Abstract: The Narrative of Captivity and Restoration of Mrs. Mary Rowlandson from 1682 is not only famous— or infamous— for its brutal descriptions of the armed conflicts of King Philip’s War, it is also a colonial document that contains both religious as well as spatial representations of Native American territories. This article proposes to analyze this entanglement of space and text with a combination of digital text analysis tools and geographic information systems (GIS). Applying the potentials of such technologies and methods to the study of captivity narratives like Mary Rowlandson’s opens up new opportunities to better understand the interaction of writing and space in colonial New England.

Keywords: digital text analysis, Geographic Information Systems (GIS), digital humanities, spatial humanities, captivity narratives, knowledge representation, intertextuality, space and text

The genre of ‘Captivity Narratives’ has been recognized as an essential part of the canon of American literature for a long time (Pearce 1947, 1). Many captivity narratives that were conveyed from colonial New England have not only been regarded as foundational texts of US American literature (Zapf 2010, 15), they have also been studied as multiethnic and multimodal representations of knowledge in colonial contact zones (Zanger 1995). In addition to the popular and sensationalist descriptions of native Americans and the North American landscape that form a signature element of the genre, captivity narratives have also been seen as reflecting the interaction and crossing of different cultural formations in colonial settings (Bauer 1997). Especially the juxtaposition of different forms of knowledge that were conveyed in many stories of the genre have attracted a host of “ethnographic” studies and interpretations (Turner-Strong 1999). Read from this perspective however, many captivity narratives promoted a very one-sided image of the conflict between colonizer and colonized, native Americans and European Settles (Behrendt 2016, Burnham 1997). In fact, many captivity narratives from colonial New England deployed a “relentless rhetoric of hate” (Stievermann 2007, 269) and were written, edited and marketed across the Atlantic in order to incite prejudice, racism, hatred towards the colonial other (Haselstein 2002, Sayre 2010, Stratton 2014). Such stories and their literary “ethnography”, as Ben-Zvi concludes, “even disguise a complex set of assumptions regarding Native American cultures, portraying them tacitly as both foreign to and objects of U.S. culture” (2008, IV).

Being mindful of the “negative cosmopolitanism” (Kent and Tomsky, 2018) of the genre therefore, a careful analysis of captivity narratives has to pay special attention to the ways in which different crossings, entanglements and representations of knowledge have shaped these painful intercultural encounters.
in and beyond the Americas. Interestingly, adaptations and deflections of captivity stories can be found in almost all places of Anglo-European colonialism from the Mediterranean, Africa, Australasia, the Pacific and the Americas. Coeval with the colonial expansion of Europe, stories of captivity developed into “a vital circuit for transnational colonial discourse … and thus, [into] an instrument of colonial expansionism” (Stratton 17-18). Studied from the perspectives of colonial land-grabbing and its subsequent forms of enforced cultural mobility, captivity narratives constitute a set of literary-historical sources situated at the intersection between textual and spatial practices of imperialism. Not only do they combine and negotiate a variety of knowledge systems; they also shed a multifaced light on mechanisms of coping with the epistemological and ontological violence of colonialism on all sides.

In a digital study of one of the most prominent captivity narratives: The Captivity Narrative by Mary Rowlandson ([1682] 1997), my contribution to this special issue will examine the interaction of writing and cultural spaces in colonial New England and will focus on two distinct but integrated forms of textual positioning: intertextual and geospatial referencing. In studying these two knowledge systems—literary representations of landscapes and literary invocations of certain textual traditions—my paper will employ new methods of digital literary studies and the digital humanities. Enhanced and expanded by digital research methods in order to systematically discover, document and connect spatial as well as intertextual knowledge, my analysis will exemplify how geographic information systems (GIS) can be used to shed a novel light onto the relationship between intertextual (biblical) references and settler-colonial appropriations of Native American landscapes and spaces. My paper will begin with a brief discussion of the problems of interculturality, religiosity and cartographic knowledge in The Narrative of Captivity and Restoration of Mrs. Mary Rowlandson. I will then sketch the contours of my digital research design of combining the analysis of space with a study of intertextual references in the text. I will then discuss exemplary results of a digital mapping of religious and intertextual references in the text and will finally draw conclusions about the way the story of Mary Rowlandson deploys the Old Testament as a rather ill-fitted navigational tool for the colonial space of New England during King Philip's War.

Interculturality, Cartographic Practices and the Representation of Knowledge in Mary Rowlandson

The Narrative of the Captivity and Restoration of Mrs Mary Rowlandson (1682), provides a significant example for the cultural and political influence of captivity narratives and its significance in colonial America. The story of Ms. Mary Rowlandson, who was captured by Narrangansett people in 1675, was printed and reprinted in the 17th, 18th, and 19th centuries and was repeatedly circulated in both New England and Europe. The text which depicts indigenous violence against an apparently innocent and defenseless settler-women in a rather drastic manner, was not only a bestseller at its time of publication. It also fulfilled an important
political function from the colonial powers’ point of view: captivity narratives such as the story of Mary Rowlandson were used to satisfy the curiosity of European readers while legitimizing all kinds of violence against indigenous people. In fact, captivity narratives can even be seen as “the first long-range tactical weapons ... and [were] thus an instrument of colonial expansionism” (Stratton 18). Indeed, in these stories we learn, as the Aboriginal writer and intellectual Larissa Behrendt recently put it, “more about the colonizer than about the colonized” (180). In fulfilling this rather tactical function however, captivity narratives unfold an enormous cultural complexity, especially with regard to representations of colonial knowledge. In promoting strong and deliberately sentimental images of transcultural contact zones, the genre has from the beginning also enabled strong counter-narratives. From this perspective, many slave narratives of the 18th and 19th centuries can be read as contrasting narratives of imprisonment, which to this day provide us with testimonies of the cognitive and cultural structures of imperial encounters between European and non-European civilizations. Among the most influential slave narratives that operate with modes of imprisonment are, for example, Olaudah Equiano’s *Interesting Narrative* ([1789] 2004) or the accounts of the life of the white American settler Mary Jemison, who was once abducted by the Seneca tribe in Ohio and simply refused to return to the rather repressive environment of the Puritan colony.

Against this background, I assume that captivity narratives do not only contain historically relevant documents of complex encounter scenarios; next to the subtext of a Christian-religious salvation story, many captivity narratives—for which Mary Rowlandson can be regarded as prototypical—contain very concrete local descriptions and inventories of colonial and indigenous spaces. Especially the story of Mary Rowlandson has hence often been categorized as a “travel narrative” (Martin 1994). Looking at both the geographical and religious knowledge contained in these narratives thus allows us to draw conclusions about the survival strategies of both European settlers and Native Americans in moments of colonial movements and encounters (Ette 2004).

Although much has been written about captivity narratives as a genre, the methods of the Digital Humanities can pose new research questions and enable novel ways of looking at a textual formation that is generally considered to be well researched (Burnham 1997). For example, the digital recording, annotation and mapping of spatial knowledge in Captivity Narratives can provide us with valuable and novel information on how and in what way religious ideas spread in colonial America, both literarily and geographically. Above all, the interweaving of spatial descriptions and negotiations with the many Christian-religious references that permeate writing at the time, creates a particularly relevant research-context that has not yet been sufficiently explored. Although space itself has long been a prominent topic in cultural and literary studies (cf. Tally 2011), the combination of intercultural analyses and intertextual renderings of space with the help of digital tools is a novelty.

But how can digital tools and procedures help us to better understand the connection between the religious and text-driven localizations of culture,
literary descriptions of space as well as colonial land grabbing in the context of colonial America? More concretely, the question that I want to ask in the case of Mary Rowlandson is: how do place-names in the narratives correlate with Bible quotations in the literary text? Or more precisely: When textually and where geographically are certain Bible quotations used and with what effect? The text of Mary Rowlandson attaches religious beliefs and readings of the Bible to the spatial configurations of the narrated journey. As we follow the “captivity” and “restoration” of her “removes” into the heart of Native American land and back; Rowlandson’s journey from the “town” into the ‘wilderness’ emerges as a very ambivalent and two-fold movement—a wandering through indigenous territory and a novel experience of alterity and spirituality. Looking at the many different and mostly verbatim quotations from the Old Testament that are sprinkled across the text Henwood (1997) has claimed that Rowlandson uses Biblical sources as a hidden and ostensibly legitimate way of self-expression as well as mental and physical orientation (170). I want to pick up on this hypothesis and start to focus on the connections between Biblical passages and the way space and place figure in the text. In creating what I call a ‘cartographic intertextuality’ The Narrative of Captivity and Restoration lends itself to a digital case study to inquire into the ways of knowing colonial spaces and especially into the ways in which New England colonists worked to overwrite the indigenous American landscape of ‘the new world’ with the intellectual textures of the ‘old’.

But in what way can a digital analysis—sensitive to these questions—produce relevant insights for such basic research questions in American studies? Achieving a precise understanding of the multimodality of geographical, textual as well as religious appropriations of Native American landscapes in colonial America opens up new ways of approaching colonial cultural artefacts and structures of thought. In better understanding the connections between the textual and geographical dimensions of literary texts as a cartographic practice as well as ethical-religious recording of intercultural encounters can tell us more about the complex and complicit geography of knowledge in North America.

**Digital-Analytical Transformations**

In the following, I will sketch a digital workflow for the investigation of spatial and religious knowledge in the intertextual zones of encounter that The Narrative of Mary Rowlandson opens. On a conceptual-theoretical level, my research design starts from the premise that all literature eventually encodes, collects, negotiates and questions various forms of human knowledge (Borgards, 2013, Demmerling & Vendrell 2014). Consequently, literary and cultural studies no matter of what kind or method—can be understood as a form of knowledge-transfer, which is always preceded by an analytical text transformation. For example, before literary studies can make its object epistemologically accessible, the text must always be methodically preprocessed and thus transformed. While hermeneutic or post-hermeneutic methods of text analysis realize this transformation primarily as an analog-cognitive procedure (underlining, marginalia, notes, analog maps, sorting,
etc.) the age of digital text technologies increasingly affords algorithmic and thus operationalizable (Ramsay 2012, Jockers 2013) ways of studying literature and the traces of knowledge it contains. Surely, regardless of procedure the final act of interpretation of literary works of art will always require an analog-cognitive— that is to say human—course of action. However, in using algorithmic and (semi) automatic approaches of “Distant Reading” (Moretti, 2005 etc.) scholars can produce completely novel avenues into even well-researched materials.

In order to analyze and visualize specific places and corresponding intertextual representations in the text of Mary Rowlandson, an openly available Geoinformation system (GIS) for the Digital Humanities—the DARIAH-De Geobrowser—as well as text technologies such as AntConc1, Voyant Tools2 and the Sandford Named Entity Recognizer3 were used in this project. In a first step the project Gutenberg edition4 of the text was lemmatized to ensure a more accurate digital processing of the text (preprocessing). A lemmatization entails the transformation of all inflected words of a text into its basic form (its lemma). This step of text preprocessing and tagging was accomplished with the DARIAH-EU DKPro Wrapper5, as well as the Sandford Named Entity Recognizer. The subsequent semi-automatic annotation of relevant entities such as place names was then gathered on a datasheet and inspected manually. Approximately half of the places named in the text were automatically recognized by the preprocessing pipeline. Place names not recognized or falsely recognized by the Named Entity Recognition tool were either highly ambivalent place names such as Providence or non-indexed indigenous place names like Wenimesset. Missing, misrecognized or falsely referenced place-names were corrected and annotated manually. A final data table including place names from the story was then semi-automatically georeferenced via the Getty Thesaurus of Geographical Names (TGN)—embedded into the DARIAH-DE Geobrowser. This semi-automatic georeferencing pipeline was used to further disambiguate the places recognized and to enrich these with respective corresponding geocoordinates. Figure 1 shows the difficulties that arise with georeferencing even precisely annotated places such as Lancaster, where the journey of Mary Rowlandson starts: the Getty Thesaurus of Geographical Names includes more than 40 references to different places named Lancaster in the United States alone. Here a final manual disambiguation based on maps of the journey created by other scholars such as Henry Nourse6 (1901), Mark Priewe at al. (2008) or most recently Lisa Brooks (2012) was required. Choosing the relevant places from the automatically suggested list of possible places named Lancaster retrieved relevant geo-coordinates such as longitude and latitude and automatically added these the imported spreadsheet with extracted place names from the story. The

1 http://www.laurenceanthony.net/software/antconc/
2 https://voyant-tools.org
3 https://nlp.stanford.edu/software/CRF-NER.html
4 https://www.gutenberg.org/files/851/851-h/851-h.htm
6 http://coursesite.uhcl.edu/HSH/Whitec/ximages/earlyam/Puritans/rowlandson/rowlmapjourney.jpg
resulting map⁷, illustrating one place for each chapter deviates only slightly from the maps drawn by Lisa Brooks (2018) or Priewe and Siewert (2018)⁸.

Of course, tracing the movement of historical-literary figures based on estimated historical locations will always entail approximation. With regard to the question of accuracy and appropriateness however, Lisa Brooks’ recent mapping of Mary Rowlandson deserves special attention not only because her digital mappings in her awikhigan⁹—a complex (digital) indigenous notebook accompanying her book *Our Beloved Kin* (2018)—produces an entire array of elucidating mappings and remappings of the King Philips’ war but also because both her book and the accompanying awikhigan revisit the story of Mary Rowlandson from the perspective of Native American history and tradition. Her maps and tracings are thus deeply knowledgeable of Abenaki history and culture and offer an impressive counter-narrative to the ethnographic re-reading of Mary Rowlandson. Inspired by her Abenaki ancestry and her unique access to the places narrated in the story of Mary Rowlandson Brooks has underpinned her maps with local fieldwork and a rich documentation of each places. Surely, no digital workflow will ever be able to live-up to the human capabilities of positioning the historical setting of the story. The fact that Lisa Brooks has also used digital maps and a GIS system to map the Native American trails used in by the Narragansett, Wampanoag, and Nashaway/Nipmuc people illustrates¹⁰ in an interesting way the compatibility of digital tools with Native American knowledge traditions.

One of the most decisive epistemological advantages of geographic information systems is their affordance to add all kinds of data to complex digital representations of geographical space. In order to utilize this potential for the analysis of cartographic knowledge in the narrative of Mary Rowlandson, I decided to enrich the geodata retrieved from the story with the many biblical references made in the text. In fact, Mary Rowlandson’s account is so rich in direct and indirect biblical references that I decided to focus on direct quotations from the old testament that occurred at least twice in the story. Using the web-based concordance and text analysis tool Voyant developed by Rockwell and Sinclair, I detected more than 500 distinctive phrases that occurred more than two times in the story¹¹. Among those longer than 10 words, only direct bible quotations were found. Table 1 shows four of the longest phrases that occur at least twice in the novel. All of those four are direct quotations from the old testament – sometimes with, sometimes without reference to the psalm.

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⁸ http://www.arcgis.com/apps/MapJournal/index.html?appid=b76736c91d7d487c8ee7cc31f7a7675b
⁹ https://ourbelovedkin.com/awikhigan/index
¹⁰ https://amherstcollege.maps.arcgis.com/apps/MapJournal/index.html?appid=2fa5ce906be749cf849d576fceb6a9d1
¹¹ https://voyant-tools.org/?corpus=eb1af0e2f5f82a1f16ceed74b7f64ae8&view=Phrases
In a further step, the derived cartographic and religious knowledge (places and biblical quotations) in the literary text were analyzed with regard to their position in the story. Interestingly, almost all twice-occurring bible references in Mary Rowlandson turned out to be symmetrically distributed throughout the text; with the 12th remove (chapter) positioned as the center. Figure 3 and 4 show the textual position of psalm 1 and 3 from the table above. Combining this insight from the textual distribution of bible quotations with the mapping of each remove, we begin to realize that the spatial and textual center of Mary Rowlandson’s narrative is the turning point in the 12th remove. Even more, once we add the exact geolocations of the chapters in which each bible quotation is used, we begin to see that these Bible quotes are used in similar spatial settings before and after the turning point in the 12th remove.

After adding all detected bible quotations to a table with geodata created by the DARIAH-DE Geobrowser, we were able to see which biblical quotation was used at which point in the narrative, at which geographical location this happens and with what effect. Figure 5 is a screenshot of the datasheet created with the DARIAH-DE Geobrowser including chapters of the story, place names, used bible quotations as well as corresponding geo-coordinates. In a close inspection of the data and its subsequent vitalization via the cartographic interface of the DARIAH-DE Geobrowser, we realized that the most-often-used quotations in the text function both a metaphysical-religious as well as a real-world-spatial guide and orientation. What does that mean in detail? Let me explicate this with the help of one particular finding. For instance, with our data driven study of the cartographic intertextuality in Mary Rowlandson’s captivity we found that the psalm Isaiah 43.2. (“When you pass through the waters, I will be with you and when you pass through the rivers, they will not sweep over you”) is quoted two times in different chapters of the text, yet at very similar locations (the crossing of the “Paquaug River” (Millers River) (See Fig.6). In other words, Mary Rowlandson first uses psalm 43.2. on her outward journey with her Narragansett captors in the 5th Remove close to Wendel Depot at a crossing of the “Bacquag River” when colonial forces are unable to continue the pursuit of the Native American Party. The exact same psalm is quoted a second time at the exact same location, at another crossing of the “Paquaug River” this time however in the 15th remove. What is the meaning of this

<table>
<thead>
<tr>
<th>Term</th>
<th>Count</th>
<th>Length</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>oh that my people had hearkened to me and israel had walked in my ways i should soon have subdued their enemies and turned my hand against their adversaries</td>
<td>2</td>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>me thus saith the lord refrain thy voice from weeping and thine eyes from tears for thy work shall be rewarded</td>
<td>2</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td>through the waters i will be with thee and through the rivers they shall not overflow thee isaiah 43.2</td>
<td>2</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td>for a small moment have i forsaken thee but with great mercies will i gather thee</td>
<td>2</td>
<td>16</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 1 with phrases extracted from the text
complex entanglement of intertextual references and the cartographic knowledge with which Mary Rowlandson tries to position herself textually, religiously as well as spatially?

In the context of King Phillip’s War the river is an especially significant site because it constitutes the border zone between colonial settlements and the remaining indigenous territories of the region and provided a safe-haven and retreat for the native warriors (Brooks 2018: 263). Connecting the intertextual references to the old testament with real-world geographical coordinates thus establishes a perspective onto the text that has received little attention thus far. The quotations of the Old Testament in the text of Mary Rowlandson can not only be understood as a religious compass, but actually, as a secular as well as spiritual toolkit for orientation. In particular the biblical context of the Book of Isaiah conjured up here, establishes a remarkable intertextual connection. The Psalm of the Bible (Jesse 43) in the OT, quoted twice here by the river—and quite obviously not arbitrarily at all—addresses Jews who were abducted to Babylon but to whom liberation, redemption and a manifest destiny is prophesied. Here, Mary Rowlandson’s description of the landscape in the border region between the colony and Native American territory—imbued with biblical meanings—takes on a function of identity construction and the establishment of territorial sovereignty. Put differently, the landscape described by Mary Rowlandson at this very precise place appears not only as mythically charged, it is—so to speak—also “enriched”– spatially as well as ideologically (cf. Slotkin 1973, Turner Strong 1999).

Conclusion

The results obtained by my digital reading of Mary Rowlandson suggests that the text of Mary Rowlandson employs a very specific cartographic intertextuality to capture spatial as well as religious knowledge by literary means. Furthermore, the biblical references in the text of Mary Rowlandson do not only fulfil religious and metaphysical functions, but indeed describe Rowlandson’s attempts to maintain a spatio-temporal and thus physical form of sovereignty in captivity. Of course, “Rowlandson and her fellow Puritans” as Hennwood points out, were first and foremost “people of the Book” and within the Puritan intellectual horizon the Bible was “a vast, roomy resource of expressive possibility an expansive vantage point from within which to articulate a literary fusion of personal emotion and collective mission” (Hennwood, 1997:183).

The fact that the intertextual references of the Old Testament in The Narrative of Mary Rowlandson actually serves as a very precise and site-specific device of navigation and orientation, opens novel avenues for digital research on colonial America. After all, the use of the Old Testament as a geographical device points to the fact that the European settlers were keen to simply overwrite all indigenous ways of landscape management and territorial sovereignty. In using The Old Testament as an artificial technology to encode the landscape and spaces of the “new world” in terms of the “old” reflects the granularity and scale of the epistemological violence with which the Puritans structured their incorporation of
Native American land. Despite this ‘new’ evidence found through digital readings of Mary Rowlandson’s captivity text, the interpretation refers us once again to the very old and eminent questions about the conditions of experience of alterity per se (Mischke 2013). In the narrative spaces of colonial America, the mental and physical maps of the English settlers were for the most part unfitted or willingly made useless to recognize and—above all, to acknowledge—the rich landscape representations and landscape management of the Narrangansett, Wampanoag and Nipmuc people.

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Figure 1: Screenshot of the place selection and geo-location completion tool of the DARIA-DE Geobrowser https://geobrowser.de.dariah.eu
**Figure 2:** The exact locations drawn from the text. Each dot signifies one chapter of the story.

**Figure 3:** Textual position of Psalm 1
**Figure 4:** textual position of psalm 3

**Figure 5:** Screenshot of the Datatable-Editor of DARIAH-DE Geobrowser with assignments of Bible quotations and geodata
Figure 6: Psalm 43.2 occurrences in Mary Rowlandson with similar geolocation in different chapters.