

7. Research Infrastructure funding as a tool for science governance in the humanities: A country case study of the Netherlands

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1. INTRODUCTION

While the bulk of Research Infrastructures (RIs) in Europe are built for the natural sciences, the humanities have not been left behind. Both on the European level, for example, through the inclusion of projects in the European Strategy Forum on Research Infrastructures (ESFRI) roadmaps and within different national contexts, there has been considerable enthusiasm for the development of RIs in the humanities. The Netherlands is a good example. After a relatively slow start in the early 2000s, when the Netherlands was seen as having to catch up on RI development, the past 15 years has seen an increase in funding across all scientific domains. In the humanities, ten projects with a total budget of €50 million have been funded since 2003. This chapter aims to contextualize and critically analyze this funding boom as an example of the general upswing that RI funding appears to have had in many European countries (see Bolliger and Griffiths, ch 5 in this volume), and thus studying RI funding as an instrument for science governance in the humanities.

RI projects included on the ESFRI roadmap are very heterogeneous, even to the extent that Hallonsten (2020: 11) argues that the roadmap should not be understood to represent a particular mode of science, but is rather a reflection of a political process. However, within the humanities, RI projects on the ESFRI roadmap are surprisingly homogeneous: they are all multipurpose, multisite repositories (in the terminology developed by Hallonsten 2020), and all have a strong digital component. I, therefore, characterize them in this chapter as digital RIs. This characterization also makes clear that infrastructure development in the humanities cannot be understood separately from the rise of digital humanities as a research area. Indeed, the institutionalization of digital humanities and the success of digital RI proposals go hand in hand.

This chapter highlights the relation between RI funding and science policy goals. While RIs in the humanities are not “Big Science” in the narrow sense (see Cramer et al, ch 1 in this volume) as defined through “big machines” and “big organizations”, it does involve “bigger” politics. The investments in RIs in the humanities are tied to big expectations in science policy. The humanities have – in the Dutch science policy context – struggled. The epistemic fragmentation of the humanities (Whitley 1984) is seen as problematic, and their societal value, evaluated in light of the perceived demands of the labor market, has been questioned ever since the 1980s. In contrast, the development of digital RIs in the humanities is seen to be a solution to this fragmentation as it is expected to increase collaboration in the domain as well as change the organization and substance of research done in this area.

The chapter is structured in the following way: First, I outline the body of literature that informs my understanding of the relation between science governance and research practices, and the tools available to governance actors, such as funding arrangements, which mediate science policy aims. Second, I contextualize the rise of funding for research infrastructure in the humanities by telling three histories: (1) the main aims of Dutch science policy and the position of the humanities within it, (2) the rise of digital humanities in the Netherlands and (3) the rise of funding arrangements for RIs. Third, I describe the funding boom for RIs in the humanities, specifically drawing attention to various early infrastructural projects and, most importantly, the Common Lab Research Infrastructure for the Arts and Humanities (CLARIAH). This RI project is the biggest collaboration in the field, drawing together the communities around the Common Language Resources and Technology Infrastructure (CLARIN) and Digital Research Infrastructure for the Arts and Humanities (DARIAH), and is seen in science policy as the defining digital RI for the humanities. Finally, I draw upon an analysis of science policy documents published or commissioned by the Ministry of Education, Culture and Science (Ministerie voor Onderwijs, Cultuur en Wetenschap, abbreviated OCW), the Royal Netherlands Academy of Arts and Science (Koninklijke Nederlandse Akademie van Wetenschappen, abbreviated KNAW), the Dutch Science Funding Organization (Nederlands Organisatie voor Wetenschappelijk Onderzoek, abbreviated NWO) and the Advisory Council for Science, Technology and Innovation (Adviesraad voor Wetenschap, Technologie en Innovatie, abbreviated AWTI) in the last 15 years to show the science policy expectations around CLARIAH. To confirm and contextualize the analysis, I interviewed two policymakers at the Ministry of Education, Culture and Science. In the conclusion I reflect on the feasibility of these expectations.

2. RESEARCH INFRASTRUCTURE FUNDING AS A TOOL FOR SCIENCE GOVERNANCE

A crucial question in the sociology of science, science policy studies and science and technology studies is the extent to which science governance actors – such as national governments, funding bodies and research organizations – can and should steer the content of research. Answering this question has been hampered by a disciplinary split between those that mainly study the governance of science and those that study research practices (Gläser and Laudel 2016). An emerging body of literature that aims to (re)connect these domains attempts to theorize the ways in which science governance actors try to influence the content of science in relation to the ways in which the content of science is determined by researchers themselves.

We know from past research that the strategic capabilities of science governance actors are limited (Whitley 2008; Gläser 2019). It is extremely difficult to steer research content because of the high level of uncertainty regarding what research problem should be prioritized and then deciding how it should be solved. Science governance actors do not usually have the competences to dictate a particular course of action. Moreover, many decisions are made during the research process; this often impedes the possibility of initially determining which research problem will be – and how it will be – studied. Thus, rather than direct steering, science governance actors try to influence how researchers do research.

In the sociology of science and science and technology studies, research has studied the ways research problems are defined in the context of the possibilities researchers have, so-called “doable” problems (Fujimura 1987), how research lines are developed in the context of the career system (Laudel 2017; Laudel and Bielick 2018) and how portfolios of research topics come to align with particular valuation regimes dominant in the science system (Rushforth et al 2019). A number of studies have also analyzed how particular forms of funding are used by researchers (Laudel and Gläser 2014; Franssen et al 2018; Whitley et al 2018).

In 2019, Gläser conceptualized four ways in which research organizations can try to influence research content: (1) by coercion through commanding or prescriptive rules; (2) by equipping through direct allocation or institutionalized allocation procedures; (3) by inducing through reward or institutionalized reward procedures; and (4) by suggesting reinterpretation of the situation through the transmission of specific information or through institutionalized belief systems.

Gläser (2019) argues that equipping through allocation of funding is often combined by what he calls the “reinterpretation of the situation”. For instance,

a university department might have a particular idea of what the “next big thing is” (e.g. artificial intelligence) and, accordingly, allocate funding to strengthen research on this particular topic in the organization (see also Laudel and Weyer 2014). Similarly, a government or funding body’s idea of “good science” might change – for instance, in the support of open science or by signing the San Francisco Declaration on Research Assessment (DORA) – and can consequently adapt its allocation procedures to such an “institutionalized belief system” or epistemic regime (Elzinga 1993).

Drawing upon this literature, I argue that we should understand science policy discourses as the preferred ways of understanding the organization, goal and societal purpose of scientific research. A science policy discourse thus consists of particular normative frames regarding what “good science” is.

One of the ways in which such normative frames are brought into the vicinity of researchers is through funding arrangements. Funding arrangements, through which research is funded, have particular epistemic dimensions in terms of size, project length and evaluation criteria. It is, therefore, necessary to understand these as epistemic devices that reconfigure research practices in particular ways (Law and Ruppert 2013). Each funding arrangement has particular affordances and constraints in terms of what can or cannot – or better, should and should not – be done with it (Franssen et al 2018). Funding arrangements are thus “charged” with particular normative frames.

RI funding is no exception. As I will show, funding arrangements for RIs and instrumentation are charged with normative frames that are aligned with the main aims articulated in the Dutch science policy discourse. The success of the humanities in these funding arrangements thus reflects the strengthening of a particular way of organizing humanities research and of particular research traditions within the humanities.

3. SETTING THE STAGE: THREE HISTORIES

To understand the significance of recent investments in digital RIs in the Dutch humanities, I propose that we need to take into account three significant histories. The first is the ways in which the humanities have been qualified in Dutch science policy since the late 1970s. The second is the development of funding arrangements for RIs in the 1990s and 2000s. The third is the emergence and institutionalization of digital humanities as a research area since the 1980s.

3.1 The Fragmentation of the Humanities as a Science Policy Problem

An important recurring element of Dutch science policy since the late 1970s is the ambition to increase collaboration between researchers and coordination

of research agendas through priority setting (Laudel and Weyer 2014; van der Meulen 2007; Blume and Spaapen 1988; Benneworth et al 2016). The increase of collaboration and coordination is meant to create critical mass around a limited number of focus points. This is deemed necessary because the science system is too small to produce good research in every research area; focusing on a limited number of research areas is assumed to lead to higher-quality research.

Departing from a more observational position in the 1960s and early 1970s, the Dutch government became increasingly involved in the coordination of research activities of scholars. Themed funding programs were introduced and disciplinary communities as well as universities were asked to plan and coordinate their research efforts (de Boer et al 2007). By the mid-1980s, accountability became integral as science governance actors looked for a more explicit relation between input and output, which introduced research evaluations into the Dutch university system (de Haan 1994). Moreover, the sector was expected to purposefully articulate the societal value of its research and teaching particularly in relation to the labor market. This curricula change in the humanities also influenced other areas; for instance, Benneworth, Gulbrandsen and Hazelkorn describe the transformation of the Spanish language and literature degree at Leiden University into a broader Latin American language and culture degree, as “reflecting labour market demands by also equipping students to deal with a foreign society as well as simply learning the language” (Benneworth et al 2016: 125).

Various policy programs, such as “Task allocation and concentration” (1982) and “Selective shrinkage and growth” (1986), championed the idea that critical mass around a limited number of research areas or in a limited number of departments was the best possibility for the Netherlands to reach a high-quality level in research. Under the influence of this ambitious policy, we saw the merger or disappearance of small subject fields and small departments in social science and humanities disciplines for which alternatives became available at other Dutch universities (Blume and Spaapen 1988; de Haan 1994: 74).

In light of fostering coordination between various researchers’ research agendas, and to engage more directly in research with clear societal relevance and demand, the epistemic fragmentation that characterizes many of the social sciences and humanities (as well as its academic curriculum) was a barrier. Research efforts should become better coordinated and more explicitly tied to the labour market; the result was problematic.

The subsequent friction between what science policy demanded and what most humanities disciplines traditionally offered was evident in various reports written about the state of the humanities between 1990 and 2010. The early 1990s saw the publication of two reports on the humanities by the advisory

council (RAWB 1990a, 1990b) and two national committees were installed to guide the humanities into the future (Benneworth et al 2016). These two committees, namely Staal (1991) and Vonhoff (1995), focused on the “small humanities” (the languages) and, specifically, the societal value of humanities research and teaching that was seemingly out of touch with the demands of the labor market. They aimed to articulate this societal value and proposed financial solutions in order to guarantee the future sustainability of the small humanities. Of course, the committees were critical of the policies of the 1980s that were attempting to streamline and rationalize humanities research and teaching. Priority setting in research through the concentration of funding, however, continued through repeated calls for greater collaboration to develop critical mass around certain independently chosen research areas.

In the 2010 report, “Focus and mass in scientific research: The Dutch research portfolio in international perspective”, Van de Besselaar and Horlings (2010) reflected upon science policy in the 2000s and its continued emphasis on creating focus and critical mass in the Dutch science system. They did not include the social sciences and humanities in their report, due to a lack of data, but it is evident that the focus of Dutch science policy had not changed. Moreover, the increasing focus on (economic) valorization and the introduction of policies to aid in public-private partnerships in the 2000s increased the need to articulate the societal value of the humanities even further and in an increasingly narrow direction (Benneworth et al 2016). Two committees, Gerritsen (2002) and Cohen (2008), again wrote reports about the humanities and its values and perspectives in light of these policy demands.

While the Gerritsen report did not become influential because of political upheaval, the Cohen report was followed by the establishment of a committee that implemented some of the recommendations made in this report, including greater regulation of the language studies portfolios of the Dutch universities. This committee received a budget of about €15 million a year. Most of this funding was distributed across humanities faculties and was used to solve local budgetary problems and make small investments. Benneworth et al (2016) summarize and argue that much has changed in terms of societal engagement in the research practices of humanities scholars. However, they also show that in the science policy discourse, to paraphrase, the humanities at large has been viewed as being in crisis, albeit without collapse, for the past 30 years:

The issues at the end of the period [1982–2012] appear to be precisely the same as those at the start, a fragmented humanities field, too introverted and unable to steer itself to produce value for Dutch society or capable of being held accountable to government for its excellence. At least that is the impression that one would get if one’s view of the public view of humanities was formed entirely by what elites said about humanities rather than to what humanities researchers were actually doing. (Benneworth et al 2016: 135)

3.2 The Emergence of (Competitive) Funding Arrangements for Research Infrastructure

Most of the funding for instrumentation and other technical resources in the 1980s was encapsulated in the block funding stream received by universities (Versleijen 2007). This changed as competitive funding arrangements became more popular across the science system. The change included funding arrangements for instrumentation and, later on, also for RI projects.

By the 1990s, the Dutch funding organization NWO developed a funding arrangement called NWO Investment Grant Large. At that time the funding arrangement was specifically meant to fund narrowly defined instrumentation. Project proposals aimed at funding had to have a budget above €900 000 (the total budget at that time was approximately €13.5 million per round). The scope needed to exceed individual institutions. The instrumentation needed to be accessible country-wide and its use had to foster national research priorities. The funding arrangement thus assumed (inter)disciplinary collaboration and coordination of research agendas across departments at different universities and among (sub)disciplines. These evaluation criteria matched the science policy's goal to increase collaboration and coordination as detailed above.

NWO Investment Grant Large was initially aimed at instrumentation that did not include, for instance, digitization of collections. It was only in 1999 that the funding arrangement was broadened and came to recognize the humanities and social sciences data collection efforts as infrastructural technology, writing: “[N]ext to acquisition [of instrumentation] the start and development of data-collection, as well as accompanying software and bibliographies is included if it makes an evident and nationally accessible contribution to the infrastructure” (NWO 1999). This was an important change in the funding arrangement and meant that instrumentation funding became available across a large number of scientific domains. Large instrumentation became, more generally, increasingly in focus within Dutch science policy at the turn of the millennium. A RAND Europe report for two ministries was published in 2001. The report's research subject, “scientific instrumentation”, aimed to answer whether additional large instrumentation investments in the Dutch science system were needed. It was concluded that there was a projected need in the science system for investments in instrumentation (which included larger infrastructural technology) of an estimated amount of 3000 million guilders (or €1500 million).

With the establishment of the ESFRI in 2002, investment in RIs quickly became important in Dutch science policy. The preparations for the ESFRI roadmap, started in 2004 (Bollinger and Griffiths, ch 5 in this volume), gave a reason to think about the Dutch participation in these roadmap projects. A working group on “large-scale research infrastructures” was established and

released an influential report in 2005. They argued, echoing the RAND Europe report, that the Netherlands was lagging behind in its involvement in RI development and that significant funds had to be made available in the coming years to bring the Netherlands into a leading position in European RI developments. While the resulting investments were smaller than the work group requested, nowhere near the €1500 million that RAND Europe argued was needed, there had been ongoing investments in RI projects of various sizes (beyond the NWO Investment Grant Large) since 2005.

An immediate investment was made to fund five projects in a so-called NWO-BIG round that included a €12 million project for the large-scale digitization of newspapers by the Dutch Royal Library (Versleijen 2007: 63). In addition to this, the development of a Dutch roadmap for RIs was proposed. The roadmap criteria were largely the same as ESFRI's, to ensure that the Dutch investments would be in line with European investments. This indeed happened; yet, another new committee was established to develop the first Dutch roadmaps. The committee established 11 evaluation criteria. Six were taken directly from ESFRI and five were specific to the Netherlands. The latter are interesting because they provided insight into the role of RIs in the Dutch science system. These five evaluation criteria were: (1) whether the RI provided a possible focus point for the Netherlands, (2) whether there was a critical mass of researchers in the Dutch science system, (3) whether there was sufficient institutional embedding, (4) whether there was a proven will to collaborate in the field and (5) whether the project aligned with broader societal developments (Commissie Nationale Roadmap Grootchalige Onderzoeksfaciliteiten 2008: 17–19).

Similar to NWO Investment Grant Large, this funding arrangement's evaluation criteria synced with the intention formulated in the science policy discourse outlined above. The Dutch roadmap for RIs was renewed in 2012 and again in 2016, and every few years (2012, 2014, 2018) NWO has organized funding invitations for projects included on the roadmap. Investments in RIs have thus significantly increased over the past 15 years, largely in line with European investments in RIs.

3.3 The Emergence and Institutionalization of Digital Humanities in the Netherlands

The rise of digital humanities as an interdisciplinary research area was preceded by the rise of computational methods in specific humanities disciplines. Arguably the most important, and most influential, was the development of computational methods in linguistics. The field of computational linguistics dates back to the 1950s (Van der Beek 2010) and many of its analytical tools are used in digital humanities research today. However, crucially,

digital humanities is a broader research area than computational linguistics. Stemmatology, for instance, which “concerns itself with the problem of the genealogy of variant versions of manuscripts and print books” (van Zundert and van Dalen-Oskam 2014: 4) draws on philology and bio-informatics. Similarly, digital humanities research in art history and media studies employs a broader range of research methods.

Digital humanities emerged in “computer and humanities” groups in the second half of the 1980s at universities across the Netherlands. Most famous in that period was the Alfa-informatics lab at the University of Groningen, established in 1986 (van Zundert and van Dalen-Oskam 2014). This first wave of interdisciplinary “computer and humanities” groups, however, turned out to lead a fragile existence as they were often considered information technology helpdesks, and most were consequently defunded in the early 1990s when such help was considered no longer necessary (van Zundert and van Dalen-Oskam 2014). A few groups survived, in Groningen and Utrecht, and in the 1990s the KNAW became a more prominent actor in the development of digital humanities in the Netherlands.

The humanities institutes of the KNAW were, and are still, “collection-heavy”, having had a function to develop an archive that predates their function as research organizations. Digitization initiatives in the 1990s were primarily focused on archives that were deemed crucial for cultural heritage. This is also why the Royal Library became a key actor in digital humanities in the same period, as well as the newly established Netherlands Institute for Sound and Vision. While digital humanities as a research area was already well established, its institutionalization in the KNAW as a research area only then, in the mid-1990s, became a topic of interest.

At the KNAW, both policymakers and researchers became increasingly aware throughout the 1990s what digitization would mean for collections and information management, as well as for research practices. The influence of digitization on research practices, and the new opportunities it would bring, was the subject of a report written in 1997 by the board of humanities of the KNAW. Two additional studies under the auspices of the AWTI, that reflect on digitization in the humanities and social sciences, were also released (Drosterij et al 2000; Bijker and Peperkamp 2002). The KNAW also invested in digital humanities research itself. At the end of the 1990s, the KNAW started the NIWI, an institute for scientific information that had a small but active digital humanities group called NERDI (van Zundert and van Dalen-Oskam 2014: 6). Out of the NERDI group, the Virtual Knowledge Studio (2005–10) emerged as an institute for what was then called “e-humanities”. The Virtual Knowledge Studio was later replaced by the e-humanities group (2011–16), led by Sally Wyatt. This smaller research group sustained a network of scholars and projects working in digital humanities at the different KNAW institutes. In 2016,

three humanities institutes of the KNAW intensified their collaboration under the name of the Humanities Cluster, and a new digital humanities group was formed led by Marieke van Erp. At the same time, pockets of digital humanities research continue to be active among the various KNAW institutes. Therefore, the KNAW was a crucial actor in the development of digital humanities in the Netherlands. In the next section, the role of the KNAW institutes will also become apparent, because, in one way or another, at least one KNAW institute participated in all RI projects in the humanities funded since the early 2000s.

4. THE DIGITAL RI FUNDING BOOM IN THE HUMANITIES

In the previous section, I told three short histories that serve as a backdrop for our understanding of the meaning and consequences for the sharp increase in funding for digital RI projects in the humanities after 2003. I detailed how the fragmentation and perceived lack of societal value of the humanities was an ongoing concern in science policy since the late 1970s. Furthermore, I traced the rise of instrumentation and RI funding arrangements, including their evaluation criteria. Lastly, I described the emergence and institutionalization of digital humanities as a research area, specifically the increasingly dominant position of the KNAW in this process. In this section, I first describe the funding boom that happened after 2003 in funding for digital RI projects in digital humanities. Second, I connect this development with the mainstreaming of digital humanities research more broadly and describe the promise that digital humanities research, specifically as envisioned to be delivered by CLARIAH, holds in the science policy discourse.

4.1 The Digital Research Infrastructure Funding Boom

The first humanities project that received funding through NWO Investment Grant Large was “Life Courses in Context” (€3.1 million), a project in socio-economic history, which started in 2003, only two years after the RAND Europe report. It was located primarily at the International Institute of Social History (a KNAW institute). The project extended the already existing project that established a historical sample of the population of the Netherlands, covering microdata of over 40 000 individuals, born between 1863 and 1922. It is important to note that this project had a much longer history that dated back to the 1980s, and had received funding from a variety of different sources. This digital RI, and the underlying research paradigm, precede this specific grant. There was already a tradition of using large quantitative databases, computation and statistical methods in socio-economic history. This is also true for other humanities fields that received infrastructure funding later on; there has

always been a research tradition in place (Agar 2006; van der Beek 2010; van Zundert and van Dalen-Oskam 2014). What was new, however, was that this type of research was suddenly actively supported through a large infrastructural grant of the main Dutch funding organization.

“Life courses in context” was thus significant because it showed that humanities research could be funded through a funding arrangement traditionally reserved for engineering and natural sciences. It showed, moreover, that their request for infrastructural funding was institutionally legitimate. Of course, this RI was, at this point, of limited size. The sources that were digitalized covered a hallway in the institute; the data were distributed online on a simple website and were relatively small. In terms of collaboration, the data were used within different groups of socio-economic history as well as by historical sociologists and in historical research in health (for overviews see Kok et al 2009; Kok and Wouters 2013). But this project was just the start of a larger development in the Netherlands that coincided with the increasing focus on infrastructural funding on the European level as described above.

After the establishment of the ESFRI, the NWO-BIG supported a project to digitize a large collection of newspapers led by the Royal Library. After the first Dutch roadmap for RIs was developed, a subsequent funding call in 2008 led to funding for CLARIN-NL (€9 million); a digital RI in the field of computational linguistics.

In the second round of funding in 2012, a collaboration between CLARIN-NL and DARIAH-NL proposed to develop CLARIAH, a digital RI that would contribute to both the European CLARIN and DARIAH projects and develop a virtual research environment for the humanities. This project was spearheaded by three institutes of the KNAW, as well as Utrecht University, the University of Amsterdam, the Netherlands Institute for Sound and Vision, and included participation of all other Dutch universities and important archives and heritage institutions. The proposal was reviewed favorably and received €1 million in seed funding. In 2014, the revised CLARIAH proposal, which proposed to focus its efforts on the disciplines of linguistics, socio-economic history and media studies as frontrunners in (computation and) digitization of research, was fully funded (€12 million). A new proposal that extended the CLARIAH infrastructure to more humanities disciplines (called CLARIAH-PLUS) received funding in 2018 (€14 million).

The collaborative spirit of the different disciplinary communities (in particular the merger of CLARIN-NL and DARIAH-NL) was received with much agreement according to the policymakers at the Ministry of Education, Culture and Science I interviewed, and aligns with the evaluation criteria discussed above that were also used in the roadmap funding arrangement. CLARIN and CLARIAH showed that humanities scholars could cooperate across disciplinary and institutional boundaries.

Next to these large grants for CLARIN-NL, CLARIAH and CLARIAH-PLUS, a number of smaller projects have been funded. Through the above-mentioned NWO Investment Grant Large, five humanities projects were funded in just four funding rounds (between 2010 and 2018). In all of them, institutes of the KNAW were involved as well as other partners already active in CLARIN and CLARIAH. Moreover, all developed their digital research infrastructure in collaboration with either CLARIN or CLARIAH. Taalportaal (2010, €1.7 million), in linguistics, was developed in close collaboration with CLARIN. CLIO-INFRA (2010, €1.4 million), in socio-economic history, was initially part of the infrastructure bid of DARIAH that was unsuccessful, but went on to get funding through NWO Investment Grant Large in 2010 and was also further developed in CLARIAH. Nederlab (2012, €2 million), in linguistics and literary studies, was developed in close collaboration with – and even received additional funding from – both the CLARIN- and CLARIAH-consortia. Both Golden Agents (2016, €3.6 million), social and cultural history, and REPUBLIC (2018, €2.5 million), political history, are explicitly embedded in CLARIAH. The amounts indicated above are all based on the NWO contribution to the project which excludes in-kind or financial contributions of institutes themselves (NWO 2019).

Between 2003 and 2018, ten projects with a combined budget of €50 million were all funded with the aim to develop digital RIs in the humanities. The projects targeted frontrunners in digitization, notably linguistics and various subdisciplines of history. However, other disciplines such as media studies and literary studies are now also being targeted in these projects. Involved institutes include KNAW institutes, universities as well as archives and cultural heritage organizations. Crucially, different digital research infrastructure projects actively engage with existing, larger initiatives, notably CLARIN and especially CLARIAH, arguing that their work will build on or are compatible with these larger RIs.

4.2 Science Policy and the Promise of CLARIAH

It is not a coincidence that newer and smaller projects actively engage with the larger research infrastructure projects, notably with CLARIAH. From 2015 onwards, CLARIAH was positioned, by science policy stakeholders, as the main digital RI in the humanities in the Netherlands in relation to which new, smaller digital projects could and should be developed. This meant that new digital RIs, for instance, used the generic linked “open data” database structure developed in CLARIAH or borrowed particular elements from it, such as authentication and provenance middleware. Moreover, in relation to CLARIAH, digital humanities research was increasingly mainstreamed through other funding arrangements at NWO as well. For instance, digitization

of sources was introduced as a legitimate part of any project funding application at NWO. This was crucial for many digital humanities projects proposals that would often need to do some work on digitization of sources. Also, a number of funding arrangements were launched for research project funding with a strong digital component. For instance, different social science and humanities funding arrangements of the E-Science Center were established, including a number of thematic programs for collaborations between academia and creative industries including CATCH, which focused on cultural heritage.

In a strategy document by the board for humanities of NWO, called “humanities aimed for the future” that outlined some of these changes, the mainstreaming of digital humanities was explained as well as the role of the CLARIAH infrastructure:

Digital humanities is an undercurrent in all open instruments and thematic programs of the domain [...] The developments in digital humanities will, as said, be present in all instruments and programs and not in a single specific program. For NWO-Humanities it is of importance that in all these developments CLARIAH is taken as the basis for the infrastructural facilities in the humanities. (NWO 2015: 7/18)

While the domain as a whole is considered to be in crisis, a particular aspect of humanities research – building large digital RIs, and to an extent digital humanities research itself – is increasingly successful in obtaining funding. This development is enabled by the main funding agency in the Netherlands, as well as other important science policy actors, that actively shape science policy and funding arrangements to support digitization in the humanities. But why, then, do they do this?

Drawing on analysis of science policy documents since 2000, I argue that infrastructural projects, and specifically CLARIAH, are seen to offer the promise of increasing integration of a domain that is traditionally regarded as epistemically fragmented, as I have shown above.

The first effect is the revolutionary possibilities that these digital RIs (and the big data contained in them) will have to offer the sciences (e.g. Leonelli 2016). This element is clearly visible in the policy documents related to the humanities. They speak of a digital revolution happening in the humanities that will fundamentally alter how humanities research is organized, including its methodologies and theories. In the 2010–15 strategic vision of the KNAW, this is neatly summarized:

The unique collections and datasources of the humanities institutes are the basis for the development of an advanced technological infrastructure (“computational humanities”) that will lead to a methodological and theoretical renewal of research in the humanities [...] the foreseen methodological renewal will make it possible

to discover in data sources, that are until now seen as (relatively) independent from each other, patterns and relations that will lead to significant new insights in the nature and the development of complex societal processes. (KNAW 2010: 23)

The unique character of this shift is highlighted in a number of policy documents including the 2008 report by Cohen (2008: 16), and the KNAW report on the future of the humanities (KNAW 2012), quoted directly below. The NWO report on large-scale RIs in the humanities (NWO 2013) even starts in its very first sentence highlighting the “fundamental change” that the introduction of the computer and digitization of sources brings to the humanities. The consequences include a change in methodologies and theories, as well as the organization of research, illustrated here: “The large-scale infrastructure and the costly, continuous maintenance of this all demand new competences and ask different requirements from investments and long-term financing. These developments ask to take stock and reflect on the work and work processes” (KNAW 2012: 12).

The coordination required to develop and maintain these types of costly digital RIs is seen to be delivered through CLARIAH. The NWO strategy document regarding the roadmap for RIs in the humanities explains: “CLARIAH and the collaborating initiatives within it guarantees a further development of an accessible large research infrastructure in which many small digital infrastructural facilities are brought together and new activities are executed in a coordinated way” (NWO 2013: 2).

A second effect is the inter- and trans-disciplinary nature of the digital humanities that will influence the humanities as a whole. Research becomes interdisciplinary because knowledge from the engineering and natural sciences are introduced in the humanities through its new involvement with large data sets. As the vision document describes:

[T]here is increased interdisciplinarity. This is not merely a matter of collaboration between disciplines in the humanities, but especially the cross-pollination between humanities and informatics, between humanities and natural sciences and between humanities and social sciences. The use of knowledge, methods, and techniques from other scientific domains will provide the humanities with new insights. (NWO 2015: 7)

But research also becomes trans-disciplinary within the humanities as the connection of data sets gives scholars the opportunity, or forces them, to ask questions beyond their discipline. For instance, the linking of entirely different corpora (letters, artworks, state documents, etc.) or corpora from different periods will raise research questions that connect and transcend disciplines requiring socio-economic historians to work with art historians, linguists

and political historians and develop new integrated theoretical frameworks. A description of CLARIAH summarizes this vision:

CLARIAH (Common Lab Research Infrastructure for the Arts and Humanities) develops a digital infrastructure that combines large collections of data and software from different areas of the humanities. In this way humanities scholars – from historians, literary scholars, archeologists to linguists, speech technologists and media scholars – can study discipline-transcending questions about, for example, cultural and societal change. CLARIAH receives 12 million for the development of research instruments and training of researchers. This project is of major importance for the development of the humanities in the Netherlands; a digital revolution is going on that will drastically change how research is done. The potential societal impact is similarly large. (NWO 2015: 14)

A third effect is the increasing societal value of digital humanities research. The first quote from the KNAW 2010–15 strategy document connects the infrastructural development and its revolutionary consequences to the humanities that can give new insights in societal questions; it reads: “Because of this, the humanities within the Academy will be able to offer new directions for solutions of societal questions [...] regarding these questions the institutes intend, on the basis of excellent scientific research, to deliver a substantial contribution to the political and societal policy agenda” (KNAW 2010: 23). This, I would suggest, relates to the longer discussion on the value of the humanities (and the sciences in general) in and for society that was the topic of discussion in all the reports of the committees outlined above about the humanities in the 1990s and 2000s. The digital turn in the humanities is expected to alter how knowledge is produced, what type of knowledge is produced and, consequently, also the societal value of this knowledge.

5. GOVERNING THE HUMANITIES THROUGH RESEARCH INFRASTRUCTURE FUNDING

In this chapter, I conceptualized RI funding as a particular tool that science governance actors can use to steer research. I argue that funding arrangements can be regarded as part of particular science policy discourses and, in that capacity, enact particular normative frames of what “good science” is.

I show that in Dutch science policy since the late 1970s, two ideas regarding science are dominant. The first is that there should be extensive coordination of research agendas across disciplines so that a critical mass of researchers could arise around certain research areas. The second is that science should produce societal value, in particular by research and teaching that aligns with the demands of the labor market. The humanities did not fit well with any of these ideas; they were considered epistemically fragmented and not producing

sufficient societal value. Committee after committee was put into place to develop plans in order to “solve” the problem of the humanities.

While the domain at large was thus considered to be in crisis from the late 1970s onward, it did remarkably well in acquiring funding to develop digital RIs. Since 2003, ten projects with a total budget of €50 million have been awarded in the humanities. In comparison to, for instance, the social sciences, this is a much larger part of the total budget for RI development than the humanities ever received. This raises the question why the humanities have been so successful. Based on an analysis of policy documents, I argue that digital RIs in the humanities, and the related emerging research area of digital humanities, are seen to foster collaboration and coordination in the humanities, and thus might solve the fragmentation the humanities are considered to suffer from. CLARIAH is in this regard considered as the core digital research infrastructure through which large-scale change of research practices in the humanities might occur.

While, in this way, I showed how two tools of science governance – introduction of normative frames of “good science” and that of funding arrangements – were put into place. I have not yet discussed the effects these interventions have had on research practices in the humanities. This is a crucial question, as I have outlined in the theoretical framework, and one that I can only give a preliminary answer to. Based on insights from science and technology studies, as well as preliminary empirical observations, there is reason to be cautious about any claims of technology-induced paradigm shifts (e.g. van Zundert 2012; Agar 2006).

Jon Agar (2006), in his study of computerization, showed that computers were predominantly introduced to reproduce already existing manual computational methods. In the Dutch humanities, we similarly see that fields that have a strong tradition of quantitative and computational methodologies, such as linguistics and socio-economic history, are also early adopters of the digitization of research practices. The introduction of digital research environments to search data sources seems to also be adopted on a larger scale, as it reproduces in a digital environment searching in archives and libraries (Kemman et al 2014). But does it go beyond that?

What we can intuit is that the investment of €50 million in digital RIs has, at the very least, strengthened particular epistemic communities within the humanities that already used computational methodologies. Moreover, digital humanities were also taken mainstream through other funding arrangements, which might have strengthened the same research communities. As funding success rates in the main “open competition” in the humanities are extremely low, this funding source might have enabled computationally minded scholars to continue their research lines while other, non-computationally minded scholars might have had to abandon their research, or academia, altogether.

A crucial empirical question for the future is the extent to which digital humanities can be understood as a coherent, scholarly community of digital research in the humanities. Infrastructural projects, as discussed here, often develop databases with easy-to-navigate graphical user interfaces that incorporate certain generic analytical tools (for instance for network analysis). These digital research environments will serve a particular subsection of humanists and allow for digital access to data sources, and possibly the use of digital analytical tools (when these tools can be used to answer the specific questions users have). A different subset of digital humanists, however, do not use generic tools but develop tools themselves, drawing on, for instance, computational linguistics and data science. These scholars usually use more advanced computational techniques for which coding skills are necessary and use software packages such as R and Python. An important empirical question becomes, then, to what extent different types of digital research practices in the humanities can be served within these digital RIs. This is an especially pertinent question in relation to the distribution of research funding across different types of scholars. If available funding is invested in large digital RIs, what is left for computational approaches that do not fit within these?

On the European level, combining the efforts of DARIAH-NL and CLARIN-NL into a single RI is gaining traction in other countries. German (CLARIAH-DE), Flemish (CLARIAH-BE) and Austrian (CLARIAH-AT) varieties exist or have recently received funding. As such, the rise of RIs, in relation to the mainstreaming of digital humanities, is not a Dutch affair. The integration of research efforts in Europe through, amongst others, the European Research Area, allowed for European-level science policy and research infrastructure development to happen (Cramer et al, ch 1 in this volume; Ulnicane, ch 4 in this volume). The example of CLARIAH shows that RIs in the humanities on a national level demonstrate isomorphic tendencies as national research communities follow and adapt to ongoing infrastructural developments.

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