Navigating Disciplinary Differences in (Digital) Research Projects Through Project Management

Anna Maria Neubert

Introduction

In this article I survey our approach to implementing digital research in a collaborative research center by navigating disciplinary differences through tools and methods deriving from project management. I argue that by providing a clear framework and making regulations in cooperative work as well as acknowledging each individual contribution, interdisciplinary collaboration especially in the digital humanities can – even in a short time – produce meaningful and satisfying research results. This article is an account of our strategy to tackle challenges and opportunities that arose during our cooperation in combining the 'humanities' and the 'digital'. It shows where effort paid off and where failures required us to tackle problems and solve them. I conclude by recommending an approach to a new and different recognition of research results and their applicability within disciplinary boundaries that supports a better understanding within interdisciplinary collaborations.

1. Implementing digital research in a collaborative research center

Not only has funding of 'big' projects[1] in the humanities constantly been growing over the past years,[2] researchers themselves turn to collaboration to explore increasingly complex questions and create large-scale projects. They aim to implement new forms of methodologies that would be either too large or too complex to be completed by a single researcher and therefore are "in need of expertise available from other disciplines."[3] This increase in quality, depth and scope of research requires a departure from traditional disciplinary boundaries to a more open and fluid concept of humanities research.

Especially in large research collaborations where digital innovations are tested within a humanities environment, the concept of interdisciplinarity is exemplified and tested with each new cooperation on a daily basis. So, "as interdisciplinary collaborations are becoming more common, aligning the interests of computer scientists and humanities scholars requires the formulation of a collaborative infrastructure for research where the approaches, methodologies, pedagogies, and intellectual innovations merge."[4] Digital humanities (DH) as a field that combines digital concepts with humanities research is an ideal example of challenges, approaches and benefits when disciplinary boundaries are conquered, and collaboration turns out to be a fruitful endeavor for all professions involved. These digital research projects – mostly initiated and "taken on by humanists […] require manage-

1 Cf. for example an article on the emergence of 'Big Science': *Weinberg Alvin M.*, Large-Scale Science on the United States, in: Science, New Series, Vol. 134, No. 3473 (Jul. 21, 1961), 161–164, http://www.jstor.org/stable/1708292 [accessed:01.04.2019].

2 Cf. for only one account from past years: *Allington, Daniel*, The Managerial Humanities; or, Why the Digital Humanities Don't Exist. (31 Mar. 2013), http://www.danielallington.net/2013/03/the-managerial-humanities-or-why-the-digital-humanities-dont-exist/ [accessed: 01.04.2019].

3 *Siemens, Lynne*, 'Faster Alone, Further Together': Reflections on INKE's Year Six, in: Scholarly and Research Communication 7 (2016), https://src-online.ca/index.php/src/article/view/250/479 [accessed: 01.04.2019]; *Siemens, Lynne*, 'More Hands' means 'More Ideas': Collaboration in the Humanities", in: Humanities 4.3 (2015).

4 *Simeone, Michael et al.*, Digging into data using new collaborative infrastructures supporting humanities–based computer science research, in: First Monday 16 (2011), https://firstmonday.org/ojs/index.php/fm/article/view/3372/2950 [accessed: 01.04.2019].

ment"[5]. Thus, "regardless of size, scope, and budget, projects members must coordinate tasks, responsibilities, budgets and achieve objectives."[6] All those jobs can be tackled and coordinated with tools and methods deriving from project management (PM) that help to issue tasks and responsibilities to eventually achieve satisfying and meaningful (research) results. Unfortunately, the complexity of planning, managing and executing DH projects is still not acknowledged in its entirety and "is usually presented from a beginner's perspective, offering merely 'basic principles,' 'tips and tricks,' or 'top-ten lists'."[7] However, combining humanistic inquiry with digital approaches allows for a huge variety in questions, implementations and outcomes that all need specific attention and precisely fitting management.

In this article I outline our approach to managing six different digital research projects as part of a pilot phase tasked with evaluating digital methods in various humanities disciplines. The Collaborative Research Center (CRC) 1288 "Practices of Comparing" at Bielefeld University[8] unites 14 humanities research projects – organized within three sections (A, B and C) –, and three central projects that deal with administration (Z), science communication (Ö) and data infrastructure as well as digital humanities (INF). Subproject INF[9] which coordinated the outlined collaborations in this volume is responsible for providing "data infrastructure and digital humanities" to other projects involved and initiates different forms of digital research over the ongoing first funding period (2017–2020). During the first year of the CRC, INF started a pilot phase to implement digital research methods in existing research projects to augment, extend or renew already existing research questions; thereby questioning how digital research methods can be implemented in existing humanities research and which parameters need altering in order to be able to carry out research that produces valuable results.

---

5 *Ermolaev, Natalia et al.*, Abstract: Project Management for the Digital Humanisties, DH2018, Mexico City, https://dh2018.adho.org/project-management-for-the-digital-humanities/ [accessed: 01.04.2019].

6 *Boyd, Jason/Siemens, Lynne*, Project Management, DHSI@Congress 2014.

7 *Tabak, Edin*, A Hybrid Model for Managing DH Projects, in: Digital Humanities Quarterly 11 (2017), http://digitalhumanities.org:8081/dhq/vol/11/1/000284/000284.html [accessed: 01.04.2019].

8 Cf. http://www.uni-bielefeld.de/(en)/sfb1288/index.html [accessed: 01.04.2019].

9 Cf. http://www.uni-bielefeld.de/sfb1288/projekte/inf.html [accessed: 01.04.2019].

The pilot phase was planned in advance and provides a number of basic conditions, such as a fixed time frame – one year – and basic defaults and standards about research material that needed digitization. From the beginning it was obvious that good (project) management would be required to deal with mechanics and people[10] throughout the whole process and in order to coordinate requests, challenges and the on-going tasks at hand.

The initial idea that arose at the beginning was that project management can be used as a neutral tool for productive implementation of each of the individual goals. As a basis for collaborative work within and outside of disciplinary boundaries, tools, techniques and methods from project management supported team INF in controlling procedures, keeping the work within deadlines and bringing it to a successful end.

In this article I survey our approach to steer that pilot phase for digital research methods in humanities disciplines ranging from History to Art History to English and German Literature by acknowledging various approaches to research. The contribution at hand is guided by the following questions: How can explicit, mutual expectations in interdisciplinary digital humanities projects be met and managed productively within each disciplinary tradition? Which methods, tools and techniques deriving from project management help to acknowledge individual ideas, pace of work and overall goals? As well as: Can already established benefits from collaborative work such as gaining new skills or new knowledge help pushing cooperation in research projects?

2. Definitions: interdisciplinary (research) project(s) in Digital Humanities

As Anthony Paré – Professor Emeritus for Language & Literacy Education at McGill University – points out in a recent blog post, "knowledge-making is a social enterprise that depends on collaborative work."[11] He thereby captures various topics from a long-lasting yet very current discussion that val-

10 *McBride, Melanie*, Project Management Basics, New York: Apress, 2016, 2.

11 *Paré, Anthony*, Scholarship as collaboration: Towards a generous rhetoric., https://doctoralwriting.wordpress.com/2019/02/04/scholarship-as-collaboration-towards-a-generous-rhetoric/#more-2322 [accessed: 01.04.2019].

ues cooperative scholarly work above research as an individual and isolated one-person endeavor and disagrees with the notion of 'survival of the fittest scholar' through competition.[12] The collaborative research Paré refers to in his article cannot be carried out without a common understanding of what a group of scholars can achieve within a complex knowledge-making process. But how can a common ground be established, and mutual goals be accomplished in collaborations? And which insights are needed to actually cooperate and pull in the same direction?

Before turning to evaluating our experiences with the implementation of project management methods in a multi-disciplinary context, I am going to elaborate on some fundamental concepts and terminology which we used in planning and executing the pilot phase.

What defines a project?

Although digital humanities research has already been carried out for many years and is in ever growing demand by funding agencies of all kind, the troubles of carrying out digital research within existing humanities environments continues to be a challenge. The difficulties emerge on levels of mechanics and people; for example, many humanities researchers still see tools, methods and theories originating in the field of DH as "neoliberal and uncritical"[13] assaults. Another critique that often hinders successful collaboration is the attitude towards managerial protocols and the so-called 'managerial humanities' that are sometimes used as a synonym for digital humanities research.[14] Nevertheless, it seems obvious, that some kind of management is necessary to do (not only digital, but generally) meaningful research and that fruitful thoughts for research in general often do originate in the planning of research between disciplinary boundaries or by combining disciplines and fields that were not linked beforehand.

In order for those managerial tasks to be carried out successfully, in most cases it helps to think in terms of a 'project' – "a temporary endeavour

12 Cf. ibid.

13 *Svensson, Patrik*, Big Digital Humanities: Imagining a Meeting Place for the Humanities and the Digital, Ann Arbor: University of Michigan Press, 2016.

14 Cf. *D. Allington*, The Managerial Humanities; or, Why the Digital Humanities Don't Exist.

undertaken to create a unique product, service or result."[15] Parameters such as time, scope and scale help to grasp a better understanding of the endeavor and support coordinating tasks and responsibilities as well as achieving scheduled and planned objectives. However,

> "projects are [also] the way in which human creativity is most effectively harnessed to achieve tangible, lasting results. In the past they may have been called something different, but building a pyramid, painting a ceiling, or funding a nation all required vision, planning and coordinated effort – the essential features of what we now call a project."[16]

So, when taking this citation seriously, every action done in an academic environment can be seen as a project, even if it is not described as such – from presentations in the first semester to larger tasks such as essays, assignments or dissertations. Research projects, however, require additional attention, as they are comprised of a complex combination of actors and interests. Thus, a research project can be understood as a

- "scientific investigation, usually using scientific methods, to achieve defined objectives."[17]
- "creative systematic activity undertaken in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this knowledge to devise new applications."[18]
- "studious inquiry or examination, especially [an] investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws."[19]

---

15 *Project Management Institute*, What is Project Management?, https://www.pmi.org/about/learn-about-pmi/what-is-project-management [accessed: 01.04.2019].

16 *Hobbs, Peter*, Project Management (Essential Managers), London: Dorling Kindersley, 2016, 6.

17 *DBpedia*, Project Management, http://dbpedia.org/ontology/ResearchProject [accessed: 01.04.2019].

18 *OECD*, Project Management, https://web.archive.org/web/20070219233912/http://stats.oecd.org/glossary/detail.asp?ID=2312 [accessed: 01.04.2019].

19 *Merriam Webster*, Project Management, https://www.merriam-webster.com/dictionary/research [accessed: 01.04.2019].

Also, "projects [in academia] are both nouns and verbs: A project is a kind of scholarship that requires design, management, negotiation, and collaboration. It is also scholarship that projects, in the sense of futurity, as something which is not yet."[20]

All definitions provided above therefore describe aspects of doing (digital) humanities research. And not only do researchers work in these forms of special activities, they also manage those projects from the very early days on. If a scholar wants to submit a paper, a thesis, or a funding application, she already is coordinating tasks, responsibilities and her working process in order to meet deadline(s). In this light, doing digital research in the form of planned projects is nothing too new, however, the novelty lies in an unprecedented interdependence when collaborating with large numbers of researchers, librarians, research software engineers and other involved stakeholders. Digital Humanities are thus a field that is "most frequently characterized as data- and compute power-intensive, interdisciplinary and highly collaborative in nature."[21] The underpinning of all projects is nonetheless a framework of specific, but also invariable processes that produce the artifacts and mechanics of project management.

Varieties of projects in the pilot phase

Subproject INF's tasks were defined rather broadly in the grant application, and it later became clear that the best way to carry out digital research and introduce digital methods to other involved humanities projects within the CRC, was by forming subprojects that would be manageable and promising with regard to their successful implementation. Thus, after a call for projects, initially six projects[22] from the collaborative research center were selected to take part in the pilot phase for applying and testing digital methods.[23] These

20 *Burdick, Anne et al.*, Digital_Humanities, Cambridge, Mass.:MIT Press, 2012, 124.

21 *Blanke, Tobias/Hedges, Mark/Dunn, Stuart*, Arts and humanities e-science – Current practices and future challenges, in: Future Generation Computer Systems 25(2009), 474–480.

22 Involved projects were A04, B01, B03, B05, C01 and C03. More on each project and digital research approach can be found in this whole volume – in much more detail and put in perspective by the humanities researchers themselves.

23 One of the projects was not carried on as the result appeared not to be useful for supporting the research questions already asked.

projects were characterized by a variety and diversity of involved people, contents, material and inputs and their expectations about research goals and outputs. People included PhD students, postdoctoral researchers, Principal Investigators and research assistants who were unified by the fact that they were all humanities researchers, but with backgrounds in History, German Literature, Art History and English Literature. Team INF consisted of computer scientists, librarians, data scientists and digital humanists; consequently, a diverse set of expertise and knowledge was given from the start. However, the projects did not only differ with regard to the people coming from various academic hierarchies, they also differed in terms of contexts within which they were taken on. The individual case studies were either part of PhD projects, initiated questions for research projects within the respective research project in the scope of the CRC, or served as the basis for postdoctoral research projects. In terms of managing these projects, it is important to mention that each project counted as a case study but was always part of a bigger project that was conducted throughout the whole first funding period of the CRC until the end of 2020 of those researchers that tested digital methods in the pilot phase. Goals and intended output were different as well and relied on a variety of source material specific to each project.[24] Nevertheless, as time and (wo)man-power were limited, we tried to offer a technical pipeline that each project could benefit from on different levels.[25]

During the first meetings it soon became obvious that interdisciplinary collaboration is not an easy task, as "it is not clear that all are accustomed to or trained for this type of work."[26] However, by asking ourselves "Who is involved and brings which qualifications and which knowledge?" and "Which steps are necessary to be successful on the way and in the end?" we were able to recognize and acknowledge disciplinary perceptions for the time being.

---

24 Source materials included French magazines from the sixteenth to the twentieth century, English novels from the seventeenth century or parliamentary debates from twentieth and twenty-first century.

25 For more information on the technical and methodological pipeline that was implemented and the tools that were deployed, see the contribution by Jentsch, Patrick and Stephan Porada "From Text to Data" in this volume.

26 *L. Siemens*,'More Hands' means 'More Ideas': Collaboration in the Humanities, 353.

By combining humanities research and the digital, digital humanities collaboration

> "requires the creation and deployment of tools for sharing that function to improve collaboration involving large–scale data repository analysis among multiple sites, academic disciplines, and participants through data sharing, software sharing, and knowledge sharing practices."[27]

These three processes of sharing different parts of those projects helped to form the baseline for managing and coordinating different tasks on the run. However, it was not only obvious that some kind of management was necessary to satisfy all parties involved in this pilot phase, it was also relevant to be open to new or unknown processes that required "skills such as innovation, flexibility, collaboration, communication, negotiation, planning and risk management."[28] Many of the factors mentioned here were limited by the variety and time of the pilot phase, but it was nevertheless explored which options were available in different situations.

As the definitions and the basic situation were somehow evident and known, they were followed by many processes to shape the phase of management, sharing practices and communication with its different tasks, responsibilities and targeted objectives.

3. Project management as the core for navigating disciplinary differences

> While researchers and other associated team members welcome collaborations as a way to undertake these kinds of projects, work still needs to be done to prepare individuals for working within a team where interdependent tasks must be coordinated, knowledge and progress must be communicated, and an overall research vision must be accepted and enacted.[29]

---

27 *M. Simeone et al.*, Digging into data using new collaborative infrastructures supporting humanities–based computer science research.

28 L. Siemens, 'More Hands' means 'More Ideas': Collaboration in the Humanities, 345.

29 L. Siemens, 'Faster Alone, Further Together': Reflections on INKE's Year Six.

These genuinely challenging tasks can be attributed into a so-called recurring cycle of processes that is structured into five groups: (1) Initiating, (2) Planning, (3) Executing, (4) Monitoring and Controlling, and last but not least (5) Closing.[30] While the pilot phase was initiated through a call for projects, the planning phase began by discussing contents, scope and resources with each involved party – mostly consisting of one single researcher but sometimes also of bigger teams of up to four scholars.

However, not only did discussions help in planning various stages of the projects, collected competency and qualifications from various stakeholders helped to draw a larger picture within the planning phase. This expertise for carrying out every aspect of digital research in humanities projects was gained on different levels by team members of INF which prior to working in the collaborative research center were active in various DH projects, university libraries as well as in the field of software development and research management.[31] Furthermore, it was clear that the composition of six different case studies at the same time should provide some basic similarities that align planning and management somewhat better. Consequently, a technological pipeline to digitize texts and carry out digital research methods was implemented for each project to achieve research results that could be utilized by the humanities researcher in their respective larger research projects. As in nearly every DH project, each case study was characterized by being "experimental, modular and incremental"[32] and thus differed from traditional scholarship that was known to the scholars until then.

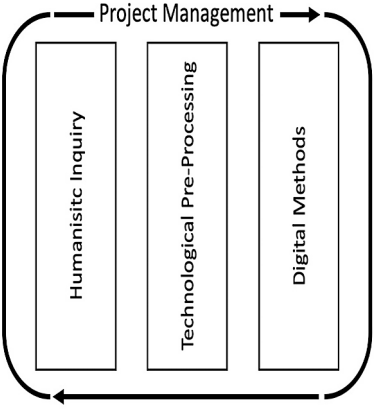
In order to coordinate the pilot phase and match the tools used for project management, the model shown in figure 1 supported a general understanding of processes that connected and supported the joint effort.

30 *Project Management Institute*, What is Project Management?.

31 Cf. for example *Neubert (born Komprecht), Anna Maria/Röwenstrunk, Daniel*, Projektmanagement in digitalen Forschungsprojekten – Ein Leitfaden für interdisziplinäre und kooperative Drittmittelprojekte im Umfeld digitaler Musikedition, in: Kristina Richts/Peter Stadler (eds.), »Ei, dem alten Herrn zoll' ich Achtung gern'«: Festschrift für Joachim Veit zum 60. Geburtstag, München: Allitera, 2016, 509–522.

32 *E. Tabak*, A Hybrid Model for Managing DH Projects.

Fig. 1: Components of a digital research project linked through project management



The diagram illustrates those three elements on which the research projects were based on. Researchers contributed their research questions on humanities subjects, team INF presented solutions on technological preprocessing and digital methods that could be used to answer the inquiries, and project management aligned all demands to plan and execute every step involved. The model thus can be read from left to right or from right to left, always depending from which angle the projects were seen and taken on. Also, by acknowledging the uniqueness of each individual project and by seeking for similarities in applying steps of technological preprocessing and digital methods it was possible to accomplish a lot of different steps within the set time frame.

For preparation purposes, every project faced the same set of questions which was based on three simple queries which shaped the mechanics of planning different tasks within a project management setting and ended in the basic workflow that was applicable for all projects: "What needs to be done?", "How is it done?", and "Who is responsible for which step?"[33] With these questions at hand the planning process was applied in the discussions mentioned beforehand and ended in a diverse mix of methods and tools to implement those research projects.

33 *Henderson, Robin*, Research Project Management – Key Concepts (2010), https://www.coursehero.com/file/13018002/Key-Concepts-in-Research-Project-Management-Robin-Henderson/ [accessed: 31.08.2019], 3.

Implementing tools and methods for cooperative work

In 2016, Lynne Siemens – one of the leading scholars in doing research on project management in digital humanities settings – writes that processes and principles from project management, like "project plans, reporting structures, knowledge mobilization plans, training, and post-project reporting"[34] are ever more required, "to ensure close alignment between the grant application and the actual outcomes."[35] And while there already exist some excellent charters that outline basic rules for collaboration in digital humanities projects[36], they can be helpful for long-lasting projects but were not discussed with the involved researchers in the here described pilot phase due to limited time and a quick start. And although it was not blatantly exposed initially, we applied processes and workflows – actually coming from business-related management – to the case studies from day one; thereby being informed by "information studies and methods in software development, while still being based on values of the humanistic tradition and methods."[37]

And as Digital Humanities "involves digital objects, digital tools and digital techniques[38] being brought to bear on traditional humanities scholarship",[39] it was also tried to close this gap by testing other methods and formats coming from science communication and public engagement (see *Inter-*

34 *Siemens, Lynne*, Project management and the digital humanist, in: Constance Crompton/Richard J. Lane/Ray Siemens (eds.), Doing Digital Humanities: Practice, Training, Research, London: Routledge 2016, 343.

35 Cf. ibid.

36 Cf. for example the 'Collaborators' Bill of Rights' in 'Off the Tracks: Laying New Lines for Digital Humanities Scholars', http://mcpress.media-commons.org/offthetracks/part-one-models-for-collaboration-career-paths-acquiring-institutional-support-and-transformation-in-the-field/a-collaboration/collaborators%E2%80%99-bill-of-rights/ [accessed: 01.04.2019] or the 'Charter' from the Scholars' Lab at University of Virginia (Library), https://scholarslab.lib.virginia.edu/charter/ [accessed: 01.04.2019].

37 *E. Tabak*, A Hybrid Model for Managing DH Projects.

38 Digital objects mainly involved digitized texts in XML/TEI, digital tools were brought in order to support the digitization of those texts and digital techniques were used to test methods like text mining, topic modelling and the building of data bases. More on this can be found in the already mentioned article by Jentsch and Porada.

39 *Meeks, Elijah*, The Digital Humanities as Content, in: Elijah Meeks, Digital Humanities Specialist (blog), 19 May 2011, https://dhs.stanford.edu/the-digital-humanities-as/the-digital-humanities-as-content/ [accessed: 01.04.2019].

action I: meetings and workshops). Facing some challenges at the beginning (e. g., a not yet complete team in subproject INF, other projects that needed a final touch before the start of the pilot phase, already existing research projects that needed to be altered to participate as a case study, etc.) we yet always believed that project management could be of use in all situations to encounter common issues that are related to risks, obstacles and tasks[40] which emerge when combining individual ideas and different perceptions of how a research process should proceed. Below follows an outline of the tools and methods that were implemented to meet challenges and seize opportunities to contribute to new questions and research directions in every participating humanities discipline.

Assembly of project team(s)

Before discussing any project related tasks, time tables or methods, each humanities researcher respectively research team was assigned to a collaborative team. Each team consisted of those humanities researchers and selected team members from INF; a computer scientist and a research assistant, a librarian and one of the two digital humanists who managed the collaboration by coordinating stakeholders, tasks and dates. The two Principal Investigators who head team INF – one a digital humanist with a background in medieval history and the other one a computer scientist working in the universities' library – oversaw the collaborations and participated in meetings, workshops and consulted on challenges or occurring failures.

Besides building single research teams for each pilot project, the whole group was understood as one large team to discuss, showcase and present preliminary and possible final results. This cross-team connection was seen as valuable to exchange experience and expert knowledge on humanities subjects but also provided a platform to swap thoughts on using similar (digital) methods and techniques as well as aiming for similar outcomes in different disciplines.

Definition of individual research cycle(s)

Different disciplinary affiliations, as well as one's position within the academic hierarchies may lead to different research cycles over time. While PhD and postdoctoral researchers have a clear time limit set by their tem-

40 Cf. *L. Siemens*, Project management and the digital humanist.

porary employment within the CRC, Principal Investigators and professors are limited through other tasks and research interests within their respective field. That is why it was important to adjust the collaborative research plans as much as possible to secure the benefits of working together and built strong working relationships despite of time constraints or boundaries that are applied by disciplinary, departmental, faculty or other systems in which every researcher is integrated throughout the academic environment.

Furthermore, it was anticipated that the research cycle of projects taken on in the pilot phase must be seen within the bigger picture of the four-year funding phase for the CRC in general. It was tried to acknowledge the presence of individual situations and the facilitation of a different pace of work, however, meetings in the larger group and discussions on intermediate results were always synced in order to disclose common misunderstandings or align changes in the project plan.

Project plans

Although it was not quite as easy in the beginning, we drafted two project plans. First, a project plan was designed for the whole endeavor from and for team INF solely, to coordinate and align tasks that were part of each individual team member and second, project plans for each individual project were created, to adjust scope, scale and involvement which differed if (only) slightly from project to project. In general, we adopted a so-called rolling wave plan[41] that allowed filling in aspects of the projects on "a rolling basis"[42] and thus made it possible to adjust to occurring challenges and risks.

The plans showed the general allocation of time within the set time frame of a year and represented upcoming tasks in the style of *Kanban*[43] workflows. Each planning step was available through the online project management system *Redmine*[44] (see *Documentation*) and roughly followed the concept of work breakdown structure (WBS)[45] which allowed a detailed planning of every step.

41 *R. Henderson*, Research Project Management – Key Concepts, 4.

42 Cf. ibid.

43 *Atlassian*, Kanban, https://www.atlassian.com/agile/kanban [accessed: 01.04.2019].

44 Cf. https://www.redmine.org/ [accessed: 10.02.2019].

45 Cf. *R. Henderson* Research Project Management – Key Concepts,4.

Each project plan can only be successful with accompanying steps that allow for a better understanding and alignment of the common project goal. And while a project plan is one of the basics for the execution of a project, we drew on more methods. Norms on how to behave in meetings, when working together or communicating[46] were also considered as were new ideas from user design or science communication.

Visualizations

Especially when talking about technical solutions for or realizations of humanistic inquiry with humanities scholars who – ordinarily – are used to text as their main research material, the idea of drawing, wire framing and plotting out steps of technological processes comes in handy. In our pilot phase, the process of 'Thinking through Practice'[47] helped to start a discussion about how to structure and model material and data in order to achieve a satisfying result. This does not always need to be in a digital format, drawing on white boards or flip charts together supported the communication and the finding of a consensus on how to tackle challenges and proceed with each project. There are many forms of visual methods deriving from design that add another layer of knowledge and prove to lead to a synchronization of how to move forward; thus, we used techniques like mind mapping or brain storming as forms of visualizing research processes. This was not only realized in smaller team meetings but also in forms of workshops.

Interaction I: meetings and workshops

Meetings took place in smaller research teams as well as in the large group. While there was always a set of standard questions prepared for those regular meetings in each project team, workshops in the large team throughout had a topic that helped to discuss each stage of the individual projects. As we tried to synchronize technological and methodological steps in order to provide opportunities for everyone to merge research progress or discuss challenges, it was quite fruitful to prepare conversation guidelines for the smaller meetings but also include new formats of collaborations in the larger gatherings. Innovative ideas from science communication, agile software

46 *L. Siemens*, Project management and the digital humanist., 352.

47 *Duxbury, Lesley/Grierson, Elizabeth M./Waite, Dianne (eds.)*, Thinking Through Practice: Art as Research in the Academy, Melbourne: RMIT Publishing, 2007.

development and information studies proved to be quite useful for getting researchers to talk and meet different standards in a very limited time. World cafés,[48] booksprints[49] or expert discussions were those formats which had a huge impact on how the collaboration moved forward. They helped to learn from each other, respect time constraints of each individual and meet up to the standards that were set from the beginning.

Interaction II: human-machine-interaction

But not only did meetups with real human beings help us understand technical and methodological challenges, workshops on how to interact with the machine were valuable to disseminate a better understanding of how the computer works and is used for the particular research questions posed by the humanities researcher. In those meetings and workshops, it was generally introduced how the technical preprocessing pipeline was employed and worked (or precisely did not work) for each project and how researchers themselves could learn to handle digital methods. With applications like *AntConc*,[50] *Voyant*[51] or *Mallet*[52] we introduced tools that can be used in order to enable researchers to work with their material alone and beyond the pilot phase. One goal of the pilot phase was always to work beyond the team effort and facilitate new skills when employing digital innovations and make those innovations usable for research processes in the humanities.

Documentation

Using the flexible project management web application *Redmine*[53] helped to coordinate each project and provided a platform for communicating with the researchers as well as documenting important steps along the way. Each project involved in the pilot phase was assigned an own subproject that always had a similar structure. Each meeting, discussion, and decision was

48 *The World Café*, http://www.theworldcafe.com/key-concepts-resources/world-cafe-method/ [accessed: 01.04.2019].

49 Cf. for example *Zennaro, Marco et al.*, Book Sprint: A New Model for Rapid Book Authoring and Content Development, in: International Journal of the Book 4 (2007), 105–109. http://ijb.cgpublisher.com/product/pub.27/prod.120 [accessed: 01.04.2019].

50 Cf. Antconc, http://www.laurenceanthony.net/software/antconc/ [accessed: 01.04.2019].

51 Cf. Voyant – see through texts, https://voyant-tools.org/ [accessed: 01.04.2019].

52 Cf. Mallet – Topic Modeling, http://mallet.cs.umass.edu/topics.php [accessed: 01.04.2019].

53 Cf. Redmine, https://www.redmine.org/ [accessed: 01.04.2019].

documented in the wiki in order to be consulted later on, and important documents were stored there as well.[54] While we did not make use of the whole project management functions Redmine offers, such as a ticketing system, it served as a communication platform for each step. It supported the execution and secured monitoring for each team member involved. Documentation already proves to be quite helpful as of now – two years later – as all stakeholders are able to draw on those materials deposited in the wiki which supports in, for example, writing the articles about the whole pilot phase.

The synopsis of tools and methods depicted above can only be a selection of what we drew upon throughout but represents the most important facets of our project management. While working in interdisciplinary collaborations is a constant challenge, it can be met with preliminary work to seize the chance of developing something novel to each community. It is absolutely clear that some kind of planning is necessary to implement cooperative research and the methodological mix we chose proved to be quite fruitful.

Co-creation: credit where credit is due

One issue that is often encountered when working in teams is the credibility for different steps along the way. As humanities research still has a "historical emphasis on the single author",[55] a team-based approach to research challenges traditional humanities. Individual authorship[56] however becomes quite a challenge as one person cannot possibly carry out all tasks which would be necessary to come to a satisfying and meaningful result in the end. The differentiation of content consumption, content creation, and content management needs to be applied to the roles of collaborative teams in digital humanities projects as soon as it becomes explicit who takes responsibility for which task. So, "the most effective digital humanities work is done when a scholar has an innovative, sophisticated agenda that can be furthered by application of computational methods [and] digital publication."[57] This

54 Research material was exchanged via the university-cloud 'sciebo', as we wanted to split the organization and communication platform from the working environment.

55 *L. Siemens*, Project management and the digital humanist, 352.

56 *A. Burdick et al.*, Digital_Humanities, 125.

57 *Meeks, Elijah*, How Collaboration Works and How It Can Fail, in: Elijah Meeks, Digital Humanities Specialist – humanities software, visualization and analysis (blog), 27 May 2013, https://dhs.stanford.edu/natural-law/how-collaboration-works-and-how-it-can-fail/ [accessed: 01.04.2019].

means that each involved party should get credit for the contribution to each part of the project. While there is no standard of new crediting systems yet, there is a "trend toward the differentiation of roles such as principal investigator, researcher, designer, programmer, modeler, editor, and the like."[58] It should be discussed which roles are involved in which process and how even 'invisible' jobs – like project management in most of the cases – can get credit for the fulfilled jobs. We opted for an approach that tries to combine the individual authorship and the team-based approach. In producing the collection of the articles at hand, each humanities researcher (team) is able to contribute a paper that is authored individually, however, on the website the data publications, data stories and research results pay tribute to the whole researcher and developer team involved.

4. Challenges and failures – a way to succeed in the end?

Any project – and maybe research projects in particular – requires careful preliminary planning to come into being. Yet, no amount of planning can prevent unforeseen developments or guarantee a smooth ride, from beginning to end. It is thus known that "there will be bumps in the road."[59] Common failure characteristics include, for example, slipped schedules, significant amounts of firefighting, which means that much time is spent on unanticipated problems, final results turn out to not come close to the original expectations, surprising decisions by any team member, failure to meet compliance requirements or late realization that the team cannot deliver on time.[60]

Needless to say, we faced some of those bumps along our own way. Starting out, we wanted to make use of existing and well established tools that had already been implemented by the digital humanities community.[61] Unfortunately, as it turns out, most of the tools that were funded in the past lack continued and continuous (technical) support after their initial funding periods

58 *A. Burdick et al.*, Digital_Humanities, 125.

59 *M. McBride*Project Management Basics, 118.

60 Cf. *M. McBride*, Project Management Basics, 118.

61 TextGrid and Weblicht for example are some of those tools that we tried to introduce but failed to do so in the end.

and were never adjusted to current technical developments. This means, we had the option to either enhance those tools by ourselves or find another way to run different applications consecutively. This process required a high investment of time as testing and adaptation of tools to our projects' needs and contexts turned out to be a challenging activity. Furthermore, most of the tools we wanted to use were somewhat 'techie' and thus an obstacle for most humanities' researchers involved. As all are used to functioning (mostly proprietary) software on very high levels it does not come easy to scale down and chum up with applications that need to be addressed and used differently. We tried to scale down the usage of such tools as much as possible and provided scholars with tools that could be handled easier.

Another obstacle that came up during the first few months was that either materials were too hard to process (e. g., no OCR was possible due to bad scans) or other materials were discovered which were suited better for the pilot phase. We therefore scaled down on different projects[62] and changed the focus for some other ones at that time. Moreover, after applying several steps of preprocessing, it was apparent that one project could definitely not use those results produced by digital methods. After considering and testing other methods and discussing other options it became obvious that perceptions and ideas for the pilot phase differed, and together as a team we decided to terminate this one project.

Another challenge we faced as a team did not primarily concern the working environment but social interactions within the team. As team members were trained in different cultures and had qualifications in various areas, it was not always easy to understand each other on a content level, and it sometimes felt – like in many other digital humanities projects – "that oftentimes collaboration with computer scientists [is] more like colonization by computer scientists."[63] We soon realized that working processes, communication practices and general disciplinary standards vary widely and conflicts must be addressed as soon as they appear. It was not clear at first how much time it would cost to translate these differing perceptions

62 Cf. for example the article by Heyder, Joris C. "Challenging the *Copia*. Ways to a Successful Big Data Analysis of Eighteenth-Century Magazines and Treatises on Art Connoisseurship" in this volume.

63 *Meeks, Elijah*, Digital Humanities as a Thunderdome, in: Journal of Digital Humanities 1, http://journalofdigitalhumanities.org/1-1/digital-humanities-as-thunderdome-by-elijah-meeks/ [accessed: 01.04.2019].

and how frequent discussions would revolve around ways of getting everyone on the same page. Nevertheless, we always tried to talk things out and not repeat errors made by other projects, like Project Bamboo the "greatest impediment [of which] was the lack of a shared vision among project leaders, development teams, and communications staff."[64] In the end, we were always able to gather around the same perception and work on the collective goals together. However, by only just describing these issues it becomes evident that collaboration needs an endless willingness to cooperate and work on arising challenges together.

5. Lessons learned – creating unique digital research projects as temporary endeavors

The preceding chapters have demonstrated that there is a lot of potential in doing planned digital research within limited boundaries such as collaborative research centers many humanities disciplines are already associated with from the start. By re-using already existing tools and doing digital humanities research with a "low end DH"[65] – or "minimalist understanding"[66] approach, a variety of outcomes can be realized in a short time. Interdisciplinary cooperation is usually a complex and challenging endeavor, but the effort pays off and opens up new spaces for research in between disciplinary boundaries and furthers innovative and thought-provoking ideas.

However, there are some lessons we learned during the execution of this pilot phase which need to be addressed during a next funding phase or any other project that is taken on by a diverse team composed of various professions and characters.

---

64 *Dombrowski, Quinn*, What Ever Happened to Project Bamboo?, in: Literary and Linguistic Computing (2014). Published by Oxford University Press on behalf of EADH. doi:10.1093/llc/fqu026.

65 *Burghardt, Manuel/Wolff, Christian*, Digital Humanities: Buzzword oder Strukturwandel der Geisteswissenschaften?, in: Blick in die Wissenschaft – Forschungsmagazin der Universität Regensburg 29 (2014), S. 40, https://dhregensburg.files.wordpress.com/…/wolff-burghardt-seiten-aus-biw_46-5.pdf [accessed: 01.04.2019].

66 *Kirsch, Adam*, Technology Is Taking Over English Departments – The false promise of the digital humanities, in: New Republic 2 (2014), https://newrepublic.com/article/117428/limits-digital-humanities-adam-kirsch [accessed: 01.04.2019].

(1) It is never too early to consider project management methods for implementing digital humanities projects. Not only does an initiating and planning phase prevent hasty research, it also gives every involved stakeholder some time to review aspects and parameters of the designated research team, research cycle and desired outcome. Furthermore, there is a chance that so-called "bumps in the road" will be discovered beforehand and resolved in time to still achieve satisfying results.
(2) Acknowledgment of different cultures of the involved disciplines is an important issue that needs to be addressed from the start. Discussing the various training and qualification standards in the arts and humanities, the social sciences and the sciences can help to nurture a mutual understanding that supports fruitful collaborations. The only chance to prevent misconceptions and the undue preference of any party is by clarifying the (learned) conceptions and keeping an on-going conversation alive to discuss similarities and differences so as to find a common path.
(3) Scholarly communication has to be expanded to not only discuss research within the known and learned disciplinary boundaries, but also with other researchers from other disciplines, fields or cultures and also with a wider public.[67] Though interdisciplinary cooperation can support this way of communicating it should not be ignored that an ongoing conversation is not always as easy to keep up as it may seem. One chance arising from this is to discuss conceptions and expectations through produced (intermediate) research results and new research questions that can combine disciplinary claims and standards.
(4) While it may be difficult to completely ignore academic hierarchies, it is certainly advisable to try to set them aside and thereby create a cooperation that recognizes skills and knowledge independently from age or standing within the academic community or in a university setting. Especially, when applying digital innovations, younger team members may have a different approach to dealing with challenges and can be motivated to think outside the box. Paired with the knowledge of scholars who have been in the system for a while, the results can exceed what

67 Also, through publication practices, see the article by Schlicht, Helene "Open Access, Open Data, Open Software? Proprietary Tools and Their Restrictions" in this volume.

would be possible individually. Also, by integrating developers, librarians and archivists, an intersection through the whole university can be created to benefit from every profession's specific knowledge and experience.

(5) The acceptance of varying paces of work as well as the acknowledgement that visibility of intermediate stages during the research cycle can differ among persons, disciplines and over time. Not every person works the same way and particularly in an academic setting it is not always obvious how one step follows the other. As long as there is a project plan with agreed deadlines, it should be acknowledged that people do research in very different ways but produce satisfying results, nevertheless.

All in all, each challenge that occurred during the collaboration helped to find useful ways of dealing with each problem. One aspect that we expect to be very valuable for further projects is to reflect on each collaboration. Through semi-structured interviews and additional discussions with all researchers involved we hope to optimize processes and outcomes to fit digital research cycles into a larger research context. Not only do already established sets of questions help to learn from other projects and prepare a better understanding for all parties from the start (see figure 2), it is also worth striving for norms and making each team member accountable from the start.[68]

By drawing on proposals from the well-established community of digital humanities practitioners, participants can be assured that generally accepted benefits from working in collaborative research teams can – up to a certain point – be achieved. Moreover, through the encounter of new technologies and as yet unknown research novel career paths can be pursued to enrich traditional humanities research.[69] As such it seems that the benefits of gaining new skills and creating new knowledge through cooperation in research settings cannot be stressed enough and that to plan and execute each step on the way secures improvement for researchers themselves, whole fields and disciplines and thus research itself.

68 *L. Siemens*, Project management and the digital humanist, 351.

69 Cf. for example "alt-academy – Alternative Academic Careers for Humanities Scholars", available at http://mediacommons.org/alt-ac/about [accessed: 01.2019].

Fig. 2: Unsworth's so-called deformation of questions from the Human Genome project to discover common experimental methods and problems in digital humanities projects which help to plan a project from the start.[70]

1.Queries: What questions will you want to answer? What types of data will you need to answer these questions? Which of these data types are permanent, which are temporary but important, and which will need to be regularly updated? What uses will you have for generic data in the next 5 years?

2.Tools: What protocols and tools for data submission, viewing, analysis, annotation, curation, comparison, and manipulation will you need to make maximal use of the data? What sorts of links among datasets will be useful?

3.Infrastructure: What critical infrastructures will be needed to support the queries you want to perform and what attributes should these infrastructures have? In what ways should they be flexible, and how should they stay current? How should they be maintained?

4.Standards: What kind of community-agreed standards are needed, e.g. controlled vocabularies, datatypes, annotations, and structures? How should these be defined and established?

6. Conclusion: What actually counts as a result?

One important lesson we learned during the pilot phase was about the differing conceptions of what a research result in different disciplines looks like. Confronted with questions surrounding what a meaningful and/or satisfying research result is (One that answers the question posed, or one that challenges views and expectations? Or only one that sparks new questions and directs further research?), it was obvious, that even if interdisciplinary collaboration appears to be successful for the stakeholders involved, it also depends on the interpretation of each party.

As different trainings, qualifications and disciplinary standards exist, the meaning of results was discussed with scholars themselves – especially in those cases where digital methods were applied. Together, we came up with the statement that every result produced through technological processing of the researched materials is a result that can be interpreted and used as a fruitful representation of the larger research done in each project. Even if an outcome cannot be interpreted within disciplinary boundaries, it alerts the researcher to a different picture and challenges perceptions and

70 Cf. *Unsworth, John,* Scholarly Primitives, http://www.people.virginia.edu/~jmu2m/Kings.5-00/primitives.html [accessed: 01.04.2019].

apprehensions.[71] So, even though Digital Humanities' "core commitments [are to] harmonize with the long-standing values of the humanistic tradition: the pursuit of analytical acuity and clarity, the making of effective arguments, the rigorous use of evidence, and communicative expressivity and efficacy",[72] it melds with "hands-on work with vastly expanded data sets, across media and through new couplings of the digital and the physical, resulting in definitions of and engagements with knowledge that encompass the entire human sensorium."[73] Thus, one of the biggest lessons learned is that it is valuable and promising to already include imaginings of results and their applicability within each context in the initiating and planning phase. Mutual expectations of each involved researcher, developer and project manager will consequently gain another angle to be implemented productively within each disciplinary tradition.

One of the researchers interviewed by Lynne Siemens on interdisciplinary collaboration points out that "while it is faster to do things alone, it is possible to go further when working in a team."[74] This quote comes very close to our experience during the pilot phase. By applying methods and tools from various fields to organize a testing environment for digital research in the humanities we were successful in acknowledging individual ideas, pace of work and overall goals in most of the cases. The contributions collected in this volume highlight different approaches to examine digital methods in each humanities discipline and demonstrate the wide variability of how results can and also should be interpreted when combining 'humanistic inquiry' and the 'digital'.

71 Cf. for example the article by Peters, Christine "Text Mining, Travel Writing, and the Semantics of the Global: An AntConc Analysis of Alexander von Humboldt's Reise in die Aequinoktial-Gegenden des Neuen Kontinents" in this volume where long-lasting research perceptions are challenged by the result of her interpretation.

72 *A. Burdick et al.*, Digital_Humanities, 124.

73 Cf. ibid., 124.

74 Siemens, Lynne. "'Faster Alone, Further Together': Reflections on INKE's Year Six", in Scholarly and Research Communication. Vol 7 No 2/3 (2016), https://src-online.ca/index.php/src/article/view/250/479 [accessed: 01.04.2019].

Bibliography

Allington, Daniel, The Managerial Humanities; or, Why the Digital Humanities Don't Exist. (31 Mar. 2013), http://www.danielallington.net/2013/03/the-managerial-humanities-or-why-the-digital-humanities-dont-exist/ [accessed: 01.04.2019].

Atlassian, Kanban, https://www.atlassian.com/agile/kanban [accessed: 01.04.2019].

Blanke, Tobias/Hedges, Mark/Dunn, Stuart, Arts and humanities e-science – Current practices and future challenges, in: Future Generation Computer Systems 25(2009)

Boyd, Jason/Siemens, Lynne, Project Management, DHSI@Congress 2014.

Burdick, Anne et al., Digital_Humanities, Cambridge, Mass.: MIT Press, 2012.

Burghardt, Manuel/Wolff, Christian, Digital Humanities: Buzzword oder Strukturwandel der Geisteswissenschaften?, in: Blick in die Wissenschaft – Forschungsmagazin der Universität Regensburg 29 (2014), S. 40, https://dhregensburg.files.wordpress.com/…/wolff-burghardt-seiten-aus-biw_46-5.pdf [accessed: 01.04.2019].

'Charter' from the Scholars' Lab at University of Virginia (Library), https://scholarslab.lib.virginia.edu/charter/ [accessed: 01.04.2019].

'Collaborators' Bill of Rights' in 'Off the Tracks: Laying New Lines for Digital Humanities Scholars', http://mcpress.media-commons.org/offthetracks/part-one-models-for-collaboration-career-paths-acquiring-institutional-support-and-transformation-in-the-field/a-collaboration/collaborators%E2%80%99-bill-of-rights/ [accessed: 01.04.2019].

DBpedia, Project Management, http://dbpedia.org/ontology/ResearchProject [accessed: 01.04.2019].

Dombrowski, Quinn, What Ever Happened to Project Bamboo?, in: Literary and Linguistic Computing (2014). Published by Oxford University Press on behalf of EADH. doi:10.1093/llc/fqu026.

Duxbury, Lesley/Grierson, Elizabeth M./Waite, Dianne (eds.), Thinking Through Practice: Art as Research in the Academy, Melbourne: RMIT Publishing, 2007.

Ermolaev, Natalia et al., Abstract: Project Management for the Digital Humanisties, DH2018, Mexico City, https://dh2018.adho.org/project-management-for-the-digital-humanities/ [accessed: 01.04.2019].

Henderson, Robin, Research Project Management – Key Concepts (2010), https://www.coursehero.com/file/13018002/Key-Concepts-in-Research-Project-Management-Robin-Henderson/ [accessed: 31.08.2019].

Hobbs, Peter, Project Management (Essential Managers), London: Dorling Kindersley, 2009.

Kirsch, Adam, Technology Is Taking Over English Departments – The false promise of the digital humanities, in: New Republic 2 (2014), https://newrepublic.com/article/117428/limits-digital-humanities-adam-kirsch [accessed: 01.04.2019].

McBride, Melanie, Project Management Basics, New York: Apress, 2016.

Meeks, Elijah, Digital Humanities as a Thunderdome, in: Journal of Digital Humanities 1, http://journalofdigitalhumanities.org/1-1/digital-humanities-as-thunderdome-by-elijah-meeks/ [accessed: 01.04.2019].

Meeks, Elijah, How Collaboration Works and How It Can Fail, in: Elijah Meeks, Digital Humanities Specialist – humanities software, visualization and analysis (blog), 27 May 2013, https://dhs.stanford.edu/natural-law/how-collaboration-works-and-how-it-can-fail/ [accessed: 01.04.2019].

Meeks, Elijah, The Digital Humanities as Content, in: Elijah Meeks, Digital Humanities Specialist (blog), 19 May 2011, https://dhs.stanford.edu/the-digital-humanities-as/the-digital-humanities-as-content/ [accessed: 01.04.2019].

Merriam Webster, Project Management, https://www.merriam-webster.com/dictionary/research [accessed: 01.04.2019].

Neubert (born Komprecht), Anna Maria/Röwenstrunk, Daniel, Projektmanagement in digitalen Forschungsprojekten – Ein Leitfaden für interdisziplinäre und kooperative Drittmittelprojekte im Umfeld digitaler Musikedition, in: Kristina Richts/Peter Stadler (eds.), »Ei, dem alten Herrn zoll' ich Achtung gern'«: Festschrift für Joachim Veit zum 60. Geburtstag, München: Allitera, 2016, 509–522.

OECD, Project Management, https://web.archive.org/web/20070219233912/http://stats.oecd.org/glossary/detail.asp?ID=2312 [accessed: 01.04.2019].

Paré, Anthony, Scholarship as collaboration: Towards a generous rhetoric., https://doctoralwriting.wordpress.com/2019/02/04/scholarship-as-collaboration-towards-a-generous-rhetoric/#more-2322 [accessed: 01.04.2019].

Project Management Institute, What is Project Management?, https://www.pmi.org/about/learn-about-pmi/what-is-project-management [accessed: 01.04.2019].

Siemens, Lynne, 'Faster Alone, Further Together': Reflections on INKE's Year Six, in: Scholarly and Research Communication 7 (2016), https://src-online.ca/index.php/src/article/view/250/479 [accessed: 01.04.2019]

Siemens, Lynne, Project management and the digital humanist, in: Constance Crompton/Richard J. Lane/Ray Siemens (eds.), Doing Digital Humanities: Practice, Training, Research, London: Routledge 2016, 343.

Siemens, Lynne, 'More Hands' means 'More Ideas': Collaboration in the Humanities", in: Humanities 4.3 (2015).

Simeone, Michael et al., Digging into data using new collaborative infrastructures supporting humanities–based computer science research, in: First Monday 16 (2011), https://firstmonday.org/ojs/index.php/fm/article/view/3372/2950 [accessed: 01.04.2019].

Svensson, Patrik, Big Digital Humanities: Imagining a Meeting Place for the Humanities and the Digital, Ann Arbor: University of Michigan Press, 2016.

Tabak, Edin, A Hybrid Model for Managing DH Projects, in: Digital Humanities Quarterly 11 (2017), http://digitalhumanities.org:8081/dhq/vol/11/1/000284/000284.html [accessed: 01.04.2019].

The World Café, http://www.theworldcafe.com/key-concepts-resources/world-cafe-method/ [accessed: 01.04.2019].

Unsworth, John, Scholarly Primitives, http://www.people.virginia.edu/~jmu2m/Kings.5-00/primitives.html [accessed: 01.04.2019].

Weinberg, Alvin M., Large-Scale Science on the United States, in: Science, New Series, Vol. 134, No. 3473 (Jul. 21, 1961), 161–164, http://www.jstor.org/stable/1708292 [accessed:01.04.2019].

Zennaro, Marco et al., Book Sprint: A New Model for Rapid Book Authoring and Content Development, in: International Journal of the Book 4 (2007), 105–109.