The Symbolic Power of the Research Excellence Framework.

Evidence from a case study on the individual and collective adaptation of British Sociologists.

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Abstract:

According to the Academic Capitalism-approach, research assessments have a negative impact on research autonomy and research diversity. They urge scholars to tailor their research in order to obtain funding and positive evaluations, which are indispensable for career advancement based on a limited set of quality-criteria. This is supposed to reduce the potential to understand phenomena and to diminish research diversity by nudging scholars to tailor their research towards short-termed, applied research. Our paper seeks to analyse the impact of research assessments on research autonomy, research diversity and the adaptation of scholars to quality criteria imposed by assessments. To do so, we focus on the impact of the British Research Excellence Framework (REF) on British sociology. In line with the Academic Capitalism-approach and Habitus-Fieldtheory, we suggest that the Research Excellence Framework exerts symbolic power and symbolic dominance on scholars. This affects both habitus and working conditions of scholars. To analyse the impact of the REF, a convergent parallel mixed methods-design is applied. On the individual level, we analysed interview data of six British sociologists. On the collective level, we analysed abstracts of 2546 REF submissions using Latent Dirichlet Allocation (LDA) and the Jensen-Shannon divergence. Our qualitative findings show that sociologists adapt by “focusing on mainstream topics” and apply strategies of “publication management”. Furthermore, “research profile development” and “recruitment of REFable” scholars is forced by the university management. The LDA uncovers a collective focus on a limited number of research foci including youth sociology, medical sociology, gender studies, or political sociology. The Jensen-Shannon divergence indicates research specialisation within universities, but low research diversity between universities. Taken together, the symbolic power and symbolic dominance of the REF urge scholars to use gaming the system strategies mirrored by low research diversity and high research specialisation on the collective level.

Keywords: Research Excellence Framework; Symbolic Power; Symbolic Dominance; Habitus-Fieldtheory; Academic Capitalism; Narrative Interviews; Natural Language Processing; Topic Modeling; Latent Dirichlet Allocation; Mixed Methods; Sociology of Sociology

Word Count: 8212

1. Introduction

Past research reveals a negative effect of research assessments on research autonomy and research diversity (Lee, Pham and Gu 2013; McNay 2007; Münch 2014; Reitz 2017). They do

so for two reasons. Firstly, the introduction of performance indicators is tied to career opportunities and the distribution of research grants. In this vein, scholars change their research strategies in line with Campbell's law (Campbell 1976) and conduct research that meets quality criteria and abandon research not covered by those criteria (see Gruber 2014; Hazelkorn 2011). Secondly, research assessments introduce professionalised governance structures in universities and ministries in order to ensure that scholars align their research with the quality criteria. These structures aim to increase the efficiency of scholars and nudge them to conduct applied research perceived as relevant by stakeholders (Gläser and Laudel 2016; Shattock 2012; Tight 2019). The interaction between the two effects introduced by research assessments narrows research diversity and has a negative impact on research autonomy (Hamann 2016; Münch 2014, 2015; Whitley, Gläser and Laudel 2018).

In the article at hand, we investigate the effects of research assessments on adaptation strategies of scholars, research autonomy and research diversity using the example of the British Research Excellence Framework (REF) and British sociology. We do so, since the REF and its predecessors, the Research Assessment Exercise (RAE) and Research Selectivity Exercise (RSE), provide a natural experiment on the influence of research assessments on academia. We expect to see adaptations on individual and collective levels to REF quality criteria, since the REF and its predecessors aimed to oust "unproductive" scholars from academia and nudge the remaining ones to conduct research on topics perceived as relevant by stakeholders, e.g. improving economic competitiveness or the national health care system (Tight 2019). We chose sociology as a case study, since it is a highly diverse, internally contested, multiparadigmatic and entrenched discipline (Moody and Light 2006; Schwemmer and Wieczorek 2019). Due to the fragmented nature of sociology, the REF is expected to have highly visible negative impacts on research diversity and research autonomy.

Since the REF is assumed to replace the opportunity to conduct research for the sake of generating knowledge with the quest for obtaining funding and acknowledgement by stakeholders, it generates a reality *sui generis* and exerts symbolic power and symbolic domination (Bourdieu 2000: 171–191). To adapt, scholars must change dispositions present in their habitus to succeed in academic competition, the competition for grants and positive evaluations outlined in the Academic Capitalism approach developed by Münch (2014, 2015). We therefore link the Academic Capitalism approach with Habitus Fieldtheory to capture the effects of the REF on a theoretical level.

On empirical grounds, we apply a convergent mixed methods approach. We link narrative interviews with 6 sociologists with a Latent Dirichlet Allocation (LDA) to investigate the REF's impact on individual scholars and find out whether a collective adaptation has taken place. Against this backdrop, we investigate the following three research questions:

1. What strategies do British sociologists adapt to in order to meet the REF performance criteria?
2. What is the REF's impact on working conditions at the sociology departments?
3. What is the REF's impact on research specialisation and research diversity of British sociology on the collective level?

In order to answer these research questions, the article is structured as follows: In section 2, we briefly introduce the REF and its predecessors providing an overview of the REF quality categories. We then proceed with introducing the theoretical concepts drawn from the Academic Capitalism approach and Habitus Fieldtheory in section 3. In chapter 4, we introduce the convergent parallel mixed methods design used to answer the three research questions. Relying on interviews with 6 British sociologists and abstract data of 2546 research submissions, we link narrative interviews, LDA and Jensen-Shannon divergence to investigate the impact of the REF on British sociology. In chapter 5, we summarize the main findings of our qualitative analysis. Our findings indicate that British sociologists cope with the symbolic power exerted by the REF by tailoring their research towards mainstream topics and by changing their publication strategy. Such strategies are aligned to research profiles promoted by the university management and the recruitment of REFable scholars. In chapter 6, we examine the extent of adaptations of British sociologists to the REF on a collective level. Our findings show that British sociologists publish predominantly in sociology journals, while the topics covered are associated with public health, migration, policy-analysis and political movements, urban studies, youth and educational sociology, gender studies and research methodology. The Jensen-Shannon divergence indicates research specialisation and profile development on the university level. Low levels of divergence between universities are detected, indicating low levels of research diversity. We complete our paper by summarising our findings, discussing the limitations and weaknesses of our approach in addition to highlight future research directions in section 7.

2. A brief overview on the REF and its predecessors

The REF's roots can be traced back to the Jarred- and Lindop-Reports of 1985. Both reports aimed at introducing a quality-assurance and accountability system in higher education (Harvey 2005). They were accompanied by a sentiment of distrust towards scholars, who were perceived as tax wasters and as being insensitive to societal, economic and technological problems. In this context, the University Grants Committee under the leadership of Peter Swinnerton Dyer initiated the Research Selectivity Exercise to prevent the waste of tax money (Kogan and Henney 2000; Shattock 2012). It aimed to increase research effectiveness of universities and to allocate funding to most productive universities with best quality research. New Public Management should ensure the rise of productivity by introducing managerial practices including project based employment, benchmarking, or total quality management. Additionally, accountability measures, output orientation and quasi-markets were introduced on a systemic level. These reforms led to the professionalisation of a university management and introduced mission agencies such as the Higher Education Funding Council of England (HEFCE) to control research effectiveness.

The second RES of 1989 introduced a peer review procedure mediated by subject-specific expert panels. Polytechnics were granted the status of full universities to increase competition among universities for funding and prestige. This increase in competition was expected to improve the efficacy of funding allocation to nudge scholars to focus their research on immediate social, economic, political and technological problems.

The RES was followed by the RAE, which was conducted in 1992, 1996, 2001 and 2008. From 1992 to 2001, disciplines at participating universities were ranked categorically (the full list of definitions is provided in appendix A). In 2008, the rating system changed from assignment to a single quality category to a quality profile. Quality profiles were aggregated from the submissions of scholars from each subject. Scholars could send up to four submissions, which were then reviewed and graded by discipline-specific expert panels. The quality profiles consisted of the share of submitted and evaluated research publications on a 1* to 4* scale with an additional unclassified category.

126 **Table 1.** Definition of REF Quality-level. Source: (Research Excellence Framework (REF) 2012: 67).

REF Quality Category	Definition
Unclassified	Research is graded as unclassified, if it falls below the quality level 1* or does not meet the definition of research used by the REF
1*	Research that is recognised nationally in terms of originality, significance and rigour
2*	Research that is internationally recognized in terms of originality, significance and rigour
3*	Research that is internationally excellent in terms of originality, significance and rigour
4*	Research that is leading worldwide in terms of originality, significance and rigour

127

128 In 2014, the REF introduced qualitatively evaluated impact studies and added “*impact*” and
129 “*environment*” as additional assessment-criteria (see table 1 for the definition of the REF
130 quality categories). These three assessment criteria were summed up, resulting in the overall
131 REF quality profile. Impact is related to research output in terms of culture and media,
132 economy and economic development, environmental issues, healthcare issues, professional
133 services, policy, law and public services (Research Excellence Framework (REF) 2012: 68–
134 70). It is measured by citation of the research by non-academic bodies (e.g. NGOs, public
135 debates) or by being documented in standards, guidelines, training materials and
136 governmental statistics. Environment is related to the university management’s ability to
137 achieve strategic goals. These goals are aligned to research impact (academic and social) and
138 the development and monitoring of research profiles between 2008 and 2013. Likewise, the
139 share of research staff that raised grants, had research fellowships, fixed-term appointments
140 and interdisciplinary research collaboration in addition to the share of students included in
141 research endeavours were evaluated (Research Excellence Framework (REF) 2012: 75–77).

142 **3. Academic Capitalism-approach, symbolic power and symbolic** 143 **dominance**

144 According to the Academic-Capitalism approach, research assessments such as the REF
145 replace the academic competition for generating new knowledge with a competition for
146 grants, visibility (e.g. the media and on top of rankings) and positive evaluations (Münch
147 2014). To this end, research is increasingly tailored to increase research output, to acquire
148 grants and to be acknowledged as relevant by stakeholders. In this view, a professionalised

university management should nudge scholars to produce large amounts of research output aligned to a limited range of problems perceived as relevant by stakeholders. This development is accompanied by the establishment of principal-agent relations between the university management and scholars as well as between university management and mission agencies. Against this backdrop, monitoring techniques were introduced to check whether the research is conducted effectively. Such monitoring techniques include total quality management, project based funding and benchmarking at university level, and research assessments on the global level (Münch 2015). This changes the authority relations within and between universities in such a way that scholars as well as the university management should meet the demands outlined in research assessments (Whitley 2011; Whitley, Gläser and Laudel 2018). If a university does not meet the demands of the stakeholders or quality criteria of research assessments, the management is held accountable and is therefore incentivised to punish scholars for following their own interests and not being as productive as intended.

From the angle of Habitus-Fieldtheory, the developments outlined above are caused by a shift in power relations within the field of power (Schmitz, Witte and Gengnagel 2017). Here, immediate economic interests and the possibility of governmental bodies to distribute grants, to increase research efficiency and to nudge universities to meet the demand of (mostly economic) stakeholders are weighted higher than the endeavour to generate knowledge for its own sake (Slaughter and Cantwell 2012). This shift resulted in a loss of research diversity (Lee, Pham and Gu 2013; Whitley 2014), research autonomy (Münch 2015; Wieczorek, Beyer and Münch 2017), and exerted a direct impact on the habitus of scholars (Münch 2014: 13–21). In line with Bourdieu (1989: 19), habitus is defined as a set of dispositions aligned with the tacit rules of conduct in a specific field. In the case of the academic field, these rules define the meaning of “good research”, the skills necessary to be acknowledged by the academic community, the right ways to conduct research properly and research foci legit to the academic community.

Since the REF installed the competition for an excellent quality profile and funding besides the competition to generate novel insights, the habitus of the scholars must adapt to the different competitions at once (Bourdieu 1988: 40f.). At the same time, the quest for generating knowledge for its own sake is weighted much lower compared to the need to obtain funding or excellent evaluations in the REF. This leads to adaptation pressure and changes the fit between dispositions present in the habitus, working conditions and possibilities to focus on original research.

Following this line of reasoning, the REF exercises symbolic power and symbolic dominance on the academic community (Bourdieu 1989). Symbolic power is defined as the power to define the tacit rules within a field, e.g. what counts as good research, or how to meet the demands of external stakeholders properly. It addresses the question of whether research can be conducted for its own sake or as a means to meet the REF quality criteria or stakeholder demands. Symbolic dominance is defined as the incorporation of an unquestioned belief as to how a field should be, how to behave adequately and what aims to follow properly (doxa, see Bourdieu 1985: 734). In our case, the REF shapes the belief as to whether research should aim at generating knowledge for its own sake, or is a means to generate applicable knowledge for other societal domains like the political field. If scholars incorporate such beliefs into their habitus, they become anchored in everyday research practices and research strategies.

On the level of scholars, symbolic power and symbolic dominance exerted by the REF should be reflected in their narratives about their adaptation strategies to the REF. These contain research foci, preferences for publication types (monographs versus journal publications) and emphasis on quality criteria imposed by the REF compared to own research interests. Collectively, the symbolic power and symbolic dominance exerted by the REF should be visible in scholars' adjustment to a limited number of research topics across all universities, research specialisation within universities and low levels of research diversity between universities.

4. Research Design

We applied a convergent parallel mixed methods-design (Ivankova, Creswell and Stick 2006) to investigate the symbolic impact of the REF on the individual and the collective level. In this kind of approach, qualitative interview data and quantitative datasets are first evaluated separately and then related to each other in their respective interpretation.

For the investigation of symbolic power and symbolic rule exerted by the REF on the habitus and the daily routines of British sociologists, interviews with six sociologists located at three British universities were conducted. The universities were sampled based on RAE 2008 quality profiles. Grounded on this, we distinguished between top-tier, mid-tier and low-tier universities. Top-tier universities are characterised by a prevalence of submissions classified as world-leading by expert panels. Mid-tier universities are characterised by an overweight of submissions classified as internationally recognized in terms of originality, rigour and significance. Finally, low-tier universities are characterised by a prevalence of submissions of

national significance. Among the six sociologists interviewed, two were located at high-tier universities, three at mid-tier universities and one at a low-tier university. Each interview lasted about one hour.

We analysed the interview data using a combination of qualitative content analysis (Mayring 2015) and Grounded Theory (GT) approach (Glaser and Strauss 2017). In a first step, we derived a coding scheme to link our theoretical underpinnings with the narratives of the six British sociologists. By doing so, we focus on the impact the REF on research autonomy, career opportunities, management practices and working conditions. The narratives of the six sociologists emphasise gaming the system strategies of sociologists and the academic management to meet the REF quality criteria.

Since our initial coding scheme was not sensitive enough to capture all aspects of game the system strategies, we decided to iterate between theoretical assumptions and open, axial and selective coding present in the GT-framework. By doing so, we identified four strategies of adaptation. Two out of these four strategies are associated with research output and evaluation criteria of REF expert commissions. The other two are associated with the REF's impact on management strategies, which in turn change the research condition of British sociologists.

The first two adaptive strategies reported by the British sociologists are interpreted as “*publication management*” and “*mainstream focus*”. The former includes strategies to improve the perceived relevance of the scholar's output and impact. They do so by focusing on certain publication types and journals favoured by members of the expert panels. The second includes all strategies to tailor research to be perceived as relevant for the scientific community and stakeholders at the same time.

As far as the following two strategies associated with managerial practices and working conditions are concerned, the first one is interpreted as “*research profile development*”. Here, scholars put emphasis on topic adjustment to REF quality criteria on the departmental level. The second strategy is interpreted as “*REFable recruitment*” of sociologists. REFable sociologists are characterized either by a large number of publications and graduations at universities with excellent research profile according to REF criteria. Or, else, REFable scholars should at least have access to expert panels and knowledge of the REF evaluation criteria for recruitment.

If our theoretical assumptions hold true and the REF exerts symbolic power and symbolic dominance, these four dimensions should be reflected on collective level. To investigate the collective adaptation of British sociologists to REF criteria, a complete survey of the abstracts

of all 2630 REF submissions distributed across 30 departments was conducted. We focused on abstracts for two reasons. Firstly, abstracts require scholars to condense the content of their publications in an appealing way for their readers. This act of condensation can be interpreted as a proxy for academic habitus. Secondly, previous research indicates that analysing of abstracts is sufficient for the reconstruction of the topic structure of sociology publications (Moody and Light 2006; Schwemmer and Wieczorek 2019).

After a web-search, text data on 2546 abstracts was found and used for the construction of the text corpus. We applied an LDA for an analysis of the abstracts (Blei 2012). The LDA is a topic modelling approach and relies on the assumption that actors – in our case sociologists – systematically use specific word combinations to talk about topics. In our case, this specific way of talking is interpreted as the product of the academic habitus. Empirically, the LDA provides a mixture model, which means that every topic present in the abstracts has a probability between zero and one to be assigned. Additional information on the data and on LDA are provided in appendix B.

We applied cleaning procedures before analysing the topic models. In a first step, stopwords without semantic function such as “the”, “a”, or “an” were removed. Additionally, stopwords referring to the publication procedure (e.g. “copyright”) were removed (see appendix C for further information). Stemming was applied in a third step to reduce the different forms to the word stems (e.g. “walking”, “walk”, “walked” are transformed to “walk”). In a fourth step, we used lemmatisation to standardise different spellings (e.g. “color” and “colour”). Finally, we converted the abstracts into a “bag of words”- format and weighted the remaining terms, called tokens after cleaning procedures, according to their document length. After this procedure, the words are stripped from their position in the abstracts and are henceforth called “tokens”.

A disadvantage of the LDA is that it relies on an a priori definition of the number of topics. We therefore have to apply goodness of fit-measures to find an adequate model for interpretation. To do so, logarithmic (log) UMass Coherence (Röder, Both and Hinneburg 2015), log Perplexity (Coleman, Seaton and Chuang 2015: 4) and qualitative interpretations of topics of the models suggested by log UMass Coherence and log Perplexity were applied.

We calculated log UMass Coherence and log Perplexity for 5 to 100 topics (see figure 1). We then applied the elbow criterion to identify the optimal number of topics. Afterwards, we interpreted the topics of the models where the elbow criterion applies. According to UMass Coherence, a model containing 15, 20, 22, 32, 36, 43, 49, 53 and 69 topics could be chosen.

After 69 topics, the Coherence value oscillates around -5.0, yielding no additional information. The Perplexity measure indicates an optimal model consisting of 10, 15, 19, 27, 36, 42, 58 or 67 topics. After 67 topics, the Perplexity value decreases far lower so that no additional information is yielded by a high number of topics. After evaluating the above-mentioned number of topics in qualitative terms, we chose a topic model consisting of 20 topics. For interpretation, we relied on the *most salient terms* according to Chuang et. al (2012) and *most relevant terms* as defined by Sievert and Shirley (2014).

Figure 1: Log UMass Coherence- and Perplexity scores provided by the LDA conducted. Own calculations.

To investigate research specialisation within and research diversity between sociology departments, we apply Shannon-Jenson divergence on the topic distributions in both cases (see Wilson and Chew 2010). We provide descriptive statistics on the minimum, median, mean, and maximum divergence in addition to the skewness and kurtosis of the mean divergence. If our assumptions hold true, a high divergence within universities refers to a specialisation of sociologists to adapt to the REF, while a low divergence between universities indicates low levels of research diversity.

5. The symbolic power and symbolic rule of the REF in the narratives of British Sociologists

The symbolic power and symbolic rule of the REF are mirrored in four dimensions in the narration of British Sociologists: “*publication management*”, “*mainstream focus*”, “*research profile development*”, and “*REFable recruitment*”. Each of the four is applied in order to

301 achieve the best possible result in the REF, which in turns generates revenues and increases
302 academic career opportunities.

303 *Publication management* is characterised by two different strategies to meet the quality
304 criteria of the REF. First, British sociologists know that only a sufficient number of articles
305 published in High-Impact journals help them to get the evaluation result needed for career
306 advancement. As the following interview passage indicates, other forms of publications such
307 as edited volumes or monographs are devaluated:

308 *“Now I’m thinking, I won’t get credit points if I write a chapter in the book, so I will*
309 *do more of my publications in academic journals.” (52, high-tier university)*

310 Furthermore, sociologists know about the focus on the journal impact factor, and its relevance
311 for the REF evaluation:

312 *„there is ... some create pecking order through journals of that better advised*
313 *journals as measured by impact of factor of its own.” (57, high-tier university)*

314 Secondly, publication management is present in the introduction of new forms of publications
315 such as the *pivot*. The pivot is a type of essay whose length ranges from a journal article to a
316 monograph. Sociologists choose this new form of publication if the research area is covered
317 by a few low impact journals, or if writing a monograph is perceived as too time consuming:

318 *„I’ve got one colleague in mind who is who decided not to try and publish her latest*
319 *idea as a journal article but rather to publish it as a pivot which I not heard of before*
320 *(...) I think it maybe sort of ... 40.000 words maybe I think - so it allows you more*
321 *space to write that one would for a full monograph rather than for a short journal*
322 *article.” (39, mid-tier university)*

323 *Mainstream focus* is related to the two aspects of publication management and related to the
324 devaluation of sociological theory. Articles focusing on theory development yield low societal
325 impact and thus do not help to get positive REF “impact” evaluations. Furthermore, the focus
326 on mainstream topics ousts innovative and risky research in the view of the interviewees.
327 Ironically, the focus on mainstream topics lowers the chances for interdisciplinary
328 collaboration, since interdisciplinary research is barely covered by high impact journals. The
329 following interview passage summarises all three aspects of the mainstream focus and
330 highlights the symbolic impact of the REF on research subjects:

331 *„ I think predominantly the work that got excluded was some more theoretical work ...*
332 *and I think that also means that work, that’s a bit quirky, that’s, ehm, in maybe sort of*

333 ... it's likely more, eh ... on the edges of sociology. So, things that don't quite fit in the
334 mainstream, that are ironically interdisciplinary because even though that supposed to
335 be something that UK universities are champions in. If it doesn't quite fit within the
336 remit full of sociology REF submission that it kind of doesn't really count" (39, mid-
337 tier university)

338 The REF's symbolic power and symbolic domination are even more visible in the need for
339 profile development. Research clusters are favoured by the university management that are
340 perceived to generate impact relevant to the REF evaluation criteria:

341 „Not really, I mean, all universities seem to have research clusters, so each
342 department has a bit of a set of research clusters and groups of academics, which
343 work with research topics, which are related. (52, high-tier university)

344 “Well, as far as we are told that this impact ... proportion that sense we're give them
345 of predicted most impacts are going up to the people than is gonna be putting more
346 emphasis into that.” (57, high-tier university)

347 Finally, the impact of the REF is visible in a shift in recruitment strategies. This dimension
348 consists of two empirical types of recruitment strategies: recruitment of scholars with
349 REFable output, and recruitment of scholars with knowledge about REF-quality criteria.
350 Considering the former, the following two interview passages highlight the competition for
351 scholars with the ability to boost REF scores. British sociologists also report the rationale for
352 their recruitment:

353 „I guess that the REF shouldn't matter when you recruit people but of course you only
354 want people who are REFable and there has been quite a lot of course trading as
355 well.” (55, high-tier university)

356 “I think we look at whether or not the person's publications are likely to be a good fit
357 for a REF submission whether they're strong enough for themselves in terms of which
358 journals they've published in, ehm, and I actually think it's impacting” (39, mid-tier
359 university)

360 The latter type of recruitment sees scholars as gatekeepers to REF expert panels. These
361 gatekeepers provide information on the REF evaluation criteria necessary for positive
362 evaluations. Therefore, these scholars are expected to provide sensitive information that leads
363 to an early adaptation to the REF quality criteria and to competitive advantages:

364 „one of the people in the department was [in] one of these sociology panels for the
365 last REF, so he knows quite a bit about it. It's very useful to hav, some like that, very
366 useful, because they actually know the process really well. Which is all we think quite
367 a big advantage, so he was saying this thing about, there's going to be more emphasis
368 on impact. It will go up from 20 to 25%, but, you know, where does he get, I don't
369 know why he gets that tip from. I don't know, we're all, we're all we have to accept,
370 what he says.” (52, high-tier university)

371 In summary, the ability to get an excellent REF quality profile is valued at least as high as
372 original research and the generation of knowledge for its own sake as outlined by Münch
373 (2014, 2015). Our findings signify an alignment of the academic habitus of British
374 sociologists to REF evaluation criteria. This alignment is backed by the recruitment of
375 REFable scholars and the focus on research areas perceived as relevant by the academic
376 management to improve/sharpen the quality profile.

377 **6. The symbolic power and symbolic rule of the REF from the** 378 **perspective of quantitative text analysis.**

379 Even if the qualitative interviews provide us with evidence of the symbolic impact of the REF
380 on British sociologists, they neither provide us with information on the research foci nor on
381 whether the effects of the REF can be observed systematically at all 30 participating
382 sociology departments.

383 Starting with descriptive statistics of the text corpus, we see that the most frequent
384 submissions by far were journal articles (2002), followed by authored books (350), and book
385 chapters (230). Only a tiny fraction of the submissions were edited books (36), research
386 reports for external bodies (8), or research data sets (3). Only a single conference contribution
387 was submitted. These numbers reveal the application of publication management by British
388 sociologists on the collective level. The REF's impact becomes even clearer when we analyse
389 the relative share of journal publications, edited books and book chapters. Using a boxplot for
390 visualisation, we see a significantly higher share of journal publications as against authored
391 books and book chapters in figure 2. As is listed among other descriptive statistics in table 2,
392 the means of the share of journal publications, authored books and chapter in books are 69.03,
393 12.07 and 8.52 respectively. Considering the submissions of all 30 sociology departments, the
394 lowest number of submissions is 27, the median 85, and the maximum 197. On average, 93.26
395 publications were submitted.

396

397

398 **Figure 2:** Boxplots of the relative share of submissions across the 30 sociology departments. Own calculations.

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Table 2. Descriptive Statistics of the submissions used as basis of our text corpus, focusing on journal articles, authored books, chapters in books and total submissions. Own calculation.

	Journal article	Authored book	Chapter in book	total
Minimum	19	1	1	27
25%-Percentile	41	8	4	63.5
Median	60	11	9	85
Mean	69.0344	12.07	8.52	93.26
75%-Percentile	94	16	11.5	114.5
Maximum	166	32	20	197
Skewness	1.08	0.68	0.45	0.69
Kurtosis	0.65	0.14	-0.64	-0.28

Figure 3: Overview of the 50 most frequently occurring tokens in the text corpus. Own calculations.

The corpus comprises of 16,528 tokens. Each token was mentioned 12.73 times on average and the distribution of tokens was highly skewed (skew = 8.95). Figure 3 provides an overview of the 50 most prevalent tokens. The topics uncovered by the LDA are mainly application and problem oriented. A full overview is provided in appendix D, whereas the following passages focus on the ten most prevalent topics. These topics cover 71.6% of the

tokens in the corpus and are listed in table 3 including the ten most salient and most relevant terms.

Table 3: Overview of the ten most strongly represented topics of British sociologists in the corpus, including the ten most salient and typical words. Own calculations.

Topic no.	Interpretation	% tokens	Most salient terms	Most relevant terms ($\lambda = 0.3$)
7	Youth sociology	12.5	People, young, child, life, data, experience, country, work, family, effect	Young, child, people, school, aged, youth, happiness, country, inequality, family
20	Gender studies with the focus on political activism	11.6	Political, woman, policy, work, public, community, politics, practice, state, market	Citizenship, immigrant, woman, pension, political, violence, politics, conflict, festival, spaniard
18	Technological and social evolution	10.3	Science, practice, work, technology, knowledge, process, life, policy, cultural, form	Science, innovation, animal, intermediary, carbohydrate, meme, technology, knowledge, engineering, mead
12	Public Health	8.0	Human, right, health, family, practice, urban, space, medium, cultural, city	Drinking, human, right, village, villager, advertising, mccann, comedy, expedition
6	Migration and Integration	6.7	Public, ethnic, policy, political, change, group, science, identity, economic, class	Discrimination, climate, privatization, sleep, white, ethnic, density, caste, racial, shame
3	Urban planning, displacement policy	5.8	Development, policy, city, urban, process, practice, form, case, economic, work	Idiocy, Nuremberg, creative, nazi, cessation, malignancy, clinician, planner, gentrification, urban
9	First generation students, mental illness	4.9	Work, body, health, space, time, mental, culture, data, knowledge, illness	Body, graduate, grooming, mental, illness, work, bodily, twitter, computer, bursary
1	Social structure analysis & quantitative methodology	4.1	Data, survey, effect, model, household, market, cooperation, result, drug, country	Cooperation, panel, phone, nonresponse, bhps, household, Darwin, indicator, shop, farmer
15	Political sociology, stem cell debate	3.9	Human, practice, political, cultural, cell, culture, question, stem, science, debate	Surgery, bombing, cosmetic, produsage, Oklahoma, autopsy, antisemitism, whitehead, infanticide, cdos
17	Social classes and their value systems	3.8	Capital, class, level, relationship, cultural, network, model, practice, process, system	Canola, herbicide, intimacy, capital, monogamy, odds, container, waist, paranoia, weed
Σ		71.6		

Topic 7 is interpreted as “youth sociology”. The most salient terms indicate a focus on quantitative methods (data, effect) with an emphasis on families, school and social inequality. The tokens also point towards comparative studies with an additional focus on quality of life (e.g. “happiness”).

419 Topic 20 links gender studies with political activism. We chose this interpretation because the
 420 most salient terms included “political”, “woman”, “policy”, “community”, “public” or
 421 “practice”. The inclusion of the token “market” in addition to typical tokens such as
 422 “violence”, “conflict”, or “immigrant” indicate a critical perspective of the scholars focusing
 423 on this topic.

424 Topic 8 is aligned to science and technology studies and coined “technological and social
 425 evolution”. We interpret the topic this way, because it contains tokens highlighting the impact
 426 of technology on daily life (“science”, “practice”, “work”, etc.). More specific technological
 427 areas are covered by relevant terms like fossil fuels (“carbonhydrate”), animal experiments,
 428 engineering, technology transfer (“intermediary”, “technology”, “innovation”) or knowledge
 429 about the internet (“memes”).

430 Topic 12 is interpreted as “public health”. While the most salient terms of “health”, “human”,
 431 “family”, and “drinking” indicate health-related content, the urban/country distinction is
 432 visible in tokens like “village”, “urban”, “space”, or “city”. Consumption behavior is related
 433 to physical health and is expressed by “drinking”, “media”, “advertising”, and “comedy”.

434 Topic 6 is coined “migration and integration”. It links tokens related to class, politics and
 435 policy with economic integration and group and class consciousness. This topic concerns not
 436 only the UK, but also former Commonwealth countries. This is indicated by the relevant
 437 terms “caste”, “discrimination”, “climate”, “white”, “ethnic”, “racial”, and “shame”.

438 Topic 3 is interpreted as “urban planning” and “displacement policy”. We do so, since it
 439 covers tokens associated with the ongoing change of urban social space (e.g. “city”, “urban”,
 440 “gentrification”), and tokens related to racism and the blood-and-soil ideology of the third
 441 Reich.

442 Topic 9 presents itself as a mixture of medical sociology and sociology of higher education. It
 443 focuses on first generation graduates and their mental problems. This interpretation is backed
 444 by tokens like “health”, “mental”, “body”, “knowledge”, “illness”, “bodily”, “graduate”, or
 445 “bursary”. Additionally, the students’ mental health is linked to the use of technological
 446 devices and the urge for self-expression by the tokens “twitter” and “computer”.

447 Topic 1 is interpreted as social structure analysis and quantitative methods, indicated by the
 448 most salient terms of “data”, “survey”, “effect”, “model”, “household”; “result”, and
 449 “country”, and the most relevant terms of “panel”, “phone”, “bhps” (the British Household
 450 Panel Survey”), and “indicator”. The token “drug” is linked to medical consumption, whereas

“farmer” and “shop” indicate consumptive behavior linked to different styles of living. Only “Darwin” seems out of place, but is associated with ideas on how a society and the competition therein can be understood.

Topic 15 is interpreted as political sociology with an emphasis on the stem cell debate and political violence. All ten salient terms highlight this association, whereas the focus on bodies and violence are mirrored by relevant terms relating to the Oklahoma bombing and “autopsy”, “surgery”, and “infanticide”. An additional underlying critical perspective is emphasized by the inclusion of tokens like “culture” and “cdos” (collateralized debt obligations).

The last topic discussed in detail is topic 17. It is interpreted as “social classes and their value systems”. We do so, since the topic links Marxist tokens like “capital”, “system” and “class” with tokens associated with cultural sociology like “cultural”, “process” or “relationship”. It also covers more specific terms relating to food consumption (“weed”, “canola”). It is likewise linked to quantitative methods embodied in “level”, “model”, and “odds”.

These topics already highlight the limitation to a few, applied and mainstream oriented research topics. They provide evidence for narrations in the previous chapter and gaming the system-dispositions and mainstream focus outlined in the previous chapter. However, since the LDA provides us with a mixture model, we must check whether the distribution of topics is stable across all UK sociology departments. For an overview, we provide a heat map as seen in figure 4. The brighter the colours, the more prevalent the topics (presented on the x-axis) are among the departments (presented on the y-axis).

In line with our theoretical expectations and the previously discussed topic prevalence, sociology departments submit mainly a mixture of youth sociology, gender studies with a focus on political activism, social and technological evolution and, to a lesser extent, health inequalities in social spaces for evaluation to REF-expert panels. Surprisingly, the heat map reveals urban planning to be covered only marginally. This finding mirrors a strong emphasis of a limited number of submissions on this topic. In summary, this finding provides further evidence of the negative impact of the REF on research diversity and highlights its symbolic power and rule in the case of British sociology.

Figure 4. Heat map of the topics covered by sociology departments. Own calculations.

In the final step of our quantitative text analysis, we analyse the research specialisation and research diversity using the Jensen-Shannon divergence. Starting with the investigation of the Jensen-Shannon divergence within universities, we see that the submissions are very dissimilar on average (mean of 0.74). The median of around 0.81 indicates even higher dissimilarity of submissions within universities (see figure 5 and appendix E for detailed statistics).

Figure 5. Mean and Median of the Jensen-Shannon Distances of the topic distributions within universities. Own calculations.

In contrast, the similarities between universities are much greater (see table 4). The median of 0.28 and mean of 0.29 indicate a relatively high similarity among sociology departments. The similarities are only moderately right skewed, further indicating relatively high levels of similarity. Overall, these findings indicate a specialisation within sociology departments, and a relatively low level of research diversity focused on a limited number of topics.

Table 4. Descriptive Statistics of the Jensen-Shannon Divergence between sociology departments.

Minimum Distance	Median Distance	Mean Distance	Maximum Distance	Skewness Mean Distance	Kurtosis Mean Distance
0.13	0.27	0.28	0.50	1.68	2.57

7. Conclusion

The present study aims to examine the symbolic effects of the REF on the habitus of British sociologists, their (collective) adaptation strategies, choice of topics and research diversity. For our investigation, we applied an amalgam of Academic Capitalism-approach and Habitus-Fieldtheory. Four our empirical analysis, a convergent parallel mixed methods approach was applied to investigate the symbolic power and symbolic rule exerted by the REF on British sociology both qualitatively and quantitatively. For the qualitative analysis, interviews with six British sociologists were conducted and analysed, to which an LDA and similarity analysis of 2546 REF submissions were added.

Addressing the first research question on the qualitative level, we uncovered four strategies of adaptation of which two were directly related to sociologists and two to research conditions at their department. Sociologists adapted to the REF quality criteria by “publication management” and “mainstream focus”. Both included strategies to raise their academic and social impact. Regarding the second research question, sociologists reported “recruitment of REFable” scholars and “research profile development” as complementary strategies of the university management to cope with the REF’s symbolic influence. Such a change in research conditions nudged scholars to focus on REF quality criteria instead of conducting research for their own sake. In this sense, our findings are in line with the theoretical background provided by Münch (2014, 2015).

These findings are mirrored quantitatively in the topic model provided by the LDA and similarities of submissions within universities as well as publication profiles between universities as indicated by the Jensen-Shannon divergence. The LDA included 20 topics, mainly focusing on application-oriented mainstream topics including youth, health, migration, gender studies, political movements and urban planning. The Jensen-Shannon divergence highlights a high level of specialisation within universities and low levels of diversity between research profiles. Our findings indicate a systematic effect of the symbolic power and symbolic dominance exerted by the REF across all 30 departments included in our analysis in line with the Academic Capitalism-approach and Habitus-Fieldtheory.

However, our study is limited threefold. First of all, an investigation of REF submissions does not fully cover the publication activity and research diversity of British sociology. There may be diverging and innovative research not covered by and thus invisible to the REF. Future investigations should keep this in mind and investigate the extent to which knowledge and expertise is covered by the REF. Secondly, we investigated the effects of the REF on sociology only. Therefore, the generalisability of our findings is limited. We cannot expect the REF to exert the same extent of symbolic power and symbolic dominance across other disciplines. Therefore, future studies should apply the framework provided in this article on different disciplines in a comparative way. Finally, a longitudinal design must be applied to fully grasp the effects of the REF on adaptation strategies, research diversity and research autonomy. This is even more important, since the REF and its predecessors could enforce conflicts and entrenchments present in Sociology and other disciplines that were already present before. Therefore, a deeper insight into the REF’s symbolic power and symbolic

536 domination might help to reduce the negative effects of assessments on the academic
537 community, especially since the next wave of the REF is currently being prepared.

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Appendix A – Definition of RAE/REF Quality-Classes

RAE 1992 Quality Category	Definition
5	Research quality that equates to attainable levels of international excellence in some subareas of activity and to attainable levels of national excellence in virtually all others.
4	Research quality that equates to attainable levels of national excellence in virtually all subareas of activity, possibly showing some evidence of international excellence, or to international level in some and at least national level in a majority.
3	Research quality that equates to attainable levels of national excellence in a majority of the subareas of activity, or to international level in some.
2	Research quality that equates to attainable levels of national excellence in up to half of the subareas of activity.
1	Research quality that equates to attainable levels of national excellence in none, or virtually none, of the subareas of activity.

Source: https://www.rae.ac.uk/1992/c26_92.html#annexc, last retrieved January 8th 2020.

RAE 1996 Quality Category	Definition
5*	Research quality that equates to attainable levels of international excellence in a majority of sub-areas of activity and attainable levels of national excellence in all others.
5	Research quality that equates to attainable levels of international excellence in some sub-areas of activity and to attainable levels of national excellence in virtually all others.
4	Research quality that equates to attainable levels of national excellence in virtually all sub-areas of activity, possibly showing some evidence of international excellence, or to international level in some and at least national level in a majority.
3a	Research quality that equates to attainable levels of national excellence in a substantial majority of the sub-areas of activity, or to international level in some and to national level in others together comprising a majority.
3b	Research quality that equates to attainable levels of national excellence in the majority of sub-areas of activity.
2	Research quality that equates to attainable levels of national excellence in up to half the sub-areas of activity.
1	Research quality that equates to attainable levels of national excellence in none, or virtually none, of the sub-areas of activity.

Source: https://www.rae.ac.uk/1996/c1_96.html, last retrieved January 8th 2020.

RAE 2001 Quality Category	Definition
5*	Quality that equates to attainable levels of international excellence in more than half of the research activity submitted and attainable levels of national excellence in the remainder.
5	Quality that equates to attainable levels of international excellence in up to half of the research activity submitted and to attainable levels of national excellence in virtually all of the remainder.
4	Quality that equates to attainable levels of national excellence in virtually all of the research activity submitted, showing some evidence of international excellence.
3a	Quality that equates to attainable levels of national excellence in over two-thirds of the research activity submitted, showing some evidence of international excellence.
3b	Quality that equates to attainable levels of national excellence in more than half of the research activity submitted, showing some evidence of international excellence.
2	Quality that equates to attainable levels of national excellence in up to half of the research activity submitted.
1	Quality that equates to attainable levels of national excellence in none, or virtually none, of the research activity submitted.

621 Source: <https://www.rae.ac.uk/2001/Pubs/other/raeguide.pdf>, last retrieved January 8th 2020.

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RAE 2008 Quality Category	Definition
4*	Quality that is world-leading in terms of originality, significance and rigour.
3*	Quality that is internationally excellent in terms of originality, significance and rigour but which nonetheless falls short of the highest standards of excellence.
2*	Quality that is recognised internationally in terms of originality, significance and rigour.
1*	Quality that is recognised nationally in terms of originality, significance and rigour.
Unclassified	Quality that falls below the standard of nationally recognised work. Or work which does not meet the published definition of research for the purposes of this assessment.

623 Source: <https://www.rae.ac.uk/results/intro.aspx>, last retrieved January 8th 2020.

Appendix B – Additional Information on the quantitative Text data and the LDA

The data is available under [https://results.ref.ac.uk/\(S\(xibskhtr1prkz23mbaam13qu\)\)/DownloadSubmissions/ByUoa/23](https://results.ref.ac.uk/(S(xibskhtr1prkz23mbaam13qu))/DownloadSubmissions/ByUoa/23) (last retrieved: 03.01.2020). The “output”-sheet contains information on university ID, and type of submission (authored book, edited book, chapter in book, journal article, conference contribution, research report for external body and research datasets and databases). We added the number of citations and the abstracts for further analysis. The modified spreadsheet will be uploaded to Harvard Dataverse and can be downloaded under {html}.

Python was used to conduct the LDA. We used the packages NLTK, genism and LDAvis for computation of the LDAs and matplotlib and seaborn for visualisation purposes. The scripts are uploaded to the Harvard Dataverse and can be found under {html}.

For the analysis of our text data, we applied a term frequency- inverse document frequency (tf-idf) using the python package *gensim*.

637 **Appendix C – Additional Stopwords**

638 "this book", "book", "author", "authors", this study", "this article", "articl", "this",
639 "aim", "paper", "study", "purpose", "social", "chapter", provide", "provides", "examine",
640 "examines", investigate", "investigates", "relevant", "explores", "explore", "sociology",
641 "within", "paper", "concern", use", "studi", "volume", "volum", "draw", "research", "article",
642 "find", "finds", "understand", "understanding", argue", "argues", "argu", "concept",
643 "conceptualize", "analysis", "analyse", "use", "uses", "sociolog", "new", "sociological"
644 "studi", "discuss", "context", "account", "way", "draw", "make", "draws", "makes",
645 "contributes", "contribute", "see", "e.g", "e.g.", "important", "sociological", "studies",
646 "also", "recent", "also", "approach", "first", "may", "approach", "use", "using", "sociologists",
647 "sociological", "approach"

Appendix D – full list of topics, prevalence and interpretations

Topic no.	Interpretation	% tokens	Most salient terms	Most relevant terms ($\lambda = 0.3$)
1	Social structure analysis & quantitative methodology	4,1	Data, survey, effect, model, household, market, cooperation, result, drug, country	Cooperation, panel, phone, nonresponse, bhps, household, Darwin, indicator, shop, farmer
2	Critical sociology, body sociology, abortion	2,2	Embryo, right, story, risk, market, national, practice, capital, image, role	Idvas, embryo, height, tesco, judgment, repressive, surgeon, protected, Marcuse
3	urban planning, displacement policy	5,8	Development, policy, city, urban, process, practice, form, case, economic, work	Idiocy, Nuremberg, creative, nazi, cessation, malignancy, clinician, planner, gentrification, urban
4	Religion and dismanteling of Stereotypes	2,5	Religious, life, practice, health, data, income, role, inequality, religion, punishment	Punishment, ashwary, laïcité, pregnant, fetal, obsolescence, Bollywood, cult, waste, beauty
5	Health sociology, mental illness	3,8	Policy, system, biology, theory, individual, based, network, food, change	Biology, Schreiner, sanctuary, consultant, Campbell, prep, Sartre, fair, sunlight, biologist
6	Migration and Integration	6,7	Public, ethnic, policy, political, change, group, science, identity, economic, class	Discrimination, climate, privatization, sleep, white, ethnic, density, caste, racial, shame
7	Youth sociology	12,5	People, young, child, life, data, experience, country, work, family, effect	Young, child, people, school, aged, youth, happiness, country, inequality, family
8	Crime prevention and victimology	1,7	Crime, hate, victim, criminal, organized, group, development, child, decline, action	Crime, hate, koro, lone, organized, victim, gambling, panic, criminal, theatre, bourne
9	First generation students, mental illness	4,9	Work, body, health, space, time, mental, culture, data, knowledge, illness	Body, graduate, grooming, mental, illness, work, bodily, twitter, computer, bursary
10	Health care system and Privacy	3,5	Data, life, patient, software, practice, form, music, space, process, idea	Software, laptop, fold, doctor, worm, intrusive, sentencing, worth, secrecy, chest

Topic no.	Interpretation	% tokens	Most salient terms	Most relevant terms ($\lambda = 0.3$)
11	Illicit migration, governmentality	1,9	State, contemporary, border, society, weber, financial, life, change, Foucault, political, woman	Offshore, weber, onshore, border, Foucault, Quebec, wind, clamping, lecture, nihilism
12	Health inequalities in urban and rural spaces	8,0	Human, right, health, family, practice, urban, space, medium, cultural, city	Drinking, human, right, village, villager, advertising, mccann, comedy, expedition
13	Globalization, cosmopolisation	3,2	State, global, cosmopolitan, political, ethnic, cosmopolitanism, world, theory, knowledge	Flood, cosmopolitanism, cosmopolitan, Bolshevik, buyer, ethico, tacit, universalist, faculty, polanyi
14	Gender studies with focus on cultural expression and empowerment	3,1	Woman, technology, environmental, money, relation, case, political, public, music, online	Money, mining, training, mets, csro, goth, environmental, fairtrade, talk, segmentation
15	Political sociology, stem cell debate	3,9	Human, practice, political, cultural, cell, culture, question, stem, science, debate	Surgery, bombing, cosmetic, produsage, Oklahoma, autopsy, antisemitism, whitehead, infanticide, cdos
16	Postcolonial Studies and Gender Studies	3,0	Woman, mobility, state, migration, public, gender, work, Scotland, case, experience	Heterosexuality, personalization, dispersion, mathematics, fernel, mobility, mammography, Uruguay, iavi, breast
17	social classes and their value systems	3,8	Capital, class, level, relationship, cultural, network, model, practice, process, system	Canola, herbicide, intimacy, capital, monogamy, odds, container, waist, paranoia, weed
18	Technological and social evolution	10,3	Science, practice, work, technology, knowledge, process, life, policy, cultural, form	Science, innovation, animal, intermediary, carbohydrate, meme, technology, knowledge, engineering, mead
19	Political sociology with focus on participation and political suppression	3,6	Class, people, political, life, part, well, society, model, change, participant, participation	Genocide, tissue, interviewer, vignette, castoriadis, complimenting, friendship, repair, mammal, nepal
20	Gender studies with the focus on political activism	11,6	Political, woman, policy, work, public, community, politics, practice, state, market	Citizenship, immigrant, woman, pension, political, violence, politics, conflict, festival, spaniard

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Appendix E: Descriptive Analysis of the Jensen-Shannon Divergence within Sociology Departments

University	Minimum Distance	Median Distance	Mean Distance	Maximum Distance	Skewness of Mean Distance	Kurtosis of Mean Distance
Cardiff University	0.00	0.81	0.74	0.83	-0.61	1.32
University of Winchester	0.00	0.83	0.73	0.83	-0.85	0.77
Goldsmiths' College	0.00	0.77	0.74	0.83	-0.57	2.35
University of Abertay Dundee	0.00	0.83	0.73	0.83	-0.61	-0.68
King's College London	0.13	0.78	0.72	0.83	-3.50	18.46
Brunel University London	0.07	0.79	0.73	0.83	-1.27	3.51
City University London	0.00	0.77	0.72	0.83	-1.03	0.73
Birkbeck College	0.00	0.83	0.78	0.83	-0.69	-0.07
Manchester Metropolitan University	0.00	0.76	0.73	0.83	-1.00	3.33
Lancaster University	0.00	0.83	0.75	0.83	-0.34	-1.23
Open University	0.00	0.83	0.78	0.83	-1.94	7.36
University of Oxford	0.00	0.83	0.79	0.83	-1.47	3.88
London School of Economics and Political Science	0.07	0.79	0.74	0.83	-1.01	2.43
Roehampton University	0.00	0.77	0.73	0.83	-0.22	-0.58
Queen's University Belfast	0.00	0.83	0.74	0.83	-0.62	1.42
University of Aberdeen	0.00	0.81	0.74	0.83	-0.37	-1.10
University of East London	0.00	0.83	0.72	0.83	-0.38	-0.78
University of Bristol	0.00	0.83	0.78	0.83	-0.11	-1.29
University of Cambridge	0.21	0.80	0.75	0.83	0.24	-0.19
University of Edinburgh	0.18	0.77	0.74	0.83	0.09	-0.59
University of Essex	0.00	0.83	0.79	0.83	-0.03	0.06
University of Exeter	0.00	0.79	0.75	0.83	-0.22	0.45
University of Leicester	0.06	0.77	0.73	0.83	-0.34	-0.82
University of Manchester	0.10	0.78	0.74	0.83	-0.92	1.98
Newcastle University	0.00	0.83	0.75	0.83	-0.42	-0.74
University of Surrey	0.13	0.74	0.72	0.83	0.01	-0.40
University of Warwick	0.00	0.83	0.77	0.83	-0.50	-0.77
University of Sussex	0.00	0.83	0.79	0.83	-0.24	0.12
University of York	0.00	0.83	0.73	0.83	-2.54	6.12