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Computer Mapping of Geography and Border Crossing in Scandinavia

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Øyvind Eide,
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Abstract: In his article "Computer Mapping of Geography and Border Crossing in Scandinavia" Øyvind Eide discusses computer based methods for enquiry into a set of border protocols created in the mid-eighteenth century based on interviews with inhabitants of northern Scandinavia. Most of the interviews are with common people: semi-nomadic reindeer herders, fishers, and farmers of Sámi, Norwegian, Swedish, and Finnish origin. Eide discusses the value of the interview material as source material which can be used to understand the way people spoke, especially about geographical matters. The data and their analysis suggest the relevance of mediality and materiality with not only scholarly but general knowledge impact. Accepting the shortcomings of the data, Eide demonstrates that with available methods of digital humanities the border protocol material is worth a close study as a possible source of knowledge about cognitive structures of people in the multi-ethnic area of northern Europe.

Øyvind EIDE

Computer Mapping of Geography and Border Crossing in Scandinavia

In modern European societies, maps are seen as the natural way to communicate about geography. This is different in other historical periods. There are many examples of historical periods in which maps were not used much, although they are known. In my opinion, this lack of use is not based on a lack of cartographic tools or knowledge only. There are other reasons why people choose to use verbal texts to communicate about geography, reasons that may be difficult to see for people living in a modern map based society. With respect to humanities computing, modelling is an experimental method based on similar methods in the natural sciences. Modelling is to create and manipulate models in order to learn from the experiences we gain through the process. Models are in this context representations of something, which are created for the purpose of studying this "something" more closely. The result of this kind of work is not the model we create, but the modelling process itself. This process will be repeated. Each time, changes will be made based on the experiences of previous work. New questions will emerge, which may be answered by changing factors in the experiments, eventually leading to more questions (McCarty 23-24). The process of modelling is similar to a process of close reading, but instead of storing the results as prose or in the mind of the researcher, and then creating conceptual structures from that, each fact is stored as a triplet in a fact database. At the time of text reading they are only stored and interconnected, not analysed and integrated based on any idea of truth. Such analysis and integration will come later. This article describes the application of such methods to a non-fiction text from the mid eighteenth century. The goal of the research is to develop a richer understanding of how people represented in the text expressed themselves, with a focus on geographical matters.

From the late fourteenth century, the three kingdoms of Denmark, Norway, and Sweden were united in various personal unions known as the Kalmar Union. Sweden broke out of the union in the early 1520s, whereas Norway stayed under Denmark until 1814. In the peace treaty after the Great Nordic War in 1720 there was an agreement that negotiations should be initiated in order to clarify the border between Norway and Sweden, the latter including what is now Finland. The first meeting of the border commission eventually took place in 1738, and by 1741, the first part of the border was established. The work was done based on surveys in the field and on witness statements taken up in situ. In 1742 the work on the Danish side was reorganized and Peter Schnitler was appointed the task of going before the border sergeants and collect evidence. The extreme points of his three journeys, Brekken and Vardø, are more than 1200 kilometres apart in airline. Significant parts of the text in the manuscript that he handed over to the Danish government consist of transcripts of local court sessions carried out by Schnitler in order to gather information about the local population as well as their view of the border areas. The material includes information directly relevant to the border question, as well as general information about the areas in question. The text corresponds to similar material collected through work carried out in other parts of Europe at the time (Burke, *A Social History* 128-29). The court transcripts are based on interrogations about geography with more than 100 individuals. The voices in the text represent persons coming from different ethnic and professional backgrounds, thus bringing a number of different perspectives into the text.

During the national Norwegian Documentation Project, parts of Schnitler's protocols were digitized (see Eide and Sveum) and a model is being created based on this digital text (see Eide, *The Area Told as a Story*). The data to be included in the model includes my reading of geographical information from the digital version of Schnitler's manuscripts. The model represents a version of the geographical information read from the source text, expressed in a formal language. There is significant reduction of complexity in the conversion from text to model. The model is event based, which means that facts are stored as statements about the world put forward in specific speech events. The model stores contradictory facts if and when they exist. Identifying contradictions is important, but that is done at a later stage. Possible contradictions can be found using rules of calculation that are being developed on top of the model. The model is also used to investigate how the information in the model can be expressed as maps. My hypothesis is that such map expressions are not possible to make for some of

the information in the model. In this article, preliminary results from this research will be presented, together with the results of previous research into Schnitler's protocols.

The text in Schnitler's protocols has an internal history of information aggregation, performed by Schnitler and his assistants. This internal history consists of the following main steps: 1) Data collection: The interrogation records were written down, and older written evidence was collected; 2) Aggregation: Based on the interrogation records, together with other sources of information including his own observations, Schnitler described larger areas; and 3) Maps: Based on his sources, Schnitler drew maps of large areas to indicate where the border should be located. For Schnitler, it was a goal to remove any inconsistencies in the statements made by the witnesses when he created the aggregations. But this was not accomplished by neglecting statements that did not fit. His project was based on information from the witnesses, transcribed so as to remain truthful to each person's understanding of the situation on the ground and the manner of his explanation. The aggregations Schnitler made, in which only the hard facts from the witnesses survived, came in addition to the witness statements. As will be shown below, the reality of his work was more complex than this. The text documents how many smaller discrepancies were cleared out during the court sessions, and more may have been sorted out without the transcripts showing it — after all, Schnitler was in control of the text. But when problems were seen as important, the sources strongly suggest he recorded them. A problem for understanding Sámi history is that all the older documents were made by others; the first book written by a Norwegian Sámi was published in 1910 (see Turi, Demant-Hatt, Lundbohm). In many historical sources, including the ones written by Schnitler, there are important traces of knowledge to be found about Sámi people, as well as about people from the Norwegian and Swedish lower classes. But in order to see these traces in their right context, in order to understand what they may be traces of, one has to understand the writer and collector of the material, and the situations in which the sources were created, including the relations between the social and ethnic groups. In order to know whom the witnesses were we must know who Schnitler was (see Dening 59).

When reading the protocols, we see that the common people, in the role of witnesses, were considered to be knowledgeable participants in a dialogue. This is not at all uncommon in border work in this area, but is quite different from the stories behind some of the borders we see in other parts of the world, as the borders following map grid lines, e.g., between Canada and the U.S., as well as many places in Africa. This dialogue had a master, however. Schnitler initiated the meetings in which the situations documented in his protocols were created. He did not only write, or let be written, the text; he also created the situation in which the events described in the text took place. According to the vocabulary developed in the field of regional geography, Schnitler's role was that of a gatekeeper, mediating a number of different folk geographies existing at the same time (Buttimer, Brunn, Wardenga 130). Schnitler's text is not an open window into how people reflected about geography in their everyday life at the time of writing, nor is it a documentation of an everyday communication about geography. It is a document describing an extraordinary situation (Burke, "Overture" 11). But although it is a documentation of such a situation, it is not an accurate reproduction of how the witnesses spoke in this extraordinary situation. The text taken down is based on what people said, but it is not a transcript of it. In letters from his superiors, Schnitler was instructed to be truthful (Schnitler xxvi-xxx). Truthful to what? Two main principles lay behind the border work. According to the topographical principle, the border was based on the highest mountain ridge. The other principle, of possession, was based on human knowledge and documents. Schnitler's object of study was culture, the landscape as it was seen and expressed by people of the lower classes — and he collected and studied mostly what people could tell him about the topography, not his own observations of the landscape. His aim was to reach the common truth, a description of the border that was true to all witness statements, or rather to what all witnesses would agree upon after discussing the matter. The interviews did represent the statements made by the witnesses, but in his aggregations, he did what he could to remove the differences in order to reach the essential truth. Only when he was not able to make such a truth did he express differences between statements made by the witnesses openly in his aggregations. When he was not able to put forward a coherent description, as we will see in the example below, this was seen as a failure on his side, not as an indication of a fundamentally incoherent reality.

In earlier research, possible stylistic variations between the statements made by different witnesses have been examined (see Eide, *Fra SGML* 19-23, 45-68), using methods from authorship attribution (see Oakes). Instead of comparing texts written by different persons, as is the normal use of authorship attribution methodology, Schnitler's text was divided into sections based on the identification of different oral sources. All paragraphs in the text in which an identified speaker could be seen as responsible were connected to a representation of that person. The assumption behind the research was that parts of the way people expressed themselves survived from their oral statements into the written text. This was based on the idea that court interviews are the best available source to how people in earlier times expressed themselves: "Short of travelling back in time armed with tape recorders or clipboards, legal records appear to represent the closest we can get to the "words as they were spoken" and the "authentic voices" of thousands of individuals" (Stretton 16). This statement has been discussed and criticised, also by Tim Stretton himself. The research presented here represented an attempt to give source based evidence to that discussion. The research problem was summarised in the following three statements: 1) The parts of the text representing statements from witnesses contain significant traces from the creators of the formulations (the witnesses), even if the text parts are written down by somebody else; 2) The speakers can be grouped by class and ethnicity. There are differences between these groups in how they express themselves, based on differences in how they think. These differences between the groups overshadow the differences between the individuals; and 3) Some of the differences in 2 can be found through statistical analysis after a chunking, regrouping and sorting of parts of the text. The paragraphs from the text for which one person was defined as the speaker was the basic unit of the analysis, and any systematic differences would be visible through the fact that persons of one category would form a statistical cluster which would be different from that of persons of other categories. The statistical analyses were used for detection; when interesting patterns were found, the text itself, or a KWIC concordance representation of it, was used to examine the patterns and draw conclusions**.**

Table 1: The three categories used in the comparisons between subject groups

category	English translation	subject count	word count
bonde	Norwegian farmer	34	30,645
reindriftssame	Sámi reindeer herder	31	15,640
sjøsame	Sámi farmer	22	22,372

Based on the subject index in the printed edition (Schnitler 474-78), each speaker was classified into one of 17 broad categories. Categorization of people based on eighteenth-century sources is not trivial, as the expressions used to describe people are only partly comprehensible for us. Further, they do not necessarily correspond to categories in modern terminology. In the analysis, only three broad categories were used, however, which should be quite safe, as those categories are based on markers which were visible and important at the time, and reasonable clear to us today, namely mother tongue and occupation. The three categories are shown in table 1. The words "farmer" and "herder" should not be taken in a strict sense. Farming of the area was marginal, so that the common people, especially the Sámi farmers in the far north, used a number of additional strategies in order to survive. The three selected groups had relations to Schnitler that were quite similar, as they were all interrogated witnesses of rural lower classes. An important difference between them was that the communication with the Norwegian farmers could be made in Danish, which is close to their Norwegian dialects, whereas most of the Sámi witnesses were interpreted by missionaries.

An important part of the analysis consisted in comparisons between word frequencies. The 99 most frequent words in the material were chosen. A factor analysis showed some tendency of difference between Norwegian farmers on one hand and the two other groups on the other, but the first two factors only explained 21,2% of the variance, so the tendency was weak. In order to find out if there were interesting things to learn from this tendency, various groups of words were examined separately. The prepositions showed no pattern, but the nouns did. This is an indication that the difference is more in the area of theme than in the area of style (Oakes 201). The clearest difference found was

for length expressions: "bøsseskud" (rifle shot) and "miil" (mile) with its plural form "miile." "Miil" was more frequent among Norwegian farmers than in the two Sámi groups, whereas the opposite can be seen for the word "bøsseskud":

Table 2: Singular and plural of the word for mile along with the word for rifle shot. % expresses the percentage of all the words spoken by representatives for the category the specific word represents. The figures for "bøsseskud" are manually corrected for different spellings

word	word count	bonde	reindriftssame	sjøsame
all words	166,841	30,645	15,640	22,372
miil	981	435 (1,42%)	173 (1,11%)	373 (1,67%)
miile	177	155 (0,51%)	21 (0,13%)	1 (0,00%)
bøsseskud	193	43 (0,14%)	43 (0,27%)	107 (0,48%)

Table 3: Numbers of paragraphs for each category of speakers related to the two manuscript hands

category	Røyem's hand	Schnitler's hand
bonde	386 (93%)	28 (7%)
reindriftssame	81 (26%)	225 (74%)
sjøsame	0 (0%)	424 (100%)

The figures indicate that we have a different choice of words among the groups. The question is why. We can assume that the need for measurements of distances is quite similar for all groups of witnesses. The difference could be based on varying use of concepts between the different witness groups, as indicated by a comment from Schnitler about the use of measurements among the Sámi reindeer herders: "In general, the court has seen of these Sámi witnesses, that as few of them has been much in the village areas, where the miles are marked by poles, it is hard to be sure that the mile measurement they have conveyed were correct" ("J almindelighed har Rætten mærcket af disse *Finne*-Viidner, at Siiden faae af dem har vanchet meget i bøjdene, hvor Miilene findes ved Stolper afpælede, Saa kan man ickke forsickre, at det Miil-Maal, Som de have opgiivet, Skal være riigtig") (Schnitler 161; unless indicated otherwise, all translations are mine). Although this citation discusses different aspects of the use of the words for mile, a tendency towards using normalized measurements (mile) instead of ad hoc ones (rifle shot) is arguable implied. There is, however, another fact that has to be taken into consideration. Two different hands are found in the manuscript: Schnitler himself wrote the latter part, but the first part was written by his assistant, Røyem. The first part of the text is also the part with most of the Norwegian farmers' testimonies, as we see in Table 3. The division by hand could be influencing the choice of words. Røyem, mostly taking down transcripts of Norwegian farmer interviews, rarely wrote the word "bøsseskud."

Differences along the same lines can also be found for a few other words as well. The conclusion for the authorship attribution research at the time it was originally done was that statement 1 through 3 from page 4-5 was not supported by the research. The analysis shows a clear co-variance between choice of words and manuscript hand, which can explain all the differences found. Some of the differences can also be explained by different choices of words between the groups. The results of the examination of stylistic variation were very far from the traditional high esteem of legal records as sources, as we can see it expressed in the above quotation from Stretton. Seen in hindsight, there is a problem with this conclusion: it did not take into consideration the negotiations that must have taken place during the meetings between Schnitler, Røyem, and the subjects. Further, Schnitler's border protocols represent a text in which many voices speak. They are voices of civil, clerical and military servants, as well as Norwegian and Sámi common people. Any understanding of the interplay between the various perspectives in the text has to be based on an understanding of Sámi as well as Norwegian and Danish history and culture. The source material was written mainly in Danish, influenced by Norwegian dialects, as they existed at the time of writing. Many of the Sámi witnesses gave their tes-

timonies in Sámi, translated to Danish by Christian missionaries. The translators obviously played a key role in forming what the Sámi witnesses were recorded to have said, together with the scribe. Even Schnitler himself saw the need to present the Sámi perspective to the reader. Included as an appendix to his protocol I, there is a "Relation concerning the Lap Finns" ("Relation om Lap Finnerne") (Schnitler 56-64, with an added appendix 93-95): "Lap Finns" denotes more or less what we today call Sámi. His writing about the Sámi demonstrates a reasonable knowledge and understanding of them, if one takes the time in which it was written into consideration.

The Sámi is an indigenous people traditionally living in the north of Norway, Sweden, and Finland, and in the north west of Russia. For many indigenous peoples, e.g., in the Americas, the concept of first contact, and thus a pre-contact time, is significant. This is not so for the Sámi. There is no pre-contact time, as they have been living with neighbours of whom descendants are the later Norwegians, Swedes, and Finns as far back into pre-history as we are able to speculate. By the mid-eighteenth century, the Sámi were integrated as tax paying citizens of Denmark, Sweden, and Russia. They had no written culture. Many of them could read, and a handful of Sámi people were educated and learned to write during the seventeenth and eighteenth centuries, as missionaries in Norway and even as priests in Sweden, but that did not constitute a separate Sámi written culture, and the Sámi had no institutions keeping archives. They were still, by and large, a nation without a history. History in a European sense of the word, that is. They had, of course, oral traditions including epic songs telling stories about the past (see Gaski). There is no indication of map use during court hearings as part of the communication with witnesses; no requests to witnesses to draw maps can be found in the records of Schnitler's interrogations. This is different from several contemporary reports from North America and also some reports from Siberia, where locals, e.g., Evenks, were asked to draw maps to visitors (see Woodward and Lewis). A significant number of the extant maps connected to native North Americans from before 1800 are based on maps drawn on request from visiting Europeans or Euro-Americans. Schnitler would have known if the Sámi used maps, and would probably have asked for map based evidence in that case. The fact that he did not ask for this is one of the indications that such use was not common.

The measurement of distance and directions are keys to creating a scaled map on paper. Without knowing or assuming knowledge to distances and directions, it is impossible to express geographical information in the form of a scaled map. In the 1740s, a common formal system of distance measurements was in place for Denmark-Norway. The official Norwegian mile measured 11.3 kilometres (Nørlund 77). There are numerous references within Schnitler's text on how he tries to make the witness connect their statements to this system, by expressions like "The Bad land in the North, is 2 old miles, Which he means, would be 1.5 New Miles long" ("Det Stygge land i Nord, er 2 gamle miile, Som hand meener, at være 1.5 Nye Miile lang") (Schnitler 79). Such conversions are not done for rifle shots. No formal standard for "rifle shot" existed. It is much shorter than a mile; no more than a few hundred meters, and it is a measurement based on sight. It is something you develop an eye for as part of taking the decision if a game can be killed or not from where you are. Miles, on the other hand, are more connected to travel, to a number of paces or milestones, or to the time it takes to travel a distance. A possible explanation of the development from the use of miles only to the use of both systems we see in the text is the following: In the first parts of the transcripts, the interviewed witnesses were living in the south, as Norwegian farmers connected to the culture of the mile — maybe not the formalised one, but at least what was called the "village mile." When Schnitler travels north, into Sámi areas in the mountains and later into Sámi farming areas, it became harder to keep on using the expression "miil" in the transcripts while still being truthful. So the attempts to formalise the measurements of distance already in the interviews has to be given up because the reality is too complex for it, and giving a truthful version of the statements is more important than formalising the measurements — the problems this solution pose can be solved later in the process anyway. This is puzzling if we look into the Sámi language, however. In the systematic volume of his Sámi dictionary, Konrad Nielsen and Asbjørn Nesheim list a number of measurements for distances (vol. 5, 51). For long distances, he mentions two: "mii'lâ" and "b•nâh-gullâm." The former is the loan word mile, documented at least back to 1768 (Qvigstad 235), the latter means "the distance at which a dog can be heard," which is approximately one Norwegian mile (Nielsen and Nesheim, vol. 1, 293-94). No Sámi version of

the rifle shot is listed, however, whereas this is documented as a length measurement in Danish in 1720 (Dahlerup, vol. 3, col. 304). This explains the use of mile also among the Sámi, but it does not explain why the Sámi should be more eager to use "rifle shot" than Norwegians or Danes. The lack of entries for a Sámi version of "rifle shot" does not prove it was not used, of course, but as it is documented in Danish, it could not have been a specifically Sámi expression.

The records constitute prose texts created by the scribe in order to represent correctly the thematic content of the testimonies based on the oral statements. Prose cannot be natural speech (Frye 8). On the contrary, the text seems to be the result of discussions; we see this in how the subjects were asked to convert their measurements to official miles. The differences of wording, e.g., between "mile" and "rifle shot," could not be based on choices made by the scribe alone. One must assume some sort of negotiations with the witnesses took place, with none of the parties in full control. Daniel Lord Smail's study of *notaricus publicus* in Marseille in the middle ages, shows how customers of a professional writer often preferred a different geographical system from the one preferred by the scribe. The system preferred by the customer may influence the scribe, but would not always control the system used: "We must assume that the clients of the notaries, when first asked by the notary to give property sites for the purposes of property conveyance, chose to define these sites according to their own language of space. The diversity of vernacular linguistic cartography, at times, managed to push through whatever standard form the notaries might have been developing, because the set of extant notarial site clauses includes every possible template and all manner of toponymic styles. … All the same, fourteenth-century notaries had a clear preference for streets, and often translated the cartographic terminology of their clients into the language of the streets" (Smail 67-68). This relationship cannot be transferred directly to the situation in the hearings led by Schnitler; the relationship between a customer and a seller of services is quite different from the relationship between the king's civil servant and a common man. But Schnitler's ideal of truthfulness, together with the fact that the witnesses were speaking under oath, are further indications that negotiations must have taken place.

In his aggregation, Schnitler discussed two different views held by groups of witnesses living in different parishes, in which either Amberfield or Baanesfield is seen as the border mountain. Schnitler says he is not in a position to choose between these two views, as he has not been able to gather the two groups of witnesses together to reconcile the matter. He argues that the most likely solution is Amberfield, but both mountains are included in his list of border mountains with an "or" between (Schnitler 174). They are both included on a map he made in 1744 as well, but the "or" has disappeared. They are located close to each other on the map; the former larger and crossed in the middle by the border, the other one smaller and touched at the edge by the border (Mordt, Appendix). Whether the differences between them in size and in location relative to the border on the map are due to his view of the choice most likely to be correct is something I do not know. According to our best knowledge today, Baanesfield and Amberfield were either two names of the same mountain, or the mountain denoted by the former was a part of the one denoted by the latter.

Either-or is a concept that is hard to express on a map. A possible way of doing it is to include the fact that two items on the map has this relationship as a text on the map. Schnitler could have done so. The viewer's immediate understanding would still be, however, that both of the objects of choice are located in the landscape as indicated by their locations on the map; in our case, touching the border. The reading of the text on the map could only eventually change this impression. While reading the textual version in Schnitler's aggregation, on the other hand, in which the heading of the description reads "Amber or Baanes mountain" ("Amber- eller Baanesfield"), the idea of both mountains being border mountains is never established in the mind of the reader, as the word "or" immediately establishes the fact that there is a choice between the two.

Negative statements are equally hard to express on maps. Negative data can be expressed explicitly in text, such as in "There are no more farms to the north" ("Norden der fra, er ingen bonde gaard") (Schnitler 152). But the expression of nothingness following from a blank on the map is not strong enough to say explicitly "no farms found." It is a different expression of nothingness. Even if a blank space on a map says "nothing here," it implies "nothing of interest." So there may be an uninteresting farm there. A text, on the other hand, can include statements such as "no farm here." The frame is the border of the area that is seen as a map, and thus, any empty space within the frame is a

statement of nothingness, whereas an area outside the frame is no statement at all. Holes in the physical surface of a map, common for maps that have been used for navigation, will escape to become places outside the frame. A text has no such frame. A text about geography describes what it describes and is silent otherwise. We see the description of a lake as good and clear when it conveys the measurements of the length and the width, and adds where rivers float in and out. But this gives us very few clues to drawing the lake. In order to draw it we would have to answer numerous questions about the form of the lake about which the text is silent.

There is another question at play here; one connected to the difference between expressing information from a verbal text as a map as compared to expressing it onto a pre-existing map. The problem of expressing "of" and negations will be similar in both cases, but a much more widespread phenomenon is present as well. Even if anyone with an understanding of Danish can read Schnitler's text, it is hard to really understand the shape of the landscape being described, even if the reader has a good ability to visualise landscape based on textual descriptions. One can, in fact, make a number of different maps based on any of the description in Schnitler's text. But if one knows the landscape or has access to a trustworthy map, most of those will be rendered irrelevant. This fact makes the text hard to visualise without access to either of the two: local knowledge or a map. Reading one of Schnitler's maps gives a clear understanding of the landscape as far as the map goes. But it cannot be as far as the text goes, as we saw in the previous examples. The clarity and decontextualized nature of the map comes at a price. In the intended use of Schnitler's text, one must assume that his maps, as well as maps made by others, would be kept available as one part of the total presented material. His story was presented as a hybrid document collection.

The text is less decontextualized than maps tend to be. This is not specific to Schnitler, but a question of media types. In the written intellectual history of Western Europe, the relationships between the arts have been discussed since the early days of writing, even though the categories have shifted. The idea of the sister arts goes at least back to Simonides in sixth century BCE. When Horace used the words *pictura* (picture, painting) and *poesis* (poetry, written text) in *Ars Poetica* 2000 years ago, the categories may not match exactly categories in common use today, but they are immediately recognisable for competent modern readers (Horatius 68). When attempts have been made to clarify these differences, such as in Lessing's *Laokoon* from 1766, as in numerous other works following in this tradition, the existence of certain art forms have been taken as the starting point. Lars Elleström takes a different approach: Instead of starting from a set of different media or art forms, he takes a bottom-up approach, starting from a set of media modalities. His set includes four, namely, material, sensorial, spatiotemporal and semiotic modality. The differences discussed here fall mainly in the latter two categories. An important part of reading and understanding Schnitler's text is to see the spatial organisation of a landscape. This spatiality is expressed in the text in the linearised form of the intended reading process. Although texts as well as maps have space manifested in the material interface, the way a cognitive space is established based on the material interface differs. Because the spatiality of Schnitler's text is not directly connected to the spatiality of the described landscape, the landscape spatiality established in the mind of the reader is a reconstructed virtual space. As for the Schnitler map we have seen fragments of, the space manifested in the material interface has a strong similarity to the landscape depicted. This similarity is visible for most modern readers, because the way maps refer to the landscape it depicts is deeply embedded into modern Scandinavian culture. And this is also connected to a point made by Lessing who used the example of a typical classical statue: If it depicts a person dressed in the robe, the play of the muscles cannot be shown, as the depiction of the robe will hide them. A description of the depicted person in a poem, on the other hand, can show the reader the body as well as the clothes (Lessing 42-43). This is closely related to what David E. Wellbery calls the syntax of the medium and that cannot be divided from semiotics (125-27). This is the other of Elleström's modalities in which maps and texts show clear differences. Schnitler's text and the maps he made uses signs differently, as will verbal texts and scaled geographical maps in general (see MacEachren). Scaled maps tend to be understandable to anyone with a basic reading ability of such graphical representation, an ability that seems to be either existing or quickly developed by people of all cultures. Numerous examples of this can be found in Woodward and Lewis. The fact that it is easier

to understand what is described on Schnitler's maps than the spatiality described in his court transcripts is local to his work, but it is still an example of a general tendency.

The process of decontextualization in mapping is also connected to time. Lessing's demand for poetry to be time-based and painting space-oriented is well known. In Schnitler's case, the process of aggregation was completed in the maps, on which the truth is supported by the medium; as Christian Jacob and Edward H. Dahl describes it from America in 1652 when a priest makes a map to support his narration: "the drawing of the map gives materiality and objectivity to space, endowing it with an additional degree of reality" (32). The map becomes a visual memory of the discourse, in which time is frozen; the narrative was situated in time, whereas the map is outside time (Jacob and Dahl 326-27). The subjects interviewed by Schnitler were able to inform the courts about many different areas of their life. They described the landscape as a spatial system, but a great number of details about how they used their land as well as their personal and family histories were also recorded. This was used by the Danish government to get a better hand in the negotiations leading up to the 1751 border treaty with Sweden. In that treaty, an appendix guaranteed the Sámi minority certain rights, including the right to yearly crossings of the border with their reindeer as well as neutrality in times of war (*Norges Traktater* 13-17). The appendix has been called the Magna Carta of the Sámi (see Sámi instituhtta), and is still used politically.

In the text, and the maps following it, we see that Schnitler and his assistants struggled with many problems that are common when one tries to model a complex reality in a structured way, and in the transit between knowledge systems: from mind to speech, from speech to writing, from writing to maps (Eide, "Sound"). These problems are still with us, and the experience from the attempts made by Schnitler and his witnesses to solve them are still important when models are built based on readings of texts, e.g., in mapping the places mentioned in a text. Making models and visualizations are necessary, but two important rules must be remembered: First, a model is necessarily a simplification. In this simplification the choice of what is to be removed is not neutral and will often be influenced by the medium. And second, what is modelled is always a reading of the text, based on the reader's conscious as well as unconscious choices.

In intermediality studies, relationships between cultural expressions made in different media are studied. The results of this research have typically been expressed in written or oral verbal texts, as have most publications in the humanities. A few static maps or graphs or some photographs to illustrate the publication would be the best one could hope for in the way of including other media. One of the consequences of the growth in digital humanities is that a growing number of scholarly publications and discussion are more multimedial than before. One striking example is the use of presentational tools such as power point, another one the use of online games (see, e.g., McGann). The most relevant example for this article, however, is the spatial turn in the humanities the last decade (see Bodenhamer, Corrigan, Harris). While the problems connected to visualisations are by no means invisible in current research (see, e.g., Drucker), it is still under-communicated. Researchers in digital humanities must be aware that when publishing a map or a graph something happens to the message, no matter if they want it or not.

When Schnitler wrote up his data he had a level of control over what he included that he did not have when he made his maps because in the latter case the medium change forced him to add and remove information, in addition to and beyond the changes he chose to make. The same will happen to any digital humanist, no matter if the map she makes is in an ESRI system, in Google Maps, or on paper. This is not to call for an end to mapmaking in the digital humanities. It is, rather, a suggestion that we all must be careful and knowledgeable and that we remember that *capta* is not data (see Drucker).

Works Cited

Bodenhamer, David J., John Corrigan, and Trevor M. Harris, eds. *The Spatial Humanities: GIS and the Future of Humanities Scholarship*. Bloomington: Indiana UP, 2010.

Burke, Peter. *A Social History of Knowledge: From Gutenberg to Diderot*. Cambridge: Polity P, 2000.

Burke, Peter. "Overture: The New History, Its Past and Its Future." *New Perspectives on Historical Writing*. Ed. Peter Burke. Cambridge: Polity P, 2001. 1-24.

Buttimer, Anne, Stanley D. Brunn, and Ute Wardenga. "III. Polyphonies of Place and Identity: Mapping Self and

Other." *Text and image: Social Construction of Regional Knowledges*. Ed. Anne Buttimer, Stanley D. Vrunn, and Ute Wardenga. Leipzig: Institut für Länderkunde, 1999. 130-32.

Dahlerup, Verner. *Ordbog over det danske sprog. Grundlagt af Verner Dahlerup*. København: Gyldendal, 1918.

Dening, Greg. "A Poetic for Histories." *Performances*. By Greg Dening. Chicago: U of Chicago P, 1996. 35-63.

Drucker, Johanna. "Humanities Approaches to Graphical Display." *DHQ: Digital Humanities Quarterly* 5.1 (2011): <http://www.digitalhumanities.org/dhq/>.

Eide, Øyvind. *Fra SGML til begrunnede påstander om verden. Et system for analyse av geografiske resonnementer uttrykt i historiske tekster*. MA thesis. Oslo: U of Oslo, 2004.

Eide, Øyvind. "Sound, Ink, Bytes: Geographical Information through the Centuries." *New Knowledge Environments* 1 (2009): <http://journals.uvic.ca/index.php/INKE/article/view/156/162>.

Eide, Øyvind. *The Area Told as a Story: An Inquiry into the Relationship between Verbal and Map-based Expressions of Geographical Information.* PhD diss. London: King's College. Forthcoming.

Eide, Øyvind, and Tor Sveum. *Dokumentasjonsprosjektet ved Universitetsbiblioteket i Tromsø. Rapport*. Tromsø: U Tromsø, 1998.

Elleström, Lars. "The Modalities of Media: A Model for Understanding Intermedial Relations." *Media Borders, Multimodality and Intermediality*. Ed. Lars Elleström. Basingstoke: Palgrave McMillan, 2010. 11-48.

Frye, Northrop. "The Hidden Likenesses of Literature: A Search for Theory." *On Teaching Literature*. By Northrop Frye. New York: Harcourt Brace Jovanovich, 1972. 3-30.

Gaski, Harald. *Med ord skal tyvene fordrives: om samenes episk poetiske diktning*. Karasjok: Davvi media, 1987.

Horatius Flaccus, Quintus. *Ars poetica.* Ed. C.O. Brink. Cambridge: Cambridge UP, 1971.

Jacob, Christian and Edward H. Dahl. *The Sovereign Map: Theoretical Approaches in Cartography Throughout History*. Chicago: U of Chicago P, 2006.

Lessing, Gotthold Ephraim. *Gotthold Ephraim Lessings sämtliche Schriften.* Ed. Karl Lachmann, and Franz Muncker. Berlin: Mouton de Gruyter, 1968.

MacEachren, Alan M. *How Maps Work: Representation, Visualization, and Design*. New York: Guilford P, 2004.

McCarty, Willard. *Humanities Computing*. Basingstoke: Palgrave Macmillan, 2005.

McGann, Jerome J. *Radiant Textuality: Literature after the World Wide Web*. New York: Palgrave, 2001.

Mordt, Gerd. *Norge i 1743. Innberetninger som svar på 43 spørsmål fra Danske Kanselli. 5. Møre og Romsdal, Sør-Trøndelag, Nord-Trøndelag, Nordland,Troms*. Appendix: Map of Nordland amt 1744. Peter Schnitler. Oslo: Solum, 2008. CD-ROM.

Nielsen, Konrad, and Asbjørn Nesheim. *Lappisk ordbok: grunnet på dialektene i Polmak, Karasjok og Kautokeino.* Oslo: Novus, 1932.

Norges Traktater 1661-1966. Oslo: Grøndahl, 1967. Vol. 1.

Nørlund, N.E. *De gamle danske længdeenheder*. København: Geodætisk Institut, 1944.

Oakes, Michael P. *Statistics for Corpus Linguistics*. Edinburgh: Edinburgh UP, 1998.

Qvigstad, Just. *Nordische Lehnwörter im Lappischen*. Christiania: Jacob Dybwad, 1893.

Sámi instituhtta. *Lappcodicillen av 1751. Var det samernas Magna Charta?* Guovdageaidnu: Sámi instituhtta, 1989.

Schnitler, Peter. *Major Peter Schnitlers grenseeksaminasjonsprotokoller 1742-1745.* Oslo: Norsk historisk kjeldeskrift-institutt, 1962.

Smail, Daniel Lord. *Imaginary Cartographies: Possession and Identity in Late Medieval Marseille*. Ithaca: Cornell UP, 1999.

Stretton, Tim. "Social Historians and the Records of Litigation." *Fact, Fiction and Forensic Evidence: The Potential of Judicial Sources for Historical Research in the Early Modern Period*. Ed. Sølvi Sogner. Oslo: Department of History, U of Oslo, 1997. 15-34.

Turi, Johan, Emilie Demant-Hatt, and Hjalmar Lundbohm. *Muittalus Sámid birra*. Stockholm: Nordiska bokhandeln, 1910.

Wellbery, David E. *Lessing's Laocoon: Semiotics and Aesthetics in the Age of Reason*. Cambridge: Cambridge UP, 1984.

Woodward, David, and G. Malcolm Lewis. *Cartography in the Traditional African, American, Arctic, Australian, and Pacific Societies*. Chicago: U of Chicago P, 1998.

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