of some parts of Europe, Asia or Africa, might meet with purchasers, I therefore thought it advisable to form the design universal. (Colles 1794, viii)

But at the scale of each sheet, it would take some 3,600 sheets to cover the entire world. Even if sheets covering only ocean were omitted, Colles would still have to design, engrave, print, and sell as many as 2,000 sheets. Colles knew this: the five known sheets all bear sheet numbers in the 1000s. But how he could think that he could profitably produce so many maps within New York's fledgling economy is simply beyond me.

I'm still amazed by Colles' audacity in attempting such a project. His intellectual resources were limited. (He admitted that he could not gain access to Maupertuis' account of the spheroidal earth.) Vandermaelen and the creators of the IMW were all bound up with imperialistic sentiments fostered in modern Europe; but, to judge from the subject matter of the maps that were sold in 1790s New York (see Wheat and Brun 1978), public geographical interest was focused on the fledgling United States, not the rest of the world. Colles' global project seems instead to have been driven by personal idiosyncrasy, and chutzpah.

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