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Title:
BERT for discourse analysis

a pragmatist approach to governmentality

BERT for Discourse Analysis: A Pragmatist Approach to Governmentality

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2022

Word Count: 83771

Abstract

This thesis is an investigation of the potential utility of using large language models – specifically BERT – to address the concerns of approaches to discourse analysis within the radical sociological traditions prominent since the 1970s, e.g., neo-Marxist theories of ideology, Critical Discourse Analysis, Foucauldian discourse analysis. Though using natural language processing (NLP) techniques within sociology is now a widespread practice, work on integrating these computational approaches within discourse analysis is sparse – thus there is no work which uses NLP methods within a Foucauldian framework. In addition, though the importance of large language models as the current state of the art within NLP is well recognised, sociological work which uses large language models is also sparse. These two gaps are the focus of this thesis. To address these gaps, I first develop a reading of Foucault's work on governmentality that incorporates pragmatist views on language. This reading has two purposes. First, it is used to highlight and address some of the blind spots of current approaches to discourse analysis which prevent such approaches from addressing questions about the large-scale behaviour of discourses, e.g. the question of how exactly discourses spread across and within organisations. Second, it is used to provide the theoretical tools needed to interpret the results of using BERT to conduct text analysis. Existing Foucauldian approaches were not developed with the use of NLP techniques in mind, meaning they do not come already equipped with the tools needed to interpret NLP results. I demonstrate the utility of my pragmatist-governmentality framework for text analysis via BERT by using it in an empirical examination of the British state's use of crisis neoliberal discourses about 'resilience', 'sustainability' and 'wellbeing'. Using a dataset of 92 million tokens sampled from approximately 170000 documents of legislation and 12 central government departments produced between 2000 – 2020, I use BERT as part of an analysis of the British state's vocabulary and the state's use of ideological vocabulary. I use the patterns in these words' uses revealed through BERT to discuss the sociolinguistic mechanics through which crisis neoliberal discourses spread across and within the organisations of the British state, and to discuss the pragmatic logic of the linguistic agency which mediates the spread of crisis neoliberal discourses. I argue that an important part of understanding the discursive aspect of governmental power is understanding the sociolinguistic mechanics which emerge from the pragmatic logic of the linguistic agency underlying the 'microphysical'/'capillary' practices through which governmental power is exerted.

Dedication and Acknowledgements

I dedicate this thesis to my parents, Prof. Suman Gupta and Dr. Cheng Xiao, whose constant support and discussions around the dining table have made this thesis possible and left an indelible mark on my thinking. I'd like to thank my supervisors Prof. Gregor McLennan, Prof. Thomas Osborne and Dr. Leonidas Tsilipakos, who have consistently given me indispensable advice and guidance throughout my time in Bristol. Thanks to Prof. Lee Marshall for his invaluable guidance throughout the first year of my PhD. Thanks also to all my friends, who have provided a great variety of constructive criticisms and opinions in response to which I have formed many of the ideas in this thesis. Finally, I'd like to thank the many faceless online communities who have made vast swathes of knowledge that were formerly completely alien to me freely accessible. This thesis is built upon such knowledge.

Author's Declaration

I declare that the work in this dissertation was carried out in accordance with the requirements of the University's *Regulations and Code of Practice for Research Degree Programmes* and that it has not been submitted for any other academic award. Except where indicated by specific reference in the text, the work is the candidate's own work. Work done in collaboration with, or with the assistance of, others, is indicated as such. Any views expressed in the dissertation are those of the author.

Signed: Ayan-Yue Gupta

Date: 23/10/2022

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List of Abbreviations

- NLP – Natural Language Processing
- BERT – Bidirectional Encoder Representations from Transformers

Government abbreviations:

- DCMS – Department for Digital, Culture, Media and Sport
- DE – Department for Education
- DEFRA – Department for Environment, Food and Rural Affairs
- DHSC – Department of Health and Social Care
- DWP – Department for Work and Pensions
- FCO – Foreign and Commonwealth Office (Foreign, Commonwealth and Development Office as of 2023)
- MOD – Ministry of Defence
- MOH – Ministry for Housing (Department for Levelling Up, Housing and Communities as of 2023)
- MOJ – Ministry of Justice
- cabinet – Cabinet Office
- home – Home Office
- leg – Legislation

Introduction: Sociological Discourse Analysis, Natural Language Processing and Early 21st Century Digitalisation

This thesis is primarily concerned with arguing that pragmatist views on language, which understand the meanings of statements/words/etc. as things that cannot be determined independently of the contexts in which statements/words/etc. are used, ought to form the basis of how the relation between linguistic practice, social structures and power relations is understood. I develop a pragmatist reading of Foucault's arguments about governmentality in which pragmatist theories (e.g. linguistic scorekeeping, relevance theory) are used to flesh out Foucauldian arguments about how the exertion of power is dependent on networks of organisational structures and textual practises that operationalise certain kinds of knowledge. I oppose this pragmatist reading of Foucault to views on the relation between linguistic practice, social structure and power relations that assume a Saussurean view of meaning, in which meanings are taken to be 'directly encoded' into statements/words/etc. I use my pragmatist reading of Foucault in an empirical analysis of the diffusion of *resilience*, *sustainability* and *wellbeing* discourses into British state organisations during 2000 – 2020. I argue that their distinctive pattern of diffusion during this period of time, and, therefore, how these concepts were operationalised as a form of neoliberal governmental power, can be partly explained by appealing to pragmatist perspectives on linguistic agency – perspectives which I use to explain the role played by the most basic kinds of linguistic practise (e.g. speech acts, interpretation of statements/words, etc.) within large social structures and networks of power relations.

The development of my pragmatist reading of Foucault is a response to a broader concern with exploring the possibilities natural language processing (NLP), big data and today's permanently online open-source software ecosystem hold for established sociological approaches to using text as evidence. I am particularly interested in discourse analysis; thus, the underlying motivation of the thesis is to investigate how NLP can be integrated into discourse analysis. So, I use the large language model BERT to conduct my empirical analysis of the diffusion of *resilience*, *sustainability* and *wellbeing*. A difficulty of integrating large language models into discourse analysis is deciding what version of discourse analysis to use. There are several versions of discourse analysis, and each one works off different understandings of the relation between linguistic practise, social structure and power relations. There is no consensus on which understanding is the strongest, or the circumstances under which one understanding is more appropriate than others. Thus, integrating BERT into discourse analysis requires deciding what the best understanding of the relation between linguistic practise, social structure and power relations is, and in turn what version of discourse analysis to use as an overall theoretical framework. The central focus of arguing for incorporating pragmatist perspectives on language into Foucauldian discourse analysis is my response to this requirement.

Since my underlying concern is with the possibility of augmenting sociological methods via computational means, my thesis falls within a broader context of conducting sociological research under conditions of early 21st century digitalisation, which can be understood in terms of the following socio-technological processes:

1. The continuous development and expansion of the internet and the world wide web (especially the development of 'Web 2.0').
2. The continued increase in computing power according to Moore's law (every two years the number of transistors in an integrated circuit doubles).
3. The rise of mass data harvesting as a central feature of commercial activity, and the practice of platform capitalism enabled by mass data harvesting.
4. The increasing sophistication of algorithmic analysis enabled by 2, 3 and the development of machine learning.
5. The development of open-source software as not only an alternative to proprietary software, but as an integral part of platform capitalism.

This introduction contextualises this thesis against the backdrop of early 21st century digitalisation through a broader discussion of academic sociology and general sociological knowledge production (including sociological knowledge produced outside as well as within academia) under conditions of early 21st century digitalisation. The appropriate way for academic sociology to respond to early 21st century digitalisation has been much discussed, as is demonstrated by the emergence of topics/subdisciplines like Computational Social Science, digital humanities, cultural analytics and the corresponding journals *Journal of Computational Social Science*, *Big Data and Society*, *Journal of Cultural Analytics*, *Digital Scholarship in the Humanities*, and so on. Two early instances of these discussions, which represent the beginnings of what are now two important subdisciplines of computational sociology, are Savage and Burrows' 'The Coming Crisis of Empirical Sociology' (2007), and Lazer et al.'s 'Computational Social Science' (2009). Much of the incorporation of the fruits of early 21st century digitalisation into sociological analyses takes place within these two subdisciplines.

I argue that an important element of the effort to develop academic computational sociology (as represented by the aforementioned journals, subdisciplines etc.) in this context is the work of continuously becoming familiar with using the machine learning techniques developed by platform corporations (or more precisely the platform-academia complex) and continuously investigating how these techniques may be used for the standard concerns of academic sociology. Though this kind of work is typical of academic computational sociology today, there are still gaps which this thesis addresses. These gaps concern (a) familiarisation with the use of large, pre-trained neural language models, which are platform corporations' current state-of-the-art in machine learning techniques for linguistic analysis, and (b) using algorithmic methods to investigate the concerns of sociological

discourse analysis (e.g. Foucauldian discourse analysis, Critical Discourse Analysis). There is, of course a lot of work applying algorithmic methods to sociological text analysis. However, such research rarely refers to discourse analysis and vice versa – discourse analysts rarely engage with algorithmic methods[1]. Engagement with machine learning NLP) techniques is especially rare among discourse analysts. Regardless of one's view on how well these approaches address the questions they pose, the questions posed by discourse analysis represent important lines of sociological enquiry, and computational sociology will not be able to tackle these lines of enquiry unless it directly engages with these discourse analytic traditions. If this does not happen, an important area of academic sociology will remain isolated from the possibilities of early 21st century digitalisation despite the now widespread effort by academic sociologists to exploit these possibilities.

In what follows I first consider academic computational sociology in the context of digitalisation. I discuss Savage and Burrows' 'Crisis of Sociology' and Lazer et al.'s 'Computational Social Science', briefly describing the 'subdisciplines' of computational sociology represented by both articles. I then explain the position of machine learning within the political economy of platform capitalism, considering the relation between the development of machine learning within platform capitalism and the subdisciplines of academic computational sociology. The purpose here is to contextualise the research gaps addressed by this thesis and explain the motivation behind addressing them. Afterwards, I claim that the very diverse range of sociological approaches to text analysis that might be referred to by 'discourse analysis' are united by a concern with understanding how linguistic practices are necessary for the enactment of social relations, especially power relations. Understanding how large language models can be used for discourse analysis therefore means understanding how large language models can be used to investigate the relationship of necessity between linguistic practices and social relations. Finally, I explain the thesis' structure, summarising the overall argument used to demonstrate how large language models can be utilised to understand how linguistic practices constitute social relations.

0.1 The Crisis of Empirical Sociology and Computational Social Science – Two Subdisciplines of Computational Sociology

In 2007 Savage and Burrows argued that the growth of 'commercial sociology' threatens to monopolise the collection and analysis of sociological data (Savage & Burrows 2007: 887). Commercial sociology refers to the research carried out in the private sphere independently of academic sociology, enabled by the huge datasets routinely produced by companies. It was argued that the rise of this routine

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[1] The use of corpus linguistics within some Critical Discourse Analysis research is a notable exception.

commercial production of data threatens the claim made by academic sociology to methodological expertise, since this routine production means that private companies have access to datasets that dwarf the datasets produced through standard academic practices like large-scale surveys (Savage & Burrows 2007: 887-889). Savage and Burrows give an example of an academic research project which performed a social network analysis of the interpersonal relations of three voluntary organisations. Through a highly labour-intensive process of sending out postal questionnaires, a dataset from under 320 people had been assembled. In contrast, researchers in telecommunications companies have routine access to datasets of billions of calls, which allows for far more detailed social network analyses than the laboriously constructed, and quite small, dataset of the academic project (Savage & Burrows 2007: 886-887).

This routine production of commercial data does not just indicate the presence of data harvesting infrastructure of a much greater scale than that of academia, it also indicates an established collection of knowledge producing organisations which do not depend upon (though there is much interaction with) academia. Thus, Savage and Burrows remark that it is no longer expedient to frame funding applications to the private sector for academic research in terms of academics being able to perform research that cannot be carried out by companies themselves (Savage & Burrows 2007: 887). Companies have their own data, their own research and development departments, their own networks of consultants and so on. So, while academic sociology will continue to produce its own distinctive kind of sociological knowledge, Savage and Burrows see this academic sociological knowledge becoming gradually insular in the face of an increasingly sophisticated commercial knowledge production. They contrast this situation to the 1960s, arguing that compared to Savage and Burrow's time of writing there was a much greater degree of methodological innovation in academic sociology, e.g. *New Society's* pioneering of sending out questionnaires by post to conduct surveys. They argue that such methodological innovations are the reason why the authority of academic sociology was stronger during the mid-20th century (Savage & Burrows 2007: 888-889). Since then, despite the fruits of early 21st century digitalisation, there have been no comparable methodological innovations from academic sociology. In contrast, the private sphere has fully integrated these fruits into their practices, which has enabled their routine production of data.

The pessimism of Savage and Burrow's 2007 article was not the only response from academic sociology to commercial sociology. A more North American subdiscipline of 'Computational Social Science' emerged in response to early 21st century digitalisation. The foundations of this tradition are older than early 21st century digitalisation, being rooted in complexity theory and social simulation (Conte et al. 2012: 328). However, the relevant sense of the term 'Computational Social Science' emerged as a result of those involved in social simulation and complexity theory responding to early 21st century digitalisation. This sense of 'Computational Social Science' is introduced in a 2009 article (Lazer et al. 2009), which discusses many of the same aspects of early 21st century digitalisation as Savage and

Burrows. Lazer et al., addressing the growth of commercial sociology, citing the practices of Google and Yahoo, as well as state sociology as practised through the mass surveillance of the U.S. National Security Service (Lazer et al. 2009: 721). They also consider the danger that commercial/state sociology will monopolise computational sociology. Interestingly, they also consider the danger that computational sociology will become the domain of an academic elite who gatekeep a closed-access repository of data which cannot be availed by those outside the elite, meaning that research results cannot be tested for reproducibility. Nevertheless, despite these cursory observations about the danger of computational sociology becoming a closed-access preserve of private corporations/state surveillance/academic elite, unlike Savage and Burrows the focus is not on arguing that the development of market forces – through digitalisation and 'knowing capitalism' – threatens to isolate academic sociology. Rather, the early writings of Computational Social Science are focused on describing in some detail what computational procedures can be used in sociology (Lazer et al. 2009: 722). Thus, much of the 'Manifesto of Computational Social Science' (2012) details how simulation methods such as agent-based modelling can be used within a complex systems approach to sociology. This is what gives early Computational Social Science writings its more optimistic tone.

'The Crisis of Empirical Sociology' has had quite an impact, being one of the most cited articles in *Sociology* of the past decade (Savage & Burrows 2014: 1). Its impact is especially noticeable in the journal *Big Data and Society*, being a staple reference point of many of its articles and having Savage and Burrows' follow-up paper, 'After the Crisis? Big Data and the Methodological Challenges of Empirical Sociology', as one of the articles published in its very first issue. *Big Data and Society* therefore represents a quasi-institutionalisation of a broad focus upon studying digitalisation and critiquing/making use of computational methods in sociology, and many of the concerns raised by Savage and Burrows constitute major topics within *Big Data and Society*. Let this sort-of-subdiscipline represented by *Big Data and Society* be called 'Big Data Sociology'. There are two main differences between Big Data Sociology and Computational Social Science; between (a) the focus given by both subdisciplines to the relation between digitalisation, computational sociology and capitalism, and (b) the extent to which both subdisciplines engage with more established sociological methods and theories, e.g. ethnographic methods.

Regarding (a), much of the pessimism of Savage and Burrows' 'Crisis of Empirical Sociology' is rooted in its understanding of digitalisation as a consequence of the integration of data harvesting into market processes, hence their emphasis on digitalisation as an aspect of 'knowing capitalism' (Savage & Burrows 2007: 886) (Thrift 2005). Thus, the increasing marginalisation of academic sociology through commercial sociology is understood as the result of the development of knowing capitalism. This understanding of digitalisation as an aspect of capitalist development means the political economy of digitalisation, and how computational sociology is both enabled and limited by the political economy of digitalisation is a recurring topic in Big Data Sociology and as such is discussed in Big Data

Sociology to a much greater extent than in Computational Social Science, e.g. (Törnberg & Uitermark 2021), (Luitse & Denkena 2021), (Dalton & Thatcher 2015). This is not to say Computational Social Science does not discuss how computational sociology is constrained by the political economy of digitalisation – Lazer et al. argue that a necessary part of institutionalising computational sociology involves negotiating with big tech corporations, since such corporations own the majority of big data (Lazer et al. 2020: 1060). Furthermore Lazer et al. recognize that platform corporation datasets are limited as sociological evidence since they reflect social behaviour as conditioned by the interests of platform corporations, rather than social behaviour in general (Lazer et al. 2020: 1061). However, these considerations are presented as part of a plan of action for the institutionalisation of Computational Social Science, rather than as objects of academic enquiry. When it comes to academic enquiry, Computational Social Science is more concerned with understanding social dynamics independently of political economy, with the hope being that, despite the limitations of platform corporation data, such data can yield insights about social dynamics in general rather than social dynamics under conditions of platform capitalism, hence Computational Social Science's focus on uncovering universal social laws (Keuschnigg et al. 2018: 9). Where Computational Social Science does investigate social dynamics unique to the conditions of platform corporations, it tends to narrowly focus on problems of echo chambers and misinformation associated with social media, but again in a manner that does not consider the political economy of social media companies, e.g. (Havey 2020), (Shahsavari et al. 2020).

Regarding (b), there is greater discussion in Big Data Sociology on how computational methods can be incorporated into more established sociological methods such as ethnography. For example, a recurring topic in *Big Data and Society* is the extent to which algorithmic text analysis procedures, such as topic modelling, can fit within a grounded theory framework (Glaser & Strauss 1967), a framework originally developed as a method of making inductive inferences from qualitative data (gathered through interviews, participant observation etc.), as opposed to the more deductive approach allegedly required by pre-digitalisation statistical methods (Carlsen & Ralund 2022), (Munk et al. 2022). Related to this is the more general topic of digital ethnography, which is concerned as much with using traditional ethnographic methods to understand online cultures as it is with incorporating algorithmic procedures into ethnographic approaches (Brooker 2022), (Cardullo 2015). One also sees discourse analysis used in Big Data Sociology, where the focus tends to be either on understanding 'Big Data' as a discursive construct or on performing discourse analysis on social media discussions (e.g. tweets, comments etc.) (Stevens et al. 2018), (Pentzold & Fischer 2017).

0.2 Commercial Sociology and Platform-Academia

The integration of mass data analysis into capitalism argued by Savage and Burrows (and briefly noted by Lazer et al.) to be behind the potential crisis of empirical sociology has developed into a distinctive political economy that is usefully understood as platform capitalism, a political economy dominated by platform corporations whose profits rely on mass data collection and analysis (Srnicek 2017). One consequence of this political economy has been the intensive development of machine learning algorithms (often deceptively labelled as 'artificial intelligence') (Srnicek 2018: 157), which are currently the most powerful techniques available for making sense of big data. To understand the present relation between academic sociology and the commercial sociology of platform corporations given the development, over the past decade, of subdisciplines like Computational Social Science and Big Data Sociology, it is necessary to briefly go over the political economy of platform corporations and the role of machine learning in this political economy.

Platform corporations are corporations whose profitability depends upon providing online spaces, i.e. platforms, which both provide services which can be rented out and collect data from users which is then used to make the services more valuable (Srnicek 2017: 43-44). This means the services provided by platforms are worth renting relative to comparable services that do not operate through platforms only to the extent to which they are improved by the data harvested by the platforms. Thus, Facebook's targeted ads service is worth renting only because Facebook is able to use the data it collects from users of its social media platform to ensure advertisements are shown to those most likely to buy the advertised product/service. Likewise, Uber is only worth using because it can use the data it harvests from travellers and drivers to quickly select the best placed drivers for a trip and calculate the best route for a trip. Machine learning is the key technology here, providing the concrete means through which today's platform services can be improved through data (Srnicek 2018: 157). The reliance the services offered by platforms have upon the data collected by platforms means platform corporations pursue 'network effects' (Srnicek 2017: 45), which describes when platforms attract new users simply because they already have a large number of users. So, people might migrate to a new social media platform because their friends are already on the platform. If platforms can attract the critical number of users required to generate network effects, and so achieve the cycle in which new users guarantee a future influx of new users, then platform corporations can use the mass of new data generated by this cycle to improve their services and profitability, which in turn attracts more users and augments network effects. This relation between the value of platform services and the data generated by network effects means platform corporations are by nature monopolistic – a platform's services are most valuable when the platform dominates the market for the services and therefore maximises the data it can collect (Srnicek 2017: 45).

The important point here is the role of machine learning in the growth of platform corporations. Machine learning is what allows platform corporations to take advantage of the data generated through network effects. Thus, platform corporations invest heavily in the computational capital (e.g. servers, processing units, memory, storage space) required to develop machine learning, which allows further improvements to platform services (Srnicek 2020). Machine learning is therefore an indispensable element of the virtuous cycle which powers platform corporations' growth (Srnicek 2018: 157), in which network effects generate more data, which in turn improves platform services through machine learning, which in turn generates enough profit to invest in computational capital, which in turn allows improvement of machine learning algorithms and therefore platform services, which in turn reinforces network effects, and so on.

NLP is a clear example of machine learning's position within this virtuous cycle. The key development in recent years in NLP is the introduction of large language models (Vaswani et al. 2017), which have set a new standard in tasks such as sentiment analysis, next sentence/token prediction and so on, meaning they are the current state-of-the-art when it comes to analysing big textual data. The development of large language models is integrated into the process of using the data generated by network effects to improve platform services, e.g. The large language model BERT (Bidirectional Encoder Representations from Transformers) is used to improve Google's search engine results (Nayak 2019). large language models are also an integral part of the expansion of cloud computing platforms such as Google Cloud Platform, Amazon Web Services or Microsoft Azure. Such platforms enable people to rent out the computational resources used by corporations to operate platforms. To properly train large language models one needs both enormous datasets and therefore enormous computational resources. The amount of resources required to develop large language models has only been growing since their introduction, since it has been found that increases in their performance is facilitated by increases in their size. So, while Google's 2018 BERT had 340 million parameters (Devlin et al. 2019: 4173), Google's 2020 T5 has 11 billion parameters (Raffel et al. 2020: 3). The restrictive size of large language models prevents smaller organisations from developing them, which means they can be offered as a pay to use service provided by cloud computing platforms. Google (Natural Language AI[2]), Amazon (Amazon Comprehend[3]) and Microsoft (Cognitive Service for Language[4]) all offer NLP services on their cloud computing platforms.

The development of cloud computing platforms and the position of machine learning algorithms, such as NLP algorithms, as pay to use cloud computing services, indicates platform corporations' monopolisation of the infrastructure of commercial sociology. For example, geospatial analysis – the type of commercial sociology which has received the most attention from academic sociologists

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[2] https://cloud.google.com/natural-language
[3] https://aws.amazon.com/comprehend/
[4] https://azure.microsoft.com/en-gb/services/cognitive-services/language-service/

(Burrows & Gane 2006), (Dalton & Thatcher 2015) – now occupies the same position as NLP within cloud computing platforms. Geospatial analysis involves applying statistical techniques – including many machine learning techniques – to find associations between location and other, non-geographic variables, e.g. socioeconomic class, ethnicity etc. Such analysis is pervasively used by companies to carry out targeted advertising (as is NLP), analysis of logistics networks and so on. Google offers geospatial analysis as an addition to its BigQuery cloud data warehousing service[5], Amazon offers Amazon Location Service[6] which gives users of the service access to geospatial data, and Microsoft offers Azure Maps[7] which offers both geospatial data and analysis. Cloud computing is a growing market, with Gartner (a technological research and consulting firm) predicting that total end-user spending on cloud services will reach nearly $600 billion in 2023, compared to $495 billion in 2022 and $411 billion in 2021 (Gartner 2022), as well as being highly concentrated, with Amazon, Microsoft and Google together having around 64% of the cloud computing market share according to Synergy Research Group (2022). Along with the fact that NLP and geospatial analysis (as well as other kinds of analysis involving machine learning, e.g. computer vision) are offered as cloud computing services, this suggests that commercial sociology as practised by companies' in-house research teams and consultancy firms is becoming increasingly reliant on not only the infrastructure of the cloud computing platforms of a small number of enormous platform corporations, but also the machine learning techniques developed by those corporations.

It is important to note that commercial sociology is not independent of academia. NLP is an academic discipline, and many of the NLP procedures developed by platform corporations are presented in academic circles. Often new NLP techniques developed by platform corporations are presented and published at/by academic conferences and professional associations. Two key examples are the Association of Computational Linguistics and the International Conference on Learning Representations, both of which host conferences where NLP and machine learning research are presented. Google's BERT (Devlin et al. 2019) was presented at the 2019 North American Association of Computational Linguistics conference, Facebook's fastText was published by the Association of Computational Linguistics' journal Transactions of the Association of Computational Linguistics (Bojanowski et al. 2017). Furthermore, platform corporations often sponsor these academic conferences/associations, with both Association of Computational Linguistics and International Conference on Learning Representations receiving sponsorships from Google, Apple, Facebook and Amazon[8]. It is also notable that the board members and officers of International Conference on Learning Representations and Association of Computational Linguistics often include platform corporation researchers, e.g. the chair of International Conference on Learning Representations 2021-2022 is Yann

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[5] https://cloud.google.com/bigquery/docs/geospatial-intro
[6] https://aws.amazon.com/location/
[7] https://azure.microsoft.com/en-gb/services/azure-maps/
[8] https://www.2022.aclweb.org/sponsorship, https://iclr.cc/Conferences/2022/Sponsors

LeCun, Chief AI scientist of Facebook, and between 2020-2021 the chair of the North American chapter of the Association of Computational Linguistics was Colin Cherry, a research scientist at Google Translate[9]. It is therefore more accurate to say the development of the machine learning techniques, upon which commercial sociology is becoming increasingly dependent upon through the expansion of cloud computing, is led by a platform-academia complex.

0.3 Academic Computational Sociology under Conditions of Platform-Academia

For Savage and Burrows, the situation to be avoided is academic sociology becoming an increasingly marginal part of the production of sociological knowledge compared to a commercial sociology bolstered by digitalisation. The growth of Computational Social Science and Big Data Sociology is a counteracting force against the potential realisation of this situation, enabling academic sociology to critically engage with and incorporate the digitalised methods developed for commercial sociology. Thus, machine learning NLP methods developed by platform corporations – especially Google's word2vec and Facebook's fastText – and geospatial analysis are frequently used in academic computational sociology. Computational Social Science and Big Data Sociology have also resulted in cross-fertilisation between research in the academic side of the platform-academia complex and in academic sociology, with sociologists frequently using techniques developed in academic NLP, e.g. topic modelling. However, it is important to note that despite the progress of Computational Social Science and Big Data Sociology, currently academic computational sociology ultimately piggybacks off the growth of platform corporations. As Lazer et al. note, much computational sociological research is reliant on datasets gathered by platform companies made available through application programming interfaces (especially social media datasets) (Lazer et al. 2020: 1060). Furthermore, while often machine learning academics make their algorithmic procedures freely available, computational sociologists nevertheless heavily rely on platform corporations open-sourcing the algorithms they've developed – word2vec and fastText are prime examples. Unless academic sociology can foster an independent means of mass data collection of a scale orders of magnitude greater than what is possible with surveys, this will remain the case for the foreseeable future. In such conditions, the piggyback work of becoming familiar with using the latest machine-learning techniques developed by platform-academia and investigating how such techniques can be used to address the traditional concerns of academic sociology is crucial to the development of academic computational sociology.

It is fortunate that platform corporations have found open-sourcing their machine learning techniques to be in their interests. Regarding NLP, especially important is Hugging Face, a company that provides both a cloud computing platform and machine learning services, which provides an extensive open-

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[9] https://iclr.cc/Conferences/2022/Board, https://naacl.org/officers/officers-2022.html

source Python library containing over 39,000 large language models, many of which are directly contributed by the likes of Google, Microsoft and OpenAI[10]. This thesis relies on Hugging Face's implementation of BERT. The integration of open-source software into platform capitalism at first seems counter-intuitive, since open-source software is software released under a licence that permits users to freely use, edit and distribute it. This does not seem compatible with making software to make money – one would expect corporations to rely on not permitting free use, editing and distribution to turn profits, so that competitors cannot copy their products. Indeed, this rationale was behind Microsoft's initial hostile stance towards open-source software (Birkinbine 2020: 49–50). However, open-source licensing offers advantages over proprietary licensing when it comes to the production of software. Since anyone is permitted to edit and copy open-source software, combined with an effective system for quality control, open-source development can amass a large workforce that can produce software of the same quality as proprietary software, and release updates and fixes rapidly (Birkinbine 2020: 38). Crucially, this workforce is a voluntary workforce, meaning they do not require payment (though investment in open-source projects from monetisation of such projects can work as a quasi-substitute, as in RedHat and Fedora (Birkinbine 2020: 79–81)). The permissive licensing and voluntary nature distinctive of open-source development means in principle there is no upper limit on how many people can work on a piece of software. Thus, it is plausible that open-sourcing machine learning procedures is in the interests of platform corporations because it offers a way to amass a large, sophisticated workforce that can rapidly improve open-sourced machine learning code for free (Srnicek 2020). These improvements can then be fed into the virtuous cycle of network effects, improved machine learning techniques and improved exploitation/larger quantities of data. Furthermore, machine learning techniques often require restrictively large amounts of computational capital to fully exploit, which in general only large platform corporations have. This means smaller competitors without access to similar amounts of capital would be unable to exploit machine learning techniques to the same extent as large platform corporations, even given the open-sourcing of those techniques (Srnicek 2020).

All this suggests open-source development of machine learning is a permanent feature of platform capitalism. This permanence means it can be relied upon for the foreseeable future as a free-to-access channel to the most recent developments in platform-academia led machine learning. This makes continuous familiarisation with the general environment of open-source machine learning – the organisations involved in open-source machine learning as well as familiarity with using open-source libraries – an important part of the piggyback work needed to develop academic computational sociology. However, despite widespread use of NLP in academic computational sociology, engagement with developments in open-source machine learning has not been as up to date as possible, with there being a scarcity of work making use of open-sourced large language models. At time of writing (April

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2022), only one article incorporates BERT as part of its method in the *Journal of Computational Social Science* (Shahsavari et al. 2020). The same is true for *Big Data and Society* (Gray and Suzor 2020), although BERT and large language models in general are the subject of a number of *Big Data and Society* papers. Other open-source large language models such as GPT-2 and variants of BERT (e.g. RoBERTa, ALBERT) are not mentioned in either journal. Given the importance of keeping up with developments in machine learning, this is a large gap in the literature which this thesis addresses.

0.4 The Question of Necessity and Neoliberal Discourse

This thesis addresses the lack of investigation into incorporating large language models into sociological methodology by considering how one can use large language models to address the concerns of discourse analysis. This addresses another gap in computational sociology literature. Though use of NLP methods is frequent amongst sociologists engaging in text analysis, there is little work on adapting these methods for discourse analysis in particular. So, while discourse analysis is found in Big Data Sociology literature, it is rarely combined with NLP methods. The closest thing to a combination of discourse analysis and NLP methods one sees is work done on incorporating corpus linguistic methods into Critical Discourse Analysis (Baker et al. 2008) (Nartey and Mwinlaaru 2019). However, despite a few scattered examples (e.g. (Aranda et al. 2021)), generally, the focus of such work is not upon machine learning NLP methods in particular or more generally investigating how academic sociology can benefit from early 21st century digitalisation.

However, 'discourse analysis' is a very broad term and can encompass a broad range of approaches to text analysis. Without specifying some concern shared by this range of approaches, the focus of investigating how large language models can be used to address the concerns of discourse analysis remains vague. Throughout this thesis I maintain that a central concern uniting disparate approaches to discourse analysis involves understanding how the performance of certain linguistic practices is necessary for the enactment of particular social relations. I call this concern the Question of Necessity. More specifically, I argue that two major and distinct approaches to sociological discourse analysis are the Barthesian approach and the Foucauldian approach, which provide different answers to the Question of Necessity. There is little point in going over this argument here – the first half of the thesis is devoted to detailing this argument. But it is worth briefly unpacking further what this 'relationship of necessity' between linguistic practices and social relations might involve.

By 'social relations' I mean the modes of interaction between people sociologists are generally interested in; economic relations (e.g. buyer-seller relation), organisational relations (e.g. manager-subordinate), family relations (e.g. parent-child) and so on. By 'linguistic practice' I mean the actions involved in linguistic communication; speech acts, syntactic parsing of sentences, assigning truth-

values to statements, making references, grasping statements' logical interrelations and so on. So, the enactment of particular configurations of linguistic practices like speech acts, grasping/making logical interrelations, etc. is a necessary condition for the enactment of particular social relations, in the same way that setting the price of goods is a necessary condition for enacting a buyer-seller relation. Different approaches to discourse analysis characterise this relation of necessity in different ways. The Foucauldian approach takes a mereological perspective, in which linguistic practices are necessary components of the organisational relations through which governmental power is maintained. In contrast Barthesian approaches argue linguistic practices maintain or perpetuate, rather than constitute in a mereological sense, social relations. Critical Discourse Analysis relies on critical realist philosophy to argue the relation of necessity between linguistic practice and social relations is a causal relationship.

Discourse analysis' interest in the Question of Necessity is motivated by a project of political critique. Both Foucauldian and Barthesian approaches are generally employed to show how linguistic practices are often used to maintain or establish unjust power relations. So, the point of considering the Question of Necessity is usually to uncover how certain uses of language enable the maintenance of things like unjust class relations or the governmental power relations necessary to maintain neoliberalism. To keep my investigation of the utility of large language models relevant to this project of political critique I take the use of words associated with neoliberal discourses in British state organisations to be the central empirical focus of this thesis. Thus, the second half of this thesis is devoted to the analysis of how the spread of what Joseph and McGregor (2020) have called crisis neoliberal discourse in the organisations of the British state can be understood in terms of the spread of the linguistic items distinctive of crisis neoliberalism – namely the words 'resilience', 'sustainability' and 'wellbeing'. I construct a dataset of legislation and documents from 12 central state departments and use the large language model BERT (Devlin et al. 2019) to track the movement of different senses of 'resilience', 'sustainability' and 'wellbeing' within the dataset between 2000 and 2020. I chose to focus on these terms as Joseph and McGregor have noted they represent a new form a neoliberal discourse that has only become prominent quite recently. This means much of their spread is contained in the time period 2000 – 2020, convenient as data from before 2000 is difficult to collect en masse. The idea here is to illustrate the utility of large language models by using them in an empirical analysis of neoliberal discourse. As my overall purpose is the exploration of the potential of large language models as a methodological tool, I approach this empirical focus in a purely descriptive spirit rather than as part of a broader goal of political critique. The point is to show how large language models, when combined with a Foucauldian approach to the Question of Necessity, enable new kinds of sociolinguistic descriptions of the linguistic practices involved in governmental power. Despite the lack of focus on critique, these new kinds of sociolinguistic descriptions ought to be of interest to discourse analysts as they reframe some of the perspectives on language presupposed by discourse analysts' critiques.

My examination of the spread of crisis neoliberal discourse across state organisations is not only motivated by the goal of illustrating the usefulness of large language models to discourse analysis. It is also motivated by a theoretical concern with showing that Foucauldian approaches are preferable to Barthesian approaches, and that pragmatist perspectives on language can and should be integrated into Foucauldian approaches to the Question of Necessity. Pragmatist perspectives emphasize how the production and interpretation of linguistic expressions is dependent on the interlocutor relations in which they are used and the contextual information accessible by interlocutors. For example, pragmatist linguists and philosophers of language emphasize how interlocutors' capacity to successfully interpret a statement depends on them making inferences from contextual assumptions, presuppositions and conversational norms, the selection of which is dependent on the immediate history of the conversation/text in which the statement appears. As well as an illustration of the utility of large language models, my analysis of the spread of crisis neoliberal discourse is an illustration of how a pragmatist-Foucauldian approach can be applied in empirical analysis.

This theoretical motivation is intertwined with the motivation of illustrating the utility of large language models. Constructing a method of text analysis around large language models useful for answering the Question of Necessity is not as simple as grafting an algorithmic procedure onto already-existing approaches to Foucauldian discourse analysis. Such approaches have not been designed with the integration of algorithmic procedures or even standard corpus linguistic procedures in mind, meaning they do not come equipped with the theoretical tools to interpret the output of algorithmic/corpus linguistic procedures. Furthermore, my choice of incorporating large language models into a Foucauldian approach, rather than a Barthesian or Critical Discourse Analysis approach needs justification. This justification can only be provided by answering questions about the theoretical premises of different discourse analysis approaches. Should the relationship of necessity between linguistic practice and social relations be understood in mereological or causal terms? Are the theoretical premises of Foucauldian and Barthesian approaches consistent, or do they contradict each other? Incorporating large language models into discourse analysis is therefore as much a theoretical project as it is a technical project.

So, nested within the overall concern with illustrating the usefulness of large language models as a tool for approaching the Question of Necessity is the theoretical concern of incorporating pragmatist perspectives on language into Foucauldian work on discourse and governmentality. At the centre of this theoretical concern is the development of a pragmatist reading of Foucault that draws upon David Lewis' discursive scorekeeping framework (Lewis 1979). I use this framework to link the interlocutor dynamics which govern the production and interpretation of statements to the small-scale organisational and interpersonal practices (i.e. microphysical or capillary practices in Foucauldian terminology) through which governmental power is exercised. Aside from the methodological concerns sketched in the previous paragraph, I use the pragmatist-Foucauldian perspective to elaborate on the relation

between linguistic practice and the small-scale organisational and interpersonal relations emphasised in Foucauldian work on governmentality at a greater scale of analysis than is typical.

Existing Foucauldian discourse analysis tends to focus on demonstrating that certain texts reflect the kinds of knowledge that are especially distinctive of governmental/disciplinary/juridical power, or how the ideas found in texts are drawn upon to shape individual agency in a way that is amenable to the exercise of governmental/disciplinary/juridical power (i.e. subject constitution). Underlying these focuses is Foucault's microphysical or capillary conception of power (Foucault 1978) (Foucault 2006), in which there are two lenses of analysis. First, power is to be understood in terms of the knowledges and procedures through which aspects of individuals and populations – the body, the mind, birth rate, crime rate, etc. – are made controllable. Second, these knowledges and procedures are to be understood in terms of the small-scale organisational and interpersonal practises in which they are used. Despite the second focus, Foucauldian discourse analysis tends not to examine the systematic nature of the way linguistic practices are embedded within organisational and interpersonal relations in much detail. This is not to say that organisational/interpersonal relations are not the focus of Foucauldian discourse analysts. There are of course plenty of examples of Foucauldian studies that analyse discourse with respect to employer-employee relations (Zoller 2003), doctor-patient relations (Speed 2006), teacher-student relations (Winges-Yanez 2014), and so on. However, these analyses do not relate discourse to the total organisational systems formed by these relations. If a purpose of the microphysical perspective is to understand how power is exercised through the capillary networks/systems formed by small-scale organisational/interpersonal relations, and linguistic practice is a necessary correlate of these relations, then understanding the discursive character of power must involve understanding how particular linguistic practices are systematically embedded within the networks formed by organisational/interpersonal relations. Focusing on how texts reflect governmental/disciplinary/juridical knowledge, or on how texts are drawn upon in the production of governable subjects, does not quite address this. My pragmatist reading of Foucault is intended to extend the scope of discourse analysis to include analysis of how linguistic practices are systematically embedded in organisational/interpersonal networks.

An example of a question about this systematic embedding concerns the spread of discourses. The widespread adoption of some discourse must involve the spread of a discourse across and within organisations. For example, the widespread adoption of neoliberal discourse since the 1970s by states must have involved the spread of neoliberal discourse across and within think tanks, government departments, local authorities, regulatory agencies, and so on. This means the linguistic items characteristic of neoliberal discourse – e.g. statements, vocabularies – must have spread across and within think tanks, government departments etc. From a pragmatist perspective, the meanings of the statements/vocabularies distinctive of neoliberal discourse are fixed by the inferences from contextual assumptions, presuppositions, norms etc. which characterise the interlocutor dynamics distinctive of the

organisations across/within which neoliberal discourse spreads. So, the spread of neoliberal discourse across and within state organisations must have involved the enactment of particular patterns of organisational interlocutor dynamics. This in turn means the subject forming, discursive aspect of neoliberal governmental power relies on the establishment of intricate, sociolinguistic structures of interlocutor relations, contextual assumptions, presuppositions and so on. Focusing only on discursive subject constitution and how texts reflect governmental/disciplinary/juridical knowledge leaves little room for understanding how such structures mediate discourse. Addressing the question of the spread of discourses means analysing language on a much greater scale than analysis of language as a means of subject constitution and as a reflection of particular kinds of knowledge, since understanding the sociolinguistic structures which mediate discourse requires understanding how words and statements are used across large quantities of organisational and interlocutor contexts. This is where the utility of large language models is – they can be used to carry out text analysis at the required scale.

0.5 Thesis Structure

To present the lines of reasoning behind my pragmatist reading of Foucault and how I used BERT in the empirical examination of *resilience*, *sustainability* and *wellbeing* as clearly as possible, I have divided the bulk of the thesis into two parts. Part 1 (Chapters 1, 2 and 3) contains the discussion of the theoretical concerns pertinent to the pragmatist reading of Foucault, while the Part 2 (Chapters 4 and 5) contains the empirical examination and methodological discussion of how BERT was used. In Chapter 6 I tie these halves together, using the pragmatist perspectives in the first half to interpret the empirical analysis of the second half and discuss the sociolinguistic mechanics underlying governmentality predicated on *resilience*, *sustainability* and *wellbeing*. I end this introduction with a brief description of the purposes and contents of the first and second halves and how I link the concerns of the two halves in chapter 6.

The theoretical discussions of Part 1 have the following purposes; to (a) outline and evaluate different approaches to answering the Question of Necessity, (b) evaluate the methods of text analysis generally used to consider the Question of Necessity and (c) develop a pragmatist reading of Foucault's work on governmentality.

Regarding (a), I focus on two approaches which are particularly influential in sociology, the Barthesian approach and the Foucauldian approach. In Chapter 1 I outline the difference between pragmatist and semantic understandings of meanings and argue that the Barthesian approach works according to a semantic understanding. I provide a critique of the Barthesian semantic approach. I do this through a discussion of Critical Discourse Analysis, since the framework of Barthes' semiological analysis of

ideology is not often used in sociology. Critical Discourse Analysis is more frequently used and has modes of text analysis that follow a Barthesian logic, though it is important to note that Critical Discourse Analysis is quite a broad approach and not all aspects of Critical Discourse Analysis maintain a Barthesian logic. Some aspects of Critical Discourse Analysis are in fact closer to a Foucauldian framework. In Chapter 2 I discuss the Foucauldian approach and those approaches within Critical Discourse Analysis consistent with a Foucauldian approach, arguing that these approaches necessitate focusing upon text systems. I use the notion of text systems to introduce the question of the spread of discourses as the central empirical concern and highlight existing approaches' limitations as ways of understanding the spread of discourses. The discussions of Critical Discourse Analysis in Chapters 1 and 2 are largely a response to Fairclough's work, as he has provided an extensive articulation of methods of text analysis and theories of discourse and power which remains a significant influence on sociological text analysis today. Any discussion of sociological discourse analysis therefore must address Fairclough's work. Furthermore, he has done a lot of work analysing state discourse (especially the discourse of New Labour), meaning his work is a useful counterpoint to my approach. At the end of Chapter 2 I contrast an approach to the Question of Necessity centred on David Lewis' scorekeeping approach to more standard approaches which centre 'semiosis' as the central object of discourse analysis. Semiosis centred understandings of discourse are typical of poststructural and Critical Discourse Analysis approaches. I argue that a scorekeeping centred approach is preferable. Through this, I come to a mereological understanding of the necessary relationship between linguistic practise and social relations. I take the scorekeeping dynamics of interlocutor relations to be a constitutive part of the social relations through which governmental power is exercised.

Regarding (b), in Chapter 2 I use the notion of text systems to show how the close reading methods typically used in discourse analysis cannot be used to carry out text analysis at the scale required to understand how discourses spread across and within organisations. I argue such an understanding can only be arrived at through an understanding of the overall, structural features of text systems, which are composed of many thousands of texts. Since close reading works through analysis of small, selective samples of text, it is unable to reveal much about text systems' overall structural features.

Regarding (c), in Chapter 3 I use the scorekeeping framework to develop my pragmatist reading of Foucault. I start with a discussion of governmentality, highlighting the differences between Foucault's and Barthes' understandings of the necessary relation between linguistic practice and power relations. I then argue that in Foucault's writings about governmentality and method in *Archaeology of Knowledge* there is a clear shift from analysing discourse in terms of what can be gained from texts just from reading them towards analysing discourse in terms of the interpersonal/organisational relations in which texts are used. This means there is a fundamental similarity between Foucault's work and pragmatist understandings of meaning that emphasise the interdependence of meaning of interlocutor relations and contextual information. These similarities are the motivation behind developing a

pragmatist reading of Foucault. After noting these similarities, I integrate the notions of technologies and rationalities – introduced in Miller and Rose's reading of Foucault (Miller & Rose 2008) (Miller & Rose 1990) – into the scorekeeping framework.

Part 2 has two purposes; to (d) argue that an approach incorporating NLP methods and large language models are useful for understanding structural features of text systems and the spread of discourses and (e) illustrate this usefulness through an empirical analysis of the text systems of the British state, thereby illustrating how large language models can be used to address the Question of Necessity.

Regarding (d), in Chapter 4 I argue that a variationist approach, taken from first wave sociolinguistics, offers a way of understanding the overall structural features of text systems. Drawing on recent work in NLP which makes use of a variationist framework, I explain how NLP methods, including use of large language models, can be integrated into a variationist method for investigating the text systems. Regarding (e), I conduct an empirical study of the spread of 'resilience', 'sustainability' and 'wellbeing' discourses within the British state between 2000-2020. In Chapter 5 I focus on how the division of labour that structures the state's text systems conditions the word choices made in those text systems and the sense generation inherent in the adoption of 'resilience', 'sustainability' and 'wellbeing' discourses.

To link the concerns of the two parts, in Chapter 6 I draw upon the pragmatist perspectives discussed in Part 1 (especially relevance theory (Sperber & Wilson 1995)) and Putnam's notion of division of linguistic labour (Putnam 1975) to discuss what Chapter 5's empirical analysis reveals about the spread of discourses. I use these notions to give an account of the 'pragmatics of governmentality' – an account of how the British state's exertion of governmental power predicated on *resilience*, *sustainability* and *wellbeing* is dependent on how government workers behave as *interlocutors* who must interpret these notions in a manner appropriate to their organisational contexts in order to make them in actionable policy frameworks.

I end this thesis with some comments on what the process of using large language models for the concerns of discourse analysis reveals about the piggyback work needed to develop computational sociology. I also discuss limitations of the approach I have developed, and future directions of research that might overcome these limitations.

Part 1

Chapter 1: Two Approaches to the Question of Necessity

A key distinction between Barthesian and Foucauldian approaches to the Question of Necessity concerns how linguistic meaning is understood in each. While the Barthesian approach adopts a primarily semantic understanding of meaning, the Foucauldian approach adopts a primarily pragmatic understanding.

This difference has important methodological implications for approaching the Question of Necessity – detailing these is the central purpose of this chapter. Taking a semantic view of meaning leads to an approach to the Question of Necessity in which the interpretation and encoding of the text's directly encoded content are taken to be the key to linguistic practices necessary for the enactment of social relations. Such a perspective maintains that the focus of discourse analysis ought to be on isolating the bits of content encoded in texts that are particularly significant in the enactment of power relations. This ultimately means that text analysis ought to be a method of decoding the text's contents in a way that makes its role in the enactment of power relations transparent. On the other hand, taking a pragmatic view of meaning leads to an approach to the Question of Necessity in which arrangements of multiple kinds of linguistic practice, possibly including but not limited to the encoding and interpretation of directly encoded content, are taken to be necessary for the enactment of social relations. Methodologically this involves analysis of texts focused on how texts are used to construct such 'arrangements'.

Carefully understanding these differences is important if one wants to investigate how large language models can be used to address the Question of Necessity, since these two approaches work upon quite different objects of analysis. The object of Barthesian semantic analysis is what is directly encoded within texts; the object of pragmatic Foucauldian analysis are the total social structures/arrangements of linguistic practices in which texts are just one kind of element. Using large language models to analyse one kind of object will require a quite different approach to using them to analyse the other. So, being clear on the differences between both approaches is necessary to understand how exactly to use large language models to address the Question of Necessity. Furthermore, as I argue throughout this section, both approaches are fundamentally incompatible, meaning a decision has to be made about which approach to the Question of Necessity should be adopted. How large language models are to be used depends on what decision is made. I begin discussion of the two approaches to the Question of Necessity by discussing the difference between semantic and pragmatic understandings of meaning.

1.1 Semantic and Pragmatic Views of Meaning

Crucial to the semantic perspective of meaning is the notion of 'directly encoded' content. What separates an expression's (e.g. texts, sentences, words, etc.) semantic meanings from meanings that are merely 'contextually determined' is that the semantic meaning is 'directly encoded' into the strings/characters that compose expressions. From the pragmatic perspective, it is not useful to draw such a rigid distinction between meanings that are directly encoded and meanings present by virtue of contextual factors. So, to understand the distinction between semantic and pragmatic perspectives it is necessary to spell out what 'directly encoded' means and in what sense linguistic meanings are 'contextually determined'.

Burton-Roberts argues that to talk of content directly encoded into an expression is to take such content to be a constitutive part of the expression, in the same way the two sides of a sheet of paper (Saussure et al. 2011: 113) are constitutive parts of the sheet of paper (Burton-Roberts 2013: 3–4). This mereological relationship (i.e., a relationship between parts and wholes) is to be distinguished from a semiotic relationship, in which something stands for something else. Burton-Roberts stresses that *x* standing for *y* does not entail *x* is part of *y*, or that *x* or *y* are both parts of some other object (Burton-Roberts 2013: 4–5). In Saussure's notion of the sign, the signifier and signified have a semiotic relation to each other, with the signifier standing for the signified, and both are in a mereological relation with the sign. Saussure emphasises that both signifier and signified are inseparable, constitutive elements of the sign (Saussure et al. 2011: 113). Thus, the signified is the semantic content of the sign.

The same mereological logic is found in two major traditions of linguistics/philosophy of language; in Chomskyan generative grammar (towards which Burton-Roberts aims his critique of semantics-as-a-part-of-expressions), and in externalist semantics. It is worth briefly surveying how semantics-as-a-part-of-expressions feature in these two traditions.

Generative grammar takes linguistic competence to be an innate part of human biological nature (Chomsky 1995: 12–13), where competence consists in: the capacity to construct an infinite range of grammatical expressions from a finite collection of linguistic resources (lexical items, sounds etc.), and the capacity to distinguish grammatical from ungrammatical sentences (Chomsky 2015: 1–4). This innate competence is what Chomsky calls the Faculty of Language (with 'I-language' being the state of someone's Faculty of Language once they've learnt a language (Chomsky 1995: 13–14)). The purpose of generative grammar is to articulate *how* this capacity uses finite linguistic resources to generate an infinite range of grammatical expressions. It is argued that the Faculty of Language consists in the human consciousness's capacity to perform the operation Merge (Chomsky 2007: 5) – which takes as input some collection of items and outputs a sequence formed by concatenating the inputted items – on lexical items (i.e. words, morphemes). Given the lexical items 'the' and 'snake', one can perform the

operation Merge('the', 'snake') to yield the noun phrase 'the snake'. Syntactic categories, like noun phrases, can thus be understood as derivations via Merge from simpler categories/lexical items (Chomsky 2007: 5–6). Whole sentences can be yielded from a collection of lexical items in the same way: performing Merge on the syntactic categories derived from Merged lexical items yields clauses and performing Merge on the clauses derived from Merged syntactic categories yields sentences. The capacity to distinguish grammatical from ungrammatical sentences comes from the same innate capacity to generate grammatical sentences using Merge (Chomsky 1995: 14–15). So, upon hearing a sentence one can break down the recursive applications of Merge the utterer used to construct the sentence and thus successfully parse the sentence.

Expressions generated/parsed by the Faculty of Language are fed into two interfaces, the sensory-motor interface, responsible for humans' capacity to perform motor actions in response to sensory output, and the conceptual-intentional interface, responsible for thought and planning (Chomsky 2011: 269). At the sensory-motor interface, generated expressions are broken down into their phonetic component, allowing expressions to be uttered/written, while the conceptual-intentional interface isolates the expression's logical form, which guides interpretation of the expression's semantic content. Here lies the mereological logic critiqued by Burton-Roberts – the expressions generated by the Faculty of Language are taken to be constituted by phonetic form and logical form, with logical form being the semantic constituent (Burton-Roberts 2013: 3).

In contrast to Chomskyan generative grammar, where semantic content is fixed by a process internal to human consciousness, is externalist semantics, which argues semantic content is determined by the referential relations which map expressions onto aspects of the world. An example of such an approach is the one outlined in 'General Semantics' (Lewis 1970). Like generative grammar, Lewis starts with a grammatical system (categorial grammar) which uses a limited range of lexical items, syntactic categories and Merge-like operations to generate an infinite range of grammatical sentences (though Lewis does not hold this system to be an expression of an innate faculty of language) (Lewis 1970: 20–22). However, the semantic content of generated expressions is not the result of an internally generated Logical Form. It is the result of the referential relations that hold between the simple lexical items and aspects of the world (e.g. the referential relation between 'snake' and some real snake), and the truth-values yielded when referential lexical items are embedded into more complex expressions like predicates (e.g. 'That snake is venomous') (Lewis 1970: 19). That which enables a complex expression to yield a truth-value from its referential constituents is called the expression's intension. Intension is taken to be a function that takes as input (among other things) possible worlds (where a possible world is a list of facts about how the world in which an expression was uttered could be) and outputs a truth-value, i.e. True or False (Lewis 1970:23–25). So, in a world where the snake referred to in 'That snake is venomous' is not venomous, the intension of 'That snake is venomous' yields the value False. In a world where the referenced snake is venomous, the expression's intension yields True. Moreover, as

expressions/lexical items are merged into more complex expressions, the intensions of the merged expressions/items compose (Lewis 1970:27–29). In other words, the intension of a complex expression takes as input the intensions of the complex expression's constituents. What's important here is that the compositional intensional structure of a complex expression mirrors the expression's syntactic structure.

Effectively, to understand a simple lexical item's semantic content is to understand its reference. To understand a complex expression's semantic content is to understand its intension; the circumstances that determine the complex expression's truth-value and how this truth-value depends upon the intensions/references of the simpler expressions/lexical items which, by means of some grammatical system, compose the expression. Again, this externalist notion of semantic content largely follows a mereological logic. Possibly, the referential relation that connects simple lexical items to bits of the world is semiotic rather than mereological, but the same cannot be said for intensions. For a complex expression, the truth-value, not the intension that determines the expression's truth-value, is placed in a relation to the expression similar to the relation between lexical items and referents. Thus, Lewis categorises both the relations *expression ~ truth-value*, *lexical item ~ referent* as 'extensional' relations (Lewis 1970: 23). Therefore, if one takes extensional relations to be semiotic relations, truth-values (not intensions) are in a semiotic relation to expressions. Lewis uses intensions to describe something that's embedded within the grammatical structure in the same sense Phonetic Form and Logical Form are embedded within the products of the Faculty of Language, more suitably described in mereological rather than semiotic terms.

The pragmatic view of meaning is not concerned with meaning as a part of an expression, but with meaning as something inferred from an expression and the context of the expression's utterance (Burton-Roberts 2013: 11–13, 20). Peirce's notion of the indexical sign exemplifies this model of meaning. For instance, smoke in a forest is an indexical sign of or 'means' a forest fire because one makes the following inference: (a) Where there is smoke, there is fire (b) There is smoke in the forest (c) Therefore there is fire in the forest. A classic account of inferentially derived meaning for linguistic expressions is Grice's notion of conversational implicature (Grice 1989). Grice argues that conversations generally have a purpose which interlocutors are working towards (Grice 1989: 26). The purpose of a conversation might be to answer a question, which interlocutors work towards by offering evidence for an answer, critiquing other answers, and so on. So, interlocutors tend to follow norms which enable the purpose of a conversation to be fulfilled, such as: stay relevant to the conversation's purpose, don't be dishonest, and so on (Grice 1989: 26–28). Grice calls these norms conversational maxims. He points out that often, figuring out the meaning of a speaker's utterance consists in making inferences from the premise that the speaker is following at least some of the conversational maxims. He uses an example of a conversation between two friends, in which one asks how a mutual friend is getting on in their job, and the other responds 'Oh quite well, I think; he likes his colleagues, and he

hasn't been to prison yet.' (Grice 1989: 24) On the surface the latter part of the response does not seem to answer the question. Yet, on the assumption that the respondent is not breaking the maxim 'stay relevant to the conversation's purpose', one can infer that the response conveys what the following sentence might be said to mean by virtue of its semantic content: 'Oh quite well, I think; he likes his colleagues and he hasn't stolen any money from his employers yet.' This kind of inference is what Grice calls a conversational implicature. From this perspective, to talk of how the meaning of an expression is 'contextually determined' is to talk about the assumptions used by the interlocutor interpreting the expression to infer the expression's meaning. In the case of the interpretation of 'Oh quite well, I think; he likes his colleagues and he hasn't been to prison yet', these assumptions consist of conversational maxims and memory of the question. The 'context' that determines the meaning of an expression is the collection of assumptions from which an interpreter of the expression makes inferences about the expression's meaning (Sperber & Wilson 1995:137–42).

I now turn to discussing how the semantic and pragmatic approaches to meaning are built into the two approaches to the Question of Necessity. I start with a discussion and critique of the Barthesian approach.

1.2 Barthesian Hidden Semantics

The power relation Barthes was concerned with understanding is between the bourgeoisie – broadly understood in a Marxist sense as the class defined by its ownership of capital – and other classes (Barthes 1972:142). The method Barthes formulated for uncovering how texts (magazines, adverts etc.) covertly communicate ideologies to readers was part of an effort to understand how the bourgeoisie maintain their dominant position within capitalism beyond the enforcement of capitalist relations of production. For the bourgeoisie, texts are instruments of naturalisation (Barthes 1972: 128–29), the process through which the outcomes of historically contingent, political actions – such as the bourgeoisie's economic hegemony – are made to appear as an outcome of an immutable, self-evident natural order of things. For example, through some naturalising process socioeconomic class disparities in educational attainment may come to be represented as simply disparities in natural talent. The result of this naturalisation is that bourgeois hegemony as a whole appears as an immutable, natural feature of the world. Thus, bourgeois hegemony is perpetuated since immutable features of the natural world cannot be subject to political critique.

Barthes builds upon Saussure's notion of the sign to explain how texts contribute to the naturalisation of bourgeois hegemony (Barthes 1972: 110–15). Following Saussurean reasoning, Barthes takes texts to be collections of signs, where each sign is constituted by a signifier – the sensorially apprehended aspect of the sign, e.g. the marks/sounds taken to be letters, words etc., – and a signified, which is the

concept that is represented by the signifier (Barthes 1972: 111–12). As previously discussed, though the 'representation' relation between signifier and signified is a semiotic relation, the relation between sign and signified is a mereological relation, since the signified is understood as a constituent of the sign (Burton-Roberts 2013:4). Thus, the signified is equivalent to what linguists and philosophers of language call semantic content. Barthes understands how words, sentences, texts etc. come to have meaning according to the typical Saussurean signification picture.

He then argues that texts undergo a 'second-order' process of Saussurean signification whereby the signs that constitute texts themselves become signifiers for ideological content that naturalises bourgeois hegemony (Barthes 1972: 113–14). The second-order sign constituted through second-order signification is what Barthes calls myth. Thus while the immediate semantic content of an image of a black child saluting the French flag is simply 'black child saluting the French flag', the second-order semantic content of the myth for which the image serves as a second-order signifier is 'France is a great Empire, that all her sons, without any colour discrimination, faithfully serve under her flag' – a sanitised, naturalised representation of the French Empire (Barthes 1972:115). It is significant that Barthes again uses Saussurean signification to model the imperialist subtext of the image; a pragmatist would simply argue that one comes to understand the subtext by making a series of inferences from the child's salute, expression, ethnicity and one's background knowledge of French imperialism. By modelling the apprehension of the subtext in terms of Saussurean signification rather than inference, he models the subtext mereologically – as something that is directly encoded into the overall myth sign as second-order semantic content, comparable to intensions or logical forms.

So, the power relation between the bourgeoisie and other classes is in part enacted through the encoding and interpretation of second-order semantic content which naturalises bourgeois hegemony. Crucially, the second-order semantic content is hidden, meaning people interpret it without being aware of its second-order nature. It is this hidden aspect that makes second-order content an effective means of naturalisation. Without awareness of the second-order character of the naturalising content such content is consumed uncritically (Barthes 1972: 128–29). Discourse analysis according to this line of reasoning is then about decoding second-order semantic content to enable critical appraisal of the content. Methodologically, this contends that understanding how linguistic practices involving texts are necessary for the enactment of power relations is primarily done by closely reading the signs that compose text. Examining factors outside this sign content, that cannot be known just through reading (e.g. audience reception, how texts are integrated into organisational processes etc.), is of secondary importance since second-order, naturalising content is directly encoded into texts and one only needs to read a text to grasp/decode directly encoded content. Thus, Barthes understands the activity of decloaking hidden, second-order content as a special kind of reading informed by knowledge of how second-order signification enables naturalisation (Barthes 1972: 127).

1.3 Critique of Hidden Semantics – Critical Discourse Analysis and Stealth Ideology

Barthes is not a common reference point in sociological discourse analysis. Nevertheless, the overall logic of his hidden semantics and the methodological principles that follow are found quite frequently in sociological text analysis. One influential approach to sociological discourse analysis which repeats the Barthesian approach is Critical Discourse Analysis. It is important to note that Critical Discourse Analysis does not only involve one approach to discourse analysis, and in fact there are plenty of Critical Discourse Analysis approaches do not really follow a Barthesian logic. However, the variants of Critical Discourse Analysis which emphasise the connection between 'lexicogrammar' and ideology do repeat a Barthesian logic. Though conceptual formulations of this logic are somewhat dated, lexicogrammatical Critical Discourse Analysis still features frequently in recent Critical Discourse Analysis work and so very much remains an influential approach to discourse analysis, e.g. (Ahlstrand 2021: 70-71), (Talib & Fitzgerald 2018: 133-134), (Hanson-Easey et al. 2014: 375-376). It is therefore worth going through formative lexicogrammatical Critical Discourse Analysis literature to understand how the Barthesian approach is repeated in it.

In what follows I show how lexicogrammatical Critical Discourse Analysis comes to a very similar picture of how power relations are enacted through linguistic practices as the Barthesian approach. I provide a critique of lexicogrammatical Critical Discourse Analysis, arguing that any method of discourse analysis based upon a notion of a hidden, second-order semantics is misguided. I call the variant of Critical Discourse Analysis that follows Barthesian logic 'lexicogrammatical Critical Discourse Analysis' as it adapts lexicogrammatical analysis from Systemic Functional Linguistics. To put it crudely, such analysis is concerned with understanding how lexical and grammatical systems enable sentence construction (Eggins 2004:116–17). Lexicogrammatical Critical Discourse Analysis argues that ideological content is directly encoded into the lexicogrammatical structure of sentences, therefore forming a hidden semantic layer that works beneath what might be called the sentence's immediate propositional contents. This is where the Barthesian logic is repeated; the only difference here is that lexicogrammar is the vehicle for hidden semantics rather than second-order Saussurean signification.

As with Barthes, methodologically this means that discourse analysis should primarily be about employing a special technique of reading that can decloak hidden semantics – in this case, the decloaking involves revealing how ideological content is encoded in lexicogrammatical structure. Though Critical Discourse Analysis' use of lexicogrammatical analysis is an adaptation from Systemic Functional Linguistics, lexicogrammatical analysis as practised in Critical Discourse Analysis should not be conflated with lexicogrammatical analysis as practised in Systemic Functional Linguistics. As I

explain later, it is doubtful whether any notion of hidden semantics can be derived from Systemic Functional Linguistics. To maintain the distinction between the lexicogrammatical analysis employed in the Critical Discourse Analysis' version of Barthesian decloaking reading and the lexicogrammatical analysis of Systemic Functional Linguistics, I call the former 'critical functional reading'.

There are two steps to critical functional reading: its description of the features of the text chosen for analysis, and the way the description is used as evidence for various claims about discourse. In describing texts, critical functional reading takes after Systemic Functional Linguistics, where the grammatical features of the text's sentences are taken as encoding 'processes' (Fairclough 1992: 178) which relate 'participants', and which reveal the logic of how the sentence frames 'reality' (Fairclough 1992: 27). This framing is called the sentence's 'ideational meaning' (Fairclough 1992: 27). So, the way a sentence's verb ('process') marks its subject or object (the 'participants') as active or passive reveals how the sentence frames reality. It is then assumed that the logic of the revealed ideational meaning is the same as the logic of a broader discourse. Based on this assumption, the second step is made. Since the grammar of the text's sentence reveals the logic of the sentence's framing/ideational meaning, and the logic of the ideational meaning is the logic of the discourse represented by the text, claims about discourse can be proposed given claims about a text's grammatical structures. This kind of analysis pervades Fairclough's *New Labour, New Language* (Fairclough 2000), a book about the centre-left neoliberal discourse behind the distinctive manner of speaking/writing introduced by Blair's rebranding of the Labour Party. For example, in examining Blair's speech to the Confederation of British Industry, Fairclough draws attention to clauses such as 'change that sweeps the world' and 'to let change overwhelm us, to resist it or to equip ourselves to survive and prosper in it' (Fairclough 2000: 26). Fairclough notes that in these clauses 'change' is 'nominalised' (Fairclough 2000: 26), meaning that rather than representing a process, it is deployed as a noun to represent a 'causal entity' (Fairclough 2000: 26) related to other participants (e.g. 'the world' and 'us') through verbs like 'sweep' and 'overwhelm'. In the speech, 'change' refers to broad, general social/economic changes such as the development of information communications technology and the increased power of transnational corporations. In being referred to by a nominalised 'change', the question of who is responsible for these changes is obscured; the whole context of neoliberal policy and the actions of transnational corporations is hidden (Fairclough 2000: 26). Part of the logic of New Labour's centre-left neoliberal discourse, then, is the naturalisation of the changes brought by neoliberal policy and late capitalism. The political economic order is represented as an unchangeable fact of nature rather than the result of the actions of particular groups of people.

Analysing grammatical structures is, in itself, not sufficient for understanding the logic of discourse, so Fairclough buttresses textual analysis with historical context and theoretical insights about discourse imported from other thinkers. The purpose of importing theoretical insights about discourse gives

critical functional reading its aims. Fairclough draws upon a dizzying array of theoretical traditions, including structuralist Marxism, Foucault's archaeological and genealogical theories, the literary theories of Bakhtin and Kristeva, critical realism and so on (Fairclough 1993: 12-36). Explaining how each of these theoretical rabbit holes inform critical functional reading is beyond the purpose of this critique. Suffice to say that this theoretical backdrop gives critical functional reading the aim of explaining how relations of power are reproduced through discourse, and how the concepts and practices which constitute a discourse are constructed. These two aims motivate critical functional reading's 'three-dimensional framework' of understanding 'discursive events' (Fairclough 1993: 136). The first dimension of a discursive event is its spoken/written expression, i.e. text. The second dimension looks at the processes involved in the production and interpretation of the text, and the third dimension (social practice) looks at the broad political/economic/historical context which constrains interpretation and production (Fairclough 1993: 136). A full analysis of a discursive event at all three levels constitutes an explanation of how discourse reproduces power relations and vice versa.

For example, in *Critical Discourse Analysis and the Marketization of Public Discourse: The Universities*, one kind of text selected for analysis are press advertisements for academic posts. In this paper, analysis of social practice (the third dimension) is an account of the general trend of universities being organised more and more like businesses. This establishes the strong link between newer universities and businesses, the intensification of the use of managerial approaches to assessing staff performance, the idea of treating students like customers, and so on (Fairclough 1993: 143). Fairclough argues that this broader context of social practice results in a shift away from traditional modes of advertising for academic posts towards a more 'interdiscursively complex' mix (second dimension of analysis focusing on production), in which the advertisement for academic posts is a combination of elements from more commercial, 'promotional' genres (Fairclough 1993: 146). Concomitant with this mix is a change in the language used in the advertisements (first dimension) (Fairclough 1993: 146-147). This change in language is taken to show how the marketized advertisements for academic posts erase any difference between academia and other commercial enterprises. The explanation, demanded by the second dimension of analysis, of how relations of power are reproduced through the interpretation of discourse is implicit in the analysis of the language used in the advertisements for academic posts. The erasure of the distinction between the academic and commercial worlds means people are unable to think of roles within academia as something that should be independent from market forces, and people therefore adopt the professional roles upon which marketisation relies on without resistance. The colonisation of public services by commercial modes of advertising, through the unique textual features of those commercial modes, implants the logic of marketisation discourse in the minds in contact with those modes of advertising. Fairclough comments:

> The situation can be conceived of in terms of an *absence* within the order of discourse: the
> absence of a language — of discursive practices — through which authority relations and

institutional and professional identities different from either traditional or marketized forms can be constituted. (Fairclough 1993: 159)

Verschueren points out a serious flaw in critical functional reading, that its arguments tend to be circular. Before analysing texts, it is already tacitly assumed that the text will reflect the logic of some given discourse, so that the only reason the analysis 'reveals' the logic of the discourse is because of this prior assumption (Verschueren 2001). Verschueren critiques an analysis by Fairclough of two samples of conversation between a doctor and patient, arguing that many of the contrasts drawn are simply not warranted by what is in the transcriptions of the conversations. One sample is taken to show how the doctor wields interactional control over the patient, while the other is presented as more of a dialogue between equals. Verschueren argues this conclusion does not follow from the substance of the samples and suggests that the conclusion is already built into the categorisation of the samples as 'standard' and 'alternative' medical interviews (Verschueren 2001: 76-78).

One reason for this circularity is a confused notion of language as a 'conceptual scheme' (Tsilipakos 2015: 73) which maps reality. According to this notion, a speaker of a language is taken to be committed to beliefs about how the world is simply because of the way the language is structured (Tsilipakos 2015: 91). This idea of language can be seen in the way critical functional reading identifies two layers of meaning in language. The first layer of meaning is the most obvious kind: the arguments, narratives, impressions, etc. expressed through the concatenation of meaningful sentences. The second, hidden layer of meaning is built into the very structure of the language (hence the focus on grammar) from which meaningful sentences are formed, and the logic of this deep semantic structure is equivalent to the logic with which the users of the language make sense of the world. Hence the Systemic Functional Linguistic view that grammar is an expression of ideational meaning, a particular way of encoding reality. Being a speaker of a language commits one to the beliefs about reality contained in the ideational meanings made possible by that language's grammar.

There are some notions of hidden meaning which need to be further disentangled. The most intuitive sense of hidden meaning refers to meanings expressed through subtext, metaphors, symbolism, irony and so on. These meanings are 'hidden' as they are not the same as the 'literal' meanings expressed through sentences. They may be more dependent upon situational context (as with irony), or they may be dependent on some narrative constructed by previous sentences (as in symbolism), or they may be dependent on body language/tone of voice/expression. This sense of 'hidden' is not the same as that of a deep semantic layer. The sorts of situational contexts which metaphorical or symbolic meaning rely on are not the same as the grammatical structures which deep semantic layers rely on. Another intuitive sense of hidden meaning is the kind where, upon viewing a film for the second or third time, one comes across some meaning which one was not aware of on the first viewing. The meaning 'uncovered' on the second viewing is thus a hidden meaning. Again, this sense of hidden is not the same as the sense

implied by a deep semantic structure. That the meanings gleaned from a text can change depending on how many times one consumes the text has more to do with the probabilistic nature of interpretation rather than grammatical structures. Furthermore, the kinds of meanings gleaned on repeated 'viewings' of texts are probably metaphorical/symbolic/etc. meanings. These intuitive — and wholly legitimate — senses of 'hidden' meaning may be included in what I call the first/most immediate layer of a text's meaning. Another point worth clarifying is that arguing against the notion of a deep semantic layer is not the same as denying that grammatical structure affects the meaning of sentences, which is a truism. The notion that grammatical structure affects meaning is different from the notion that grammatical structures in themselves have meaning and constitute a deep semantic layer.

Behind Fairclough's notion that grammatical structures in themselves encode particular framings of reality is the idea that parts of speech are shorthand for metaphysical categories, in the sense of 'metaphysical' expressed in Wittgenstein's *Philosophical Investigations* (§116) (1958b: 48). According to this sense, a metaphysical view assumes that the concepts through which people order their sensory output are fixed and do not vary according to the context of use in which they are deployed. Because of this assumed fixity, these concepts are taken to be the fundamental ordering devices which organise all instances of sensory output. This makes them metaphysical concepts, since the idea that one can describe how people understand reality with a limited set of invariant concepts is an assumption of the branch of philosophy known as metaphysics, which seeks to uncover these invariant concepts through deductive inference. In critical functional reading, the metaphysical categories encoded by texts' grammatical structures are 'process', 'participant', 'causal entity' and so on. Thus, Fairclough concludes that Blair's nominalised 'change' necessarily implies obfuscation of those responsible for the change because nominalisations are shorthand for a metaphysical conception of causal entities.

Critical functional reading's assertion of a hidden semantic layer in which grammatical structures refer to configurations of metaphysical categories is a version of the linguistic relativity hypothesis. According to this hypothesis, the rules which govern how parts of speech ought to be put together determines how people understand reality. The above argument that in critical functional reading, grammar takes parts of speech to be shorthand for metaphysical categories is directly taken from Cook's critique of Whorf's arguments for linguistic relativity (Cook 1978b).

The notion that parts of speech refer to metaphysical categories is an iteration of the view that things are meaningful because they are attached to concepts. So, the sentence 'it's moving' is meaningful because there are concepts of *thing* and *moving* which are attached to 'it's' and 'moving'. Wittgenstein makes the point that it is tempting to think of the concept attached to a word as 'an object *co-existing* with the sign' (Wittgenstein 1958: 5). This habitual way of thinking about meaning gives the attached concept the appearance of being permanently attached to its signifier, so that the same concept is always signified by a signifier regardless of the context in which the signifier was used. However, on reflection

it becomes clear that concepts are not permanently attached to signifiers. The question of which concepts are signified by which signifiers depends on the signifiers' contexts of use (Cook 1978b: 24). Returning to the example of 'it's moving', Cook contrasts the situations of a photographer telling her subject 'You moved' with a referee reprimanding a football player by saying 'You moved.' (Cook 1978b: 24). In the former, the photographer is referring to the person she is trying to photograph moving his head and ruining the picture. In the latter the referee is referring to the football player breaking a specific rule — if the player had been just moving about the pitch without breaking the rules the referee would not have said anything. The ideas expressed by 'You moved' in these two contexts do not share much in common. Hence, the notion there is a fixed idea of *movement* that is permanently attached to 'movement', from which a metaphysics of *movement* can be deduced, misunderstands how meaning works. Attempts by academics to find a finite set of fixed ideas attached to words (like 'being', 'time', 'process' and so on) through which people organise the entirety of their experience, usually end up asserting that some meanings of the chosen words, which are suitable only for specific contexts, are suitable for all contexts. The idea of a hidden semantic layer which attaches fixed encodings of reality to grammatical structures does the same thing. Hence Verschueren is able to plausibly critique Fairclough's analysis of an article title ('Quarry loadshedding problem'), where Fairclough concludes that the nominalisation of 'loadshedding' results in the reader not knowing 'who or what is shedding loads or causing loads to be shed – causality is unspecified.' (Verschueren 2001: 70) Vershueren points out that in the rest of the article the cause of loadshedding is specified by the use of the noun 'quarry': 'there is no real vagueness about the link between the quarry, and hence those in charge of the quarry operations, and the stones [the things being loadshedded].' (Verschueren 2001: 70) The problem here is that nominalisation is not attached to any fixed schema of understanding reality because such a schema does not exist. Therefore, one cannot conclude from the nominalisation alone that loadshedding is conceived as a causal entity unattached to responsible agents. The way in which the nominalisation contributes to the meaning of the sentence containing it depends upon the kind of sentence it is employed in and the kind of text which uses the sentence.

In lieu of an actually existing deep semantic layer encoded at the level of grammar, the only way critical functional reading can appear to link the first dimension of a discursive event (semantic features of texts) to the second and third dimensions (of production/interpretation and broad social context) is through circular arguments. Beliefs about the second and third dimensions are already assumed before analysis at the first dimension even takes place, and the analysis of the first dimension simply reflects those beliefs under the guise of empirically arguing for those beliefs. So, the only reason why Fairclough's analysis of Blair's nominalised 'change' appears to reveal how neoliberal discourse erases those responsible for a society's political economic order is because it is already assumed that is what neoliberal discourse does. Without the illusion of a hidden semantics, this empirically backed revelation reveals itself as pure assertion.

1.4 Systemic Functional Linguistics – Textual vs. Sentential Meaning

The above should not be taken as a rejection of Systemic Functional Linguistics. It is a rejection of critical functional reading's misuse of Systemic Functional Linguistics and, more broadly, the Barthesian approach to the Question of Necessity. Fairclough does not incorporate Systemic Functional Linguistics' distinction between textual and sentential meaning into his close readings, and this omission is what makes the notion of a deep, grammatically encoded semantic layer implicit in critical functional reading. To see where critical functional reading's adaptation of Systemic Functional Linguistics concepts misuses those concepts, it is worth recapitulating Fairclough's analysis of nominalisations. On a Faircloughian interpretation of Blair's statement (in which 'change' is referring to 90s globalisation) 'The choice is: to let change overwhelm us, to resist it or to equip ourselves to survive and prosper in it', 'change' is nominalised into a noun and this nominalisation makes it impossible to infer that multinational corporations caused the change, as the referent of 'change' becomes a causal entity itself. Presumably, an un-nominalised version of Blair's statement would be something like 'The choice is: to let the changed global economy overwhelm us, to resist the changed global economy or to equip ourselves to survive and prosper the changed global economy', from which one can infer someone has caused the change. 'Changed' is an adjectivalised rather than nominalised form of 'change', which preserves the sense that someone/something must be behind whatever it is that has changed.

Fairclough's analysis builds on the Systemic Functional Linguistics argument that the grammar and words used to form sentences are tools used to imbue those sentences with three kinds of meaning (Eggins 2004: 210) – interpersonal (roughly equivalent to the illocutionary force of sentences), ideational (what the sentence says about reality, the analogue in philosophy of language would perhaps be propositional content), and textual (the sentence's contribution to a person's understanding of what the total text containing the sentence is about). So, the 'lexicogrammar' of a sentence can be analysed with respect to each of these three types of meaning. For example, an ideational analysis of a sentence understands the lexicogrammatical choices made in the construction of the sentence, i.e. choice of verb, choice of clause structure, choice of subject etc., as choices made between different ways of representing the reality talked of by the sentences (Eggins 2004: 213-215). Systemic functional linguistics provides a set of labels which can be attached to the lexicogrammatical components of a sentence to show the selected mode of representing reality chosen during the construction of the sentence: 'Circumstance', 'Actor', 'Material Process', 'Mental Process', 'Beneficiary' and so on (Eggins 2004: 214). Fairclough sees Blair's nominalisation of 'change' as a deliberate choice to represent what should be a 'Process' as an 'Actor', and it is this which precludes the ability to make inferences about who is responsible for the change. The ability to make such inferences is treated as

purely the result of the lexicogrammatical choices made in the construction of sentences, meaning such inferences are treated as dependent on sentences' ideational meanings.

However, Systemic Functional Linguistics makes a distinction between sentential and textual meaning. Halliday and Hasan argue that the meanings produced when one concatenates sentences to form a text are fundamentally different from the kinds of meanings produced through the lexicogrammatical choices made in sentence construction. This is so since the rules governing what sorts of lexicogrammatical choices one can make during sentence construction are not sufficient to produce a complete text (Halliday & Hasan 1976: 2). In addition to sentential lexicogrammatical rules, one needs 'cohesion' rules governing how to realise texts from sentence concatenation, and 'coherence' rules governing how to make lexicogrammatical and sentence-concatenation choices that are appropriate to the social situation in which one makes such choices.

The key distinction here is between a 'complete text' and the sentential level. The complete text is the result of applying cohesion and coherence rules to the production of utterances on top of lexicogrammatical rules. At the sentential level, it is possible to have arbitrary collections of well-formed sentences that do not add up to much, and yet comply with the application of only lexicogrammatical rules (Halliday & Hasan: 1). This distinction can be illustrated by considering anaphora (Halliday & Hasan 1976: 4); expressions where the 'thing' being talked about by an expression cannot be determined independently of preceding expressions. Consider the sentences 'John was annoyed. He did not like being hassled.' The second sentence ('He did not like being hassled') is an anaphoric expression: the thing being talked about by 'He' (John) cannot be determined independently of the preceding sentence ('John was annoyed'). The anaphoric relation, which is a cohesive relation in Systemic Functional Linguistics, is necessary for 'John was annoyed. He did not like being hassled.' to feel like a complete text. In comparison, 'John was annoyed. Hassle is bad.' does not quite make sense as a complete text precisely because there are no cohesive relations, such as anaphora, between the two sentences.

The ability, or inability, to figure out who is responsible for the change talked of by Blair should not be understood as dependent on sentential ideational meaning. It should be understood as dependent on textual meaning. Consider the sentences in Blair's speech preceding 'The choice is: to let change overwhelm us, to resist it or to equip ourselves to survive and prosper in it', which gives a giant list of all the things 'change' refers to:

> We all know this is a world of dramatic change. In technology; in trade; in media and communications; in the new global economy refashioning our industries and capital markets. In society; in family structure; in communities; in life styles.

Add to this change that sweeps the world, the changes that Britain itself has seen in the 20th century — the end of Empire, the toil of two World Wars, the reshaping of our business and employment with the decline of traditional industries – and it is easy to see why national renewal is so important. Talk of a modern Britain is not about disowning our past. We are proud of our history. This is simple a recognition of the challenge the modern world poses. (Quoted in (Fairclough 2000: 25-26))

It is strange to suggest that one cannot work out who is responsible for these listed changes. Technological change suggests the handiwork of scientists and engineers; changes in trade suggest the handiwork of corporations; the toil of two World Wars suggests the toil of nation-states. 'Change' in 'The choice is: to let change overwhelm us, to resist it or to equip ourselves to survive and prosper in it' becomes an anaphor for these listed changes, and this cohesive relation enables recognition of who is responsible for 'change'. Textual rules regarding cohesion are what is important here, not sentential ideational rules.

1.5 Textual Meaning, Scorekeeping and the Pragmatist View of Meaning

Systemic functional linguistics' distinction between textual and sentential meaning offers an opportunity to introduce the framework of discursive scorekeeping. Throughout this thesis I maintain that this framework can be used to inform an approach to the Question of Necessity that builds upon the pragmatic understanding of meaning as inference from contextual information – an approach which, I later argue, is consistent with Foucault's work. This is a central point of this thesis. I advocate discursive scorekeeping as a framework for a Foucauldian approach to the Question of Necessity, and this informs the way in which I investigate how to use large language models to investigate the Question of Necessity in the second half of this thesis.

In this section I introduce discursive scorekeeping through a discussion of cohesion and coherence, which, as previously discussed, are the notions used in Systemic Functional Linguistics to explain the circumstances under which a collection of sentences constitutes a text – i.e. has textual meaning – rather than an arbitrary collection of well-formed sentences. I argue that cohesion and coherence imply a view of meaning consistent with the view presented in discursive scorekeeping. Notably, the discursive scorekeeping framework is about understanding how the meaning of utterances is dependent upon interlocutors continuously updating their repositories of contextual background assumptions. This is broadly consistent with the pragmatic view of meaning as inference from contextual assumptions, which in turn is consistent with the view of meaning encapsulated in Systemic Functional Linguistics' notions of cohesion, coherence and textual meaning. An important caveat needs to be made here. The 'updates'

to contextual assumptions central to scorekeeping frameworks do not necessarily translate neatly to the notion of the inferential interplay between utterances and interlocutors' contextual assumptions that is central to the pragmatic view of meaning discussed earlier. The pragmatic view of meaning that emphasises inference is from relevance theory (Sperber & Wilson 1995). It is expedient to move away from strict adherence to relevance theory toward a version of the pragmatic view of meaning that focuses on the less strict notion of 'updates' to/from interlocutors' contextual assumptions. Nevertheless, in emphasising the dependence of meanings of expression upon interlocutors' contextual assumptions (similarly to the relevance theory based pragmatic view of meaning), the scorekeeping framework moves away from a mereological, semantic view of meaning. I end this section by discussing the methodological implications of adopting a scorekeeping informed approach to the Question of Necessity. But first, I turn to a discussion of cohesion and coherence.

Cohesion implies interpretation of texts is a sequential, backwards-facing process. It is sequential since the components of a text are interpreted one at a time in order, and it is backwards facing since the textual significance of a component interpreted at a current point in time is dependent on the textual significances of the components interpreted at previous points in time. In this connection, Systemic Functional Linguistics discusses cataphora (Eggins 2004: 35), which are cohesive relations in which what is talked about in a sentence depends upon proceeding rather than preceding sentences. For example, in the sentences 'This is what you do. First you whisk egg whites…', 'This' is a cataphor for the recipe explained from the second sentence onwards. The object of a cataphoric expression can only be known after one has heard/read the proceeding expressions. This sequential, backwards-facing nature of interpretation implies that at any current point in time during the interpretation of a text, there is a body of information which constrains the number of ways expressions read/heard at future points in time can be correctly interpreted. Further, as expressions are sequentially interpreted, this body of information is updated. So, when reading 'John was annoyed. He did not like being hassled.', when the first sentence is interpreted, the reader has access to a body of information consisting of 'There is someone called John and he is annoyed'. This body determines the correct interpretation of the second sentence, construing 'he' as an anaphor for 'John' so that by the time the second sentence is interpreted, the reader's body of information has been updated to 'There is someone called John and he is annoyed because he was hassled.'

Alongside cohesion, Systemic Functional Linguistics argues that another necessary condition for a collection of expressions to be a text is that the collection be coherent. One factor that makes a collection of expressions coherent is genre (Eggins 2004: 54). The genre of a text defines the expectations that people have of the development over time of a text: e.g. how a conversation progresses, how a novel's story progresses as one reads it (Eggins 2004: 55). For example, if someone recognizes a text as a horoscope, a distinct set of expectations is triggered within that someone. They would expect the

horoscope to tell them about their future. These expectations are not limited to expectations about what the content of a text might be; genres can also set expectations about the actions of people involved in a text. So, if someone goes to a fortune teller to get their future read, the genre of visiting a fortune teller triggers a set of expectations about how the conversation with the fortune teller would proceed. These expectations enable the text to proceed in a fairly predictable manner: if the text is an ongoing conversation, the genre of the conversation makes conversational responses somewhat predictable; if the text is written, the genre of the written text makes its narrative structure somewhat predictable. If these expectations are subverted, then the text will no longer make sense as a text – the loss of coherence leads to confusion. A horoscope would make no sense if it started as a discussion about the future and ended as a discussion about politics. The manner in which a text develops as a result of the expectations triggered by the text's genre is known as the schematic structure of the text's genre (Eggins 2004: 58). For example, the schematic structure of a Post Office transaction might be 'Sales initiation^ Sales Request^ Sales Compliance^ Price^ Sales Request^ Sales Clarification^ Purchase^ Price^ Payment^ Change^ Purchase Closure' (Eggins 2004: 62).

The idea that the interpretation of texts is dependent upon the continuous updating of bodies of information accessible to readers/listeners/speakers/etc. has been much discussed in the philosophy of language, albeit primarily in relation to conversation rather than written texts. David Lewis conceptualises this body of information as a discursive score (Lewis 1979: 344-345), which keeps track of things like presuppositions, anaphoric/cataphoric objects, permissible/impermissible courses of action, and so on. The truth conditions of sentences uttered in a conversation, their truth-value, and their effectiveness as speech-acts depend on the conversational score at the time of utterance. In the other direction, updates to the conversational score depend on the truth-conditions, truth-values, and effectiveness of previously uttered sentences (Lewis 1979: 345).

There is little consensus on what the content of such a conversational score might be or how conversational scores are updated. Stalnaker argues for seeing conversational scores as the propositional attitudes (Stalnaker 1973: 448) held by conversation participants – what the participants believe to be true or false. These attitudes are then updated by the truth-conditional contents of uttered sentences, where how a sentence's truth-conditional content updates participants' propositional attitudes depends on the speech act containing the sentence. Stalnaker illustrates this by formulating a rule for the speech act of assertion: the contents of a successful assertion simply get added to the list of propositions taken to be true by the participants (Stalnaker 2018: 386). He also acknowledges that truth-conditional content is at times dependent on the contextual propositional attitudes held by participants, pointing to indicative conditional statements whose validity is context dependent as an example (Stalnaker 1999:63–66). In contrast to this dynamic pragmatic account there is the dynamic semantic account developed by Heim. Here, conversational scores are understood as 'files' (Heim 2002: 226) – i.e. lists – of propositions.

When a sentence is uttered, the logical form of the sentence alters the file of a conversation. This alteration might result in a proposition getting added to or removed from a file, or it might involve a re-evaluation of the truth-values of a file's propositions, and so on. Unlike the dynamic pragmatic account, uttered sentences do not have truth-conditional contents, only the propositions contained in conversational files do. Uttered sentences are just logical functions whose inputs and outputs are file contents (Heim 2002: 227). Again, this means the 'meaning' of sentences is entirely dependent on the contextual conversational files of interlocutors: what is outputted by the logical functions encoded into sentences is entirely dependent on the background context of input files.

Moving away from the truth-conditional tradition of semantics, we have Brandom's normative inferentialism. Rather than truth-conditions, Brandom takes a sentence's content to be the commitments and entitlements distributed to conversational participants by the illocutionary force of the speech-act corresponding to the sentence (Brandom 1994: 116-121), which can be inferentially articulated. Thus, the semantic content of a sentence is not a list of the circumstances in which the sentence is true/false, rather it is the range of inferences in which the sentence can serve as a premise or conclusion. A sentence's content is its inferential significance. So, the propositional contents of the speech act of assertion are the beliefs one is committed to hold by logical necessity if one takes the assertion to be true/false, i.e. the inferences that can be performed on the basis of the assertion if one takes the assertion to be true/false. In this account a conversational score is a list of all the commitments and entitlements held by the participants at some point in time in conversation (Brandom 1994: 182-190) (Nickel 2011: 341). Here the content of sentences is again dependent on the contextual information. The inferential significance of a sentence uttered by *A* depends on the prior commitments and entitlements made by *A* through previous speech acts.

This lack of consensus on the content of a conversational score shows the need to move away from a strictly relevance theory based pragmatic view of meaning. There is no obvious reason to think that Stalnaker's updates to contextual propositional attitudes via speech-act rules, or Heim's file updates from logical functions encoded in sentences, or Brandom's updates to contextual commitments/entitlements is equivalent to the relevance theory based view. Determining whether all, some or none of these accounts are the correct account of the mutually dependent relation between contextual information and the meaning of expression is beyond the scope of this thesis. I therefore adopt a loose rather than strict pragmatic view of meaning, which simply states that the meaning of expressions and the contextual assumptions of interlocutors are mutually dependent without precisely specifying what is involved in the 'updates' that constitute this mutually dependent relationship. Thus, it is enough to bear in mind the points which all these accounts share:

1.) Linguistic practices such as having conversations, reading, writing etc. involve participants sequentially processing the expressions/speech-acts which compose such practices.

2.) Participants in linguistic practices can only do this sequential processing if, at any given point in time during the practice, they have access to a score which keeps track of the sum of propositional contents which have been exchanged between the participants up to that point in time. Such contents constitute the contextual information held by participants and can be understood in various ways depending on one's philosophical allegiances.

3.) The score of a linguistic practice is continuously updated as sequential processing moves forward. Each new line read, written, uttered or heard updates the score – exactly how these updates happen again depends on one's philosophical allegiances. Furthermore, the meanings of what is expressed in conversations/reading/writing etc. is dependent on updates to the score.

Following David Lewis (Lewis 1979), let any account of linguistic practice consistent with these three points be called scorekeeping accounts.

This pragmatic, scorekeeping approach to meaning has quite different methodological implications for approaching the Question of Necessity. Let us recall the three-dimensional methodological framework for analysing discursive events, discussed in the previous section, which guides Fairclough's (one of many) brands of discourse analysis (Fairclough 1993: 136). The first dimension is text analysis: this is the part of Fairclough's discourse analysis that involves his adaptation of Systemic Functional Linguistics' lexicogrammatical analysis. The second and third dimensions involve analysing the practices through which texts are produced and interpreted and the broad political relations which condition such practices (Fairclough 1993: 136). More specifically, the interest of the second and third dimensions is to analyse how the production and interpretation of texts reproduce certain power relations. Fairclough's adaptation of Systemic Functional Linguistics' lexicogrammatical analysis implies that the way texts/linguistic practices might constitute/reproduce power relations can be 'read off' the text: only a text's lexicogrammar needs to be understood to see how it reproduces power relations. This is why lexicogrammatical Critical Discourse Analysis tends to analyse texts independently of their reception: from this perspective, there is no need to analyse audience responses for lexicogrammatical analysis and reach conclusions about the power relations at work.

From the pragmatic perspective, the scorekeeping practices required for character strings to be treated as meaningful texts need to be analysed for the necessary relation between linguistic practices and power relations to be understood. This involves considering quite different questions about text than the questions considered in critical functional reading. Consider the following example: Sam has got a new job. Part of this job requires dealing with all kinds of documents – forms, reports, e-mails, meeting minutes and so on. Learning how to deal with these documents involves learning their schematic structure, learning the office-jargon required to make sense of the cohesive relations of these documents, learning the presuppositions required to be able to evaluate the sentences of these documents as true or

false, and so on. In addition to documents, Sam needs to deal with different kinds of conversations – water cooler conversations, performance assessments, complaints and so on. Again, learning the schematic structures which define each genre of conversation is required, as well as learning how each genre of conversation has distinct patterns of utterances which update the conversational score in unique ways, and so on. Learning how to deal with these different documents and conversations involves learning the unique practices of linguistic scorekeeping which constitute reading/writing these documents and participating in these conversations. So, one can say; there is a unique set of scorekeeping practices which corresponds with Sam's job position.

The organisation which employs Sam has many different job positions, and each job position can be distinguished from each other according to the set of scorekeeping practices unique to each job position. A receptionist will have to deal with a set of documents and conversations distinct to the set a manager will have to deal with. Parallel to the hierarchy of employees of the organisation there is a hierarchy of scorekeeping practices. Moreover, movements within the hierarchy of employees, i.e. promotions, demotions, hiring and firing, all have their formal processes which are nothing more than highly regularised scorekeeping practices – job interviews, performance assessments, C.Vs and so on. The structure of power relations which underly the hierarchy of employees and movements within this hierarchy, i.e. office politics, are all maintained through a highly organised system of scorekeeping practices. If one wants to know about how the organisation's documents and conversations are necessary for the practice of office politics, one cannot simply 'read off' this politics from the lexicogrammar of these documents and conversations. One needs to ask questions about how organisations produce systems of scorekeeping practices such as; what sequence of speech-acts/propositional contents defines each scorekeeping practice; for a particular scorekeeping practice, what pattern of updates can be observed over a particular time period, and so on.

Chapter 2: Semiosis, Scorekeeping and Text Systems

Critical functional reading is not the only, or even main, part of Critical Discourse Analysis. As well as multiple other approaches to text analysis beyond critical functional reading, there is a substantial theoretical framework relevant to the Question of Necessity which does not simply repeat the logic of the Barthesian approach. The key concepts of this framework, which I engage with in this section, are semiosis, semiotic order, construal, construction and genre. For brevity I refer to this bundle of concepts as 'semiosis concepts'. The purpose of these concepts is, roughly, to specify how the purposes of particular collections of social relations (e.g. the purposes of state organisations) are satisfied through the organisation of texts: e.g. the purposes of state organisations are fulfilled via systems of forms, e-mails, policy papers, organisational reviews, etc. It's important to note that these concepts do not really comment on how best to think about linguistic meaning. They do not comment upon whether meaning is best thought of in terms of semantic content or inferential/rule-bound updates from the contextual information held by interlocutors. In principle, using semiosis concepts is consistent with either the Barthesian or the Foucauldian approach to the Question of Necessity.

In sections 2.1-2.3 I discuss semiosis concepts. The central purpose of this discussion is to introduce the notion of text systems and to use this notion to point out the difficulties of relying on qualitative, close reading methods to address the Question of Necessity. This forms much of the justification for investigating the potential use of large language models for approaching the Question of Necessity. In sections 2.4-2.9 I argue that, despite there being no reason why semiosis concepts cannot be combined with an approach to the Question of Necessity premised on a pragmatic understanding of meaning, and despite the usefulness of semiosis concepts in highlighting some aspects of text systems, the scorekeeping framework is preferable. It allows delineation of text systems in a more theoretically parsimonious manner.

2.1 Construal, Construction and Semiosis

I start considering semiosis concepts with a discussion of construal and construction. I approach this discussion through a comparison of work informed by Foucault's notion of governmentality and a selection of Fairclough's text analyses. I do this not only because this is a convenient way of explaining construal and construction, but also to start highlighting what is distinctive about the Foucauldian approach to the Question of Necessity. I give a more in-depth treatment of the Foucauldian approach in the next chapter.

Janet Newman, in her analysis of the increased power given to managers under New Labour, uses Foucault's theory of governmentality with interviews to argue that the regime of inspection and target-

setting introduced by New Labour's programme of modernisation are a means of ensuring that managers fit an image of an 'ideal practitioner' (Newman 2005: 3). They are expected to be 'transformational leaders' who can, through force of personality, modernise government. Managers have only partially adopted this ideal identity, interpreting it in such a way as to fit with other concerns, such as the traditional ideal of the neutral bureaucratic public servant (Newman 2005: 4). One respondent, a local authority chief executive, talked about his rationale for consulting the residents of his locality about school rolls falling. Newman argues that though he dressed up the rationale in the language of modernisation, he also relied on a concept of social justice, which does not come from the modernisation discourse (Newman 2005: 12). Newman describes the idea of the transformational leader as a discourse, and the point of her argument is to show how the relation between discourse and individual is one of negotiation. Though managers were found to think in terms of transformational leadership, their adoption of the identity was not absolute.

Here discourse refers to a set of ideas which detail how managers should behave. This set of ideas is subject-constituting in that they provide a model of an ideal subject, in this case the transformational leader, and of how the ideal subject ought to conduct himself. To understand discourse from this perspective requires understanding how discourse constructs ideal subjects, and the techniques of power used (e.g. New Labour's regime of inspection and target-setting) make people conduct themselves according to the standards of the ideal subject.

Fairclough also takes discourse to be a set of ideas. In *New Labour, New Language*, the discourse being analysed is the Third Way, which encompasses a number of claims. These included the need to 'modernise' government through devolution and evidence-based policy. The need for Third Way policies was ostensibly because the political order of the 1990s had changed fundamentally. It was argued that phenomena like globalisation and sophisticated information communications technology meant that the old 'partisan' politics between the left and the right have to be transcended by a politics which focuses on 'what works'. Fairclough emphasises the constant push towards 'coherence'[11] (Fairclough 2000: 22)—through speeches, policy document summaries, television appearances, and so on, the 'Third Way' is constantly being talked into being, new language is constantly being found to bring these elements together into a coherent whole.' (Fairclough 2000: 5) While there is some emphasis on understanding the effects of Third Way discourse upon agency, the emphasis of *New Labour, New Language* is upon the Third Way's constant push towards internal coherence. From this perspective, understanding discourse consists in understanding its underlying logical structure as a set of interrelated arguments, and understanding the process through which this coherence is constructed.

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[11] Not the systemic functional sense of 'coherence'. Here 'coherence' means something like logical consistency.

There is agreement among these different views that a discourse is a group of concepts which acts upon/is shared by many people at once. Discourses are collective. There is also agreement that the position of concepts within the totality of social relations is important for grouping them together, hence Fairclough describes Third Way discourse as the representation of the social world 'from the particular position New Labour occupies in the political 'field'' (Fairclough 2000: 9). In governmentality approaches to discourse such as Newman's, emphasis is placed on the role of discourse in constraining individual agency as well as the set of organisations using discourse to exercise governmental power. Like Fairclough's critical discourse analysis, concepts are grouped together if they emerge from the same set of social relations. However, there is a difference in how these views of discourse decide to group concepts together as constituting a single discourse. From the governmentality perspective, rather than coherence, what matters for the grouping of concepts is their place in the mechanisms used to control individuals' conduct.

In the context of neoliberalism, the introduction of governing concepts comes from institutional and organisational arrangements such as public-private partnerships and networked governance (Joseph 2013: 42). In contrast to classical liberal states, neoliberal states do not take individual autonomy to be a given — they see it as something that must be constructed through the provision of the right kind of environment (Joseph 2013: 45). In concrete terms, under neoliberal government the public sector is no longer independent from the private sector. This allows for the expansion of the competitive norms of the market into all areas of society, and with this expansion comes the neoliberal subject, the subject who conducts themself in a manner appropriate to competitive norms (Joseph 2013: 42). The neoliberal state constructs the institutional/organisational landscape necessary for its ideal autonomous subject.

Under this perspective of discourse, shared concepts are not grouped together based on how well they form a coherent, logical whole; they are grouped together according to how they contribute to the construction of neoliberal subjectivity. What is important is that the concepts fit within the machinery of biopolitical power (that is, power concerned with the governance of population level characteristics, e.g. birth rates, crime rates (Foucault 2008: 317)) and reconstitution of civil society as a competitive market of individuals. Hence Jonathan Joseph groups the concept *resilience* with neoliberal discourse. Even though resilience originates as an element in a logically coherent argument about complex systems (Joseph 2018: 11-26), what is important, and what motivates its categorisation with neoliberal discourse, is its contribution to the construction of the ideal neoliberal subject. Resilience's coherence with the rest of the concepts grouped under neoliberal discourse, or its coherence with arguments about complex ecological systems, is of secondary importance.

Fairclough, Jessop and Sayer (2010) offer a way of understanding the relation between these two seemingly disparate ways of grouping concepts together as singular discourses. Their explanation of the importance of semiosis (any process involving the use of signs and, therefore, meaning (Fairclough

et al. 2010: 2)) for understanding social structures is illuminating. They make a distinction between construal and construction (Fairclough et al. 2010: 6). Construal is that moment in semiosis where signs are made and concatenated (into paragraphs, into pictures, into situations of face-to-face interactions etc.) to express concepts. One might concatenate several sentences (the typical linguistic sign) to articulate an argument about some belief or value — this is a construal of that belief or value. Construction is that moment in semiosis where the construed concepts produce some form of social structure. For instance, the concepts of proletariat, bourgeoisie and relations of production, organised into an argument about the unjust domination of the proletariat, played their part in the production of various forms of revolutionary political organisation. It is not guaranteed that constructions will necessarily follow from a construal, and even if they do, the messiness of interpretation as well as interference from non-semiotic features means that construction will probably not perfectly reflect the logic of its preceding construal. Understanding semiosis requires understanding these two moments of construal and construction. Considering construal leads one to think about how orderings of concepts emerge from and are constrained by existing social organisations, whereas considering construction leads one to think about how orderings of concepts play their part in 'social structuration' (Fairclough et al. 2010: 6-7).

The two different ways of grouping concepts together as discourses considered above emphasise different moments in semiosis. Understanding discourses as more or less coherent logical structures is suited to understanding construal — hence Fairclough's emphasis, in *New Labour, New Language*, on the Third Way discourse as a conceptual formation that is always being made into a coherent whole by Labour MPs. Though complete and permanent coherence may be impossible, in the moment of construal the rules that govern how signs are concatenated, and what combinations of signs are persuasive (a key concern for any political party), take centre stage. The conceptual formations which follow these rules tend towards coherence. Understanding discourses as groups of concepts which enable the exercise of biopolitical power, or of the enactment of cultural hegemony or ideological state apparatuses, etc., are focused on the constructive moment of semiosis. What is important here is the place of concepts in the concrete moment of structuration (e.g. the genesis of public-private partnerships), not the coherence of concepts, especially since the concrete moment of structuration will probably distort the coherence of construal. Construal and construction are always tightly entwined and mutually determining ('dialectical' in Fairclough, Jessop and Sayer's words). Nothing that happens in society is ever a pure construal or a pure construction. All social structures have a 'more or less semiotic ('textual') character' (Fairclough et al. 2010: 8), meaning the constructions generated by construal always contain new modes of construal, and construal is always part of existing constructions. Construal and construction happen simultaneously.

So, at any point in time a social process has a mode of construal embedded in the paraphernalia of concrete organisation, i.e. construction. For example, at any point in time the policy process has systems

in place for the organisation of concepts (construal), and these systems are embedded in the organisations which carry out the policy process (construction): the legislature, government departments, think tanks, local authorities, citizen assemblies, and so on. The systems which organise concepts cover chatter between ministers and civil servants, application forms for public funding, e-mails, texts, meeting minutes, consultation documents, department reviews, impact assessments, and so on. A useful concept employed by Fairclough, Jessop and Sayer to describe these systems of construal is semiotic order, which they break down into genre, discourse and style (Fairclough et al. 2010: 8). Genres are conventionalised modes of organising signs, such as conversations, interviews, stories, etc. Discourse is understood from the perspective of coherence and position, and style, which is the way people express themselves, e.g. their manner of speaking and their use of body language. The concepts construed by a social process are distributed across its semiotic order (Fairclough et al. 2010: 2) (Fairclough 2003: 26). Understanding the semiosis of a social process must include understanding that process' semiotic order, how it changes and how concepts move across it.

2.2 Genres and Text Systems

Critical discourse analysis, being reliant on close reading, is limited to the analysis of construal. Even though, when combined with another suitable methodology, such as historical/economic analysis or fieldwork methods such as participant observation, one can use discourse analysis to talk about semiosis' place in construction, its near exclusive focus on text means it can never stray too far away from construal. This makes genre an especially important concept for discourse analysis as it situates texts within a context of social relations. Without genre it is very easy to think of texts' meanings as independent of any specific context and so remove construal from its proper context of an already existing construction. Recognition of the conventions of, for example, the genre of the academic paper, which enjoin that any information in the paper must be arranged as a set of coherent arguments, must use a referencing system to convey the sources of information, and must be under 9000 words, roots the meaning of any academic paper into the context of social relations from which its generic conventions are formed. The social relations in question include those between students, lecturers, administrators, universities, funding bodies, and so on. Genre allows discourse analysis to relate the meanings/discourses it uncovers in a text to the specific social relations which underpin that text.

Fairclough of course recognises this, and points to three levels of scale at which discourse analysis can understand genre (Fairclough 2003: 66). At the micro-level there is the analysis of individual genres. Analysis at this scale is about how generic conventions organise concepts. For example, in *Political Discourse Analysis*, Fairclough and Fairclough revisit the analysis of Blair's speech to the Confederation of British Industry they had offered in *New Labour, New Language,* categorising the

speech as a performance of deliberation. In this genre, the centre-left neoliberal worldview is organised into an argument about a practical course of action, as an answer to the question '*what should I (we) do?*' (Fairclough & Fairclough 2012: 87). An analysis of this speech, as an example of the genre of performance of deliberation, would focus on how a worldview is translated into a set of premises and conclusions about a course of action. At the meso-level there is the analysis of genre mixture. Fairclough's argument about the colonisation of adverts for academic posts by more commercial genres of advertisement (discussed earlier) is an example of this. Analysis at this scale is about how different genres mix to form hybrids and new genres. Finally, at the macro-level there is the analysis of genre chains. Fairclough cites Iedema's (1999) study on the trajectory of information from informal to formal contexts in a project involving the renovation of a psychiatric hospital. In terms of genre chains, it traces the chain between meetings to the formalised project definition plan report. The focus of analysis here is how the meetings were of negotiations between contrary interests, and how these negotiations were translated into the 'unified content' of the project definition plan report (Iedema 1999: 50).

The examples of genre mixture and genre chain analyses are not particularly wide in scope. The genre mixing analysis of the marketization of academic post advertisements was limited to three examples and Iedema's chain analysis was limited to the link between two genres in the singular context of renovating a mental health. This contrasts with Fairclough's 'looser' discussions about genre chains/hybrids which were not tied to detailed analyses of examples, as well as more theoretical discussions about genres. An example of the former is an illustration made through the example of journalism:

> 'Think, for example, of a story in a newspaper. Journalists write newspaper articles on the basis of a variety of sources — written documents, speeches, interviews, and so forth — and the articles are read by those who buy the newspaper and may be responded to in a variety of other texts — conversations about the news, perhaps if the story is a particularly significant one further stories in other newspapers or on television, and so on.' (Fairclough 2003: 30)

On the more theoretical side, Fairclough discusses genre hybridization as the result of the colonization of genres by promotional/consumer culture as a general trend of late capitalism, packaged as part of other general trends such as the Baudrillard-ian replacement of the referential character of the signified by an infinite chain of signifiers (Fairclough 1993: 140-142) (Baudrillard 1994). Genre hybridization is one aspect of a general pattern, which is part of the logic of late capitalism, which affects *all* of culture. Both these ways of speaking about genres describe and make arguments about an interconnected array of thousands, if not millions or billions, of texts — hence their categorization at a scale larger than the analysis of individual genres. If the aim of discourse analysis is to understand the role of semiosis in social processes, and semiosis is distributed across vast arrays of a near uncountable number of texts, then close reading-based methods of discourse analysis, by themselves, are not sufficient for

understanding semiosis. As a result, there are blind spots in the study of semiosis which cannot be amended through improved application of existing methods of discourse analysis.

Before discussing blind spots, it is useful to note that there are two varieties of chains which link genres together. In Fairclough's example of the journalist's article, he highlights the chains between the article and its sources (for example, interviews) and its responses (like conversations or blog posts). The former chain is one of convention. The information in the sources collected by the journalist is transformed/formalised into the newspaper article because everyone involved in the social context producing the article (i.e. the press) expects this transformation/formalisation to take place. A comparable example is a student's homework and a teacher's feedback form. When the student hands in their homework to the teacher it is expected by everyone involved in the school context (parents, teachers, students) which underpins both genres (homework and feedback) that the teacher will produce a feedback document. The expectation which elicits the production of the newspaper article/feedback form is there because there is a rule in the social contexts underpinning those texts mandating their production. Hence, the journalist/teacher is obliged to produce the article/feedback form; producing these texts is not a matter of preference. One can generalise the character of the chains between genres categorised as conventional chains in the following way: for a given number of genres, the chains between those genres are conventional chains if there is some rule which commands that the production of one text in one genre must be followed by the production of other texts in the other genres. This conventional variety of genre chains is in opposition to the sorts of chains between the newspaper article and conversations had in response to the newspaper article. There is no obligation to have a conversation or tweet about the newspaper article — people do so because they want to. One can generalise about this sort of preferential chain in the following way: for a given number of genres, if the production of one text in one genre elicits the production of other texts in other genres by any means other than obligation, then the chains between the genres are preferential chains.

This distinction between conventional and preferential chains can be used to explain the different behaviours of different sorts of text systems. For example, in comparison to the text systems of formal social contexts, such as that of law or policy making where genre chains are likely to be conventional, the text systems underpinned by online communities (social media sites, imageboards, video sharing platforms, online forums etc.) are less stable. The kinds of genres which organise the system are more likely to change because they are related to each other by preference rather than obligation. Internet memes are a typical example of an unstable online text system: a single 'type' of meme (e.g. vaporwave) generally constitutes a set of genres which have specific modes of organising concepts into jokes, stories, expressions of nostalgia, depression and so on. If a type of meme becomes viral, then people will adopt and alter the meme's generic mode of organisation, producing new memes and therefore new genres. Besides the minimal constraint that new meme genres tend to reference each other, there are no rules which oblige people to produce memes in any specific way, so the memetic text system changes

quickly and unpredictably. As is generally the case with analytical categories of social theory, conventional and preferential chains are not mutually exclusive; there will be chains which do not fit neatly into either category, rather they sit somewhere in between. A related point is that text systems are never purely conventional or preferential. Rather, they will be composed of a greater ratio of conventional to preferential chains or vice versa, or somewhere in the middle. The text system of the art world could be an example of a system with a fairly even ratio of conventional to preferential genre chains.

Returning to the blind spots in using close reading-based methods in discourse analysis, a key blind spot concerns the idea of position, i.e. the mode of categorising concepts together as a discourse mentioned above. Going by Fairclough's arguments about genres, one cannot visualise a discourse's position as a single, unitary point. A discourse's position marks out the specific social relations (a set of existing constructions) from which the discourse emerges. These social relations can only express a discourse if it has a semiotic order. That is, if the social relations which constitute a position make use of texts which are organised into genres, which govern how each text organises concepts, and are linked together as a system through conventional/preferential genre chains, which govern how texts are made in response to each other. It is only with such a text system that a position can organise concepts into values and worldviews which can be collectively acted upon by the people involved in the position's social relations. The policy process is an example of this: without the network of impact assessments, reports, evaluations, reviews, consultations, and so on, making and implementing policy would be impossible since there would be no way of organising information in a practical way. The theory behind close-reading based methods of discourse analysis understands this perfectly well. That is why Fairclough observes that New Labour's discourse is constantly being renewed and pushed towards coherence through the multiple speeches and documents the party produces. And that is why Foucauldian approaches to discourse put emphasis on the place of discourse within institutional techniques of subject-constituting power. Yet, beyond this theoretical recognition, analysis of the text systems which underpin discursive positions remains either extremely localised, due to the inescapable limits of relying on close reading, or the behaviour of text systems is elided altogether.

Thus, while Fairclough persuasively shows that New Labour's discourse indeed does originate across different kinds of genres, it is still unclear how these genres chain together. Within the construction of New Labour discourse, are there any formalising chains like the one identified by Iedema's study? Fairclough sees New Labour's discourse as part of an international neoliberal discourse by pointing out similarities between the discourse of New Labour and that of Clinton's New Democrats and the European Union (Fairclough 2000: 68-72). As a way of arguing that there really is an international neoliberal discourse this is sufficient. However, the question of *how* neoliberal discourse spread across the globe is not considered. This is not simply a question of pointing to an academia-think-tank nexus which took advantage of the economic crisis of the 70s as the origin of neoliberal discourse. Each of

the organisations involved in the international discourse of neoliberalism have their text systems. A description of the international spread of neoliberal discourse must include the description of how concepts move across these text systems. How does discourse spread within the text system of a single domain of organisations? What transformations do concepts undergo as they spread within a domain of organisations? How does discourse move between the text systems of different domains of organisations? How do conventional genre chains of each text system adapt the elements of neoliberal discourse to the various purposes of the organisations underpinning each text system? Do the genre chains which organise text systems change as neoliberal discourse spreads?

The same kinds of questions are skipped over by governmentality approaches to discourse. I discuss Jonathan Joseph's work as an example of this. Joseph's *Varieties of Resilience* (2018) argues how the appearance of 'resilience', referring to the capacity for a system to bounce back after some shock/crisis, has been appropriated by neoliberal governmentality as a means of subject-constitution to ease the management of populations (Joseph 2018: 3). Hence in security policy in the UK and the USA, the aim is to craft resilient populations that can autonomously respond to threats like terrorism and climate change (Joseph 2018: 27-73). In the first chapter Joseph shows the origins of 'resilience' in academic literature, citing disciplines such as psychology, engineering and ecology as places where 'resilience' was first developed as part of overall arguments about systems, shocks and equilibria (Joseph 2018: 11-26). It may be argued from this that *Varieties of Resilience* in fact contains at least three claims about the 'spread' of neoliberal ideas such as 'resilience'. First, 'resilience' spread from academia to policy making, and has since been developed simultaneously in both spheres in ways conceptually consistent with each other. Second, this spread and simultaneous development indicates that academic social theorising and governance share a common set of ontological commitments. These commitments downplay the importance of persistent social relations, such as the class relations, which emerge from capitalist relations of production, and instead emphasise the fluidity and unpredictability of complex networks of individuals. This common 'discursive framework' (Joseph 2018: 17) is an explanation of the spread and development of resilience in academic and policy making contexts. Third, the growth of this common discursive frame is part of the general development of neoliberal governmentality. This claim is not dissimilar to Fairclough's claim that genre hybridization is part of the general cultural logic of late capitalism. Again, what these claims elide is the spread of discourse within positions, i.e. within the organisations producing the documents which Joseph uses to make his arguments about resilience. Each of these organisations has a text system organised by generic conventions, and an explanation of the spread of ideas must include an explanation of how ideas spread within these text systems. In making the first two claims, how the spread/simultaneous development of resilience and the common discursive frame of complexity is mediated by text systems and the effects of this mediation are not discussed. In making the third claim, the question of how neoliberal governmentality organises text systems to enable the spread of certain discursive frames is also not discussed.

The above is not intended as a criticism of the governmentality approach to discourse, since delving deeply into the workings of text systems is not the point. To the extent that Jonathan Joseph's intention is to show how resilience is part of the neoliberal management of populations, his use of close reading is sufficient. I point out how his work omits an exploration of text systems to underline how it is simply outside the purview of existing close-reading methods of discourse analysis. They do not consider how text systems mediate discourses in detail. This point may be taken more as a criticism when considering Fairclough's critical discourse analysis, since he does have an explicit theory of genres and the place of text systems in semiosis. However, his actual empirical investigations/examples of empirical investigations into genre chains/hybridization are extremely localised and cannot describe more than a fraction of the total process of semiosis mediated by texts.

What prevents existing methods of discourse analysis from tackling the workings of genre and text systems in depth is their over-reliance on close reading. That is irrespective of whether that close reading is performed upon documents or ethnographic data. That over-reliance means that a significantly large proportion of an institution's text system cannot be represented. So, while close reading excels at enabling one to recognize the logical structure behind the arguments which make use of a concept, or at enabling one to recognize that the concept used in one context is the same as that used in other contexts, or at recognizing the generic conventions/chains which structure a small set of specific texts, it is unable to properly represent the trajectories of ideas through a text system. At most it can represent a miniscule part of an idea's web of trajectories.

2.3 Text Systems and the Policy Process

Next, I consider the above arguments about discourse in the specific context of policy. As the empirical focus of this thesis concerns the British state's use of language, and therefore the role of language in governance, there is an obligation to contextualise the above arguments against existing literature about language and governance. Focusing on literature about discourse and public policy offers a way to do this. I argue that if one accepts the picture of semiosis provided by Fairclough, Jessop and Sayer, one is committed to a specific view about the relationship between the organisations involved in policy making and reality. I then argue that there are a family of theories which make the required claim about this relationship, and that if one accepts any member of this family, then one's ability to explain how policy gets made relies on understanding the text systems used by policy-making organisations. Since existing methods of discourse analysis are limited in their ability to understand text systems, and the family of theories about policy making organisations use these existing methods, existing work about discourse and policy making are limited in their explanatory power.

The key point in the distinction between construal and construction is the gap between how conceptual systems of values and worldviews are construed, and how these conceptual systems are put to work in structuration. Because of the inevitable ambiguity introduced in the interpretation of construal required by construction, and because of the inevitable interference from features not predicted by construal in construction, construction will never perfectly reflect its preceding construal. Noise is always introduced in the movement from construal to construction. This noise means that modes of construal are constantly changing (which means construction is constantly changing), as new constructions come up with new modes of construal to adapt to what previous modes of construal could not predict. Hence, one can say that how the social structures which result from construction understand reality depends on their mode of construal. Moreover, their manner of understanding is continuously changing. Explaining the relationship between social structures and reality must include understanding the relevant modes of construal, and of how these modes change.

It follows that understanding the policy process requires a picture of policy-making organisations' modes of construal, since policy making involves making claims and value judgments about reality, which can only happen within a mode of construal. This means attention needs to be paid to the semiotic orders of policy-making organisations, i.e. to the text systems which organise the concepts organisations use to construe a picture of reality.

There are a range of theories of policy which agree with the above claim that policy making must be placed within a mode of construal to be understood, which I briefly summarise here. The governmentality approach to policy is one, of which Jonathan Joseph's work on resilience is an example. This emphasises that the concepts used in policy to construe reality, such as resilience, are part of an overall structure of texts and organisations designed to exert power through constituting the subjectivities of citizens in the image of an ideal neoliberal subjectivity. Here, explaining the use of resilience in policy making involves showing how resilience is a mode of construing reality consistent with neoliberal subject-constitution, and that policy making takes place within this construed reality. Jessop's cultural political economy approach uses the same framework as Fairclough, Jessop and Sayer to understand the discourses within which economic policy is made. He understands the discourse of the knowledge-based economy as an 'economic imaginary', where an economic imaginary is a representation of the 'actually existing economy' — 'the chaotic sum of all economic activities' (Jessop 2004: 162). This became dominant because it allowed policy-making organisations to adapt economic policy to the new landscape of the post-Fordist, 1980s global economy, and because it gave organisations a picture of reality which could be used for new modes of neoliberal institution construction (Jessop 2004: 168). Thus, Jessop explains the movement towards economic policy which focuses on profiting from intellectual property. He focuses on how the knowledge-based economy construal of reality was selected in response to the pressures exerted by the unpredictable development of capitalism. Cultural political economy's and Fairclough et al.'s emphasis on how modes of construal

are selected in response to unpredictable noise introduced through construction resembles Luhmann's theory of public policy.

Luhmann describes a similar relationship between construal and construction using a different vocabulary. The dialectic between construal and construction is replaced by an autopoietic communicative system which is perpetually rearranging itself in response to the unpredictable complexity of its environment (Brans & Rossbach 1997: 422). The 'extra-semiotic' (Fairclough et al. 2010: 4) features of construction are relegated to the system's environment, and the rest of construction is melded with construal as a single, unified communicative system which is nothing but a system of signs. From this perspective, what distinguishes construal from construction is that construal is the system's self-representation. It is the way in which the system understands itself, whereas construction is the concrete course of the communicative system's development, regardless of whether that course mirrors the way the system sees itself or not. Policy-making organisations are particular kinds of communicative systems, and the policy process is a specific set of operations within these organisational systems. So, understanding these policy-making operations involves several steps. It means understanding the total organisation of the communicative system which contains it, and how this system differentiates itself from other systems and the environment (for policy making organisations this is done through a semiotics of membership (Brans & Rossbach 1997: 422)). It further involves understanding how the reality within which policy making works is fabricated by the organisational system's construal of itself, and how this self-construal develops by representing previous modes of self-construal (this is autopoiesis).

A final example is actor network theory's perspective on policy making. Actor network theory describes social processes as networks of actors which interact to produce various 'effects'. Actors are not necessarily human, they can include any non-human entity so long as its presence is necessary to produce the effect of interest (Law 2009: 141-142). These networks are often described by adherents through analogy with Saussurean semiology ('material semiotics' (Law 2009: 142)). Saussure considered the meaning of each sign to be the result of the position of that sign within a total semiological system, with the specific meaning of a sign being a relation between its signified and other signs' signifieds. Likewise, the contribution each actor in a network makes towards the effect in question is not a result of a property of the actor that exists independently of networks. Like the meaning of a sign, an actor's contribution is understood as a result of that actor's relation with the other actors in the network. Thus, Law notes how Latour's understanding of the effect of pasteurisation on agriculture emphasises the 'network of domesticated farms, technicians, laboratories, veterinarians, statistics, and bacilli' (Law 2009: 145) rather than Pasteur's property of greatness. Greatness, rather than being a property which generated pasteurised agriculture, is in fact one effect among many produced by the network: 'Farms were turned into laboratories, vaccines made from attenuated bacteria, cattle stopped dying of anthrax, and Pasteur became a great man.' (Law 2009: 145) Applied to policy

making, actor network theory has informed several ethnographic studies which seek to identify the network of actors which effect policies. The results of such studies come to similar conclusions about the role of construals of reality in policy making as Luhmann and Jessop.

One such study investigated the development of biotechnology policy in Quebec and identified the network of actors surrounding the dossier as the key network from which biotechnology policy comes (Cambrosio et al. 1990: 200). Without such a dossier, there is no biotechnology policy. The authors note how the dossier comes into existence once its topic is recognised by the state as an area of interest through a mandate. In the case of biotechnology, this mandate was realised through the formation of the Secretariat for Scientific Development (SSD) (Cambrosio et al. 1990: 209). The dossier contains all the documents used by the SSD to understand biotechnology and to set goals for biotechnology policy. It is argued that much of the work involved in the dossier consisted of the SSD trying to represent the field of biotechnology, and how the construction of this representation happened through the path of the dossier through the various offices of the SSD, and the methods used in offices, meetings etc. to decide what counts as biotechnology and what does not (Cambrosio et al. 1990: 210-213). One such method used was the fields/methods matrix, in which biotechnology is split into a grid of industries (biomedical, agricultural, industrial) and techniques (genetic engineering, enzymes, cell fusion, cell culture, bioengineering). Thereupon, people associated with biotechnology were placed in each grid cell depending on their involvement with specific industries and techniques (Cambrosio et al. 1990: 212). It is noted that the categories used in the fields/methods matrix were not decided upon through any kind of rigorous, sociological analysis of biotechnology research. Rather, they were 'based on institutional, political, epistemological, economic, disciplinary, technical and functional criteria' geared towards organising information in a way that is practical and habitual for the SSD (Cambrosio et al. 1990: 212). Attention is also drawn to the place of the dossier in an intertextual web of other state documents: such as, those detailing previous policy plans, the science policies of other states, regulatory documents, memoranda, meeting minutes (Cambrosio et al. 1990: 216). The making of biotechnology policy relies on the SSD's construal of the reality of biotechnology, which depends on the internal priorities of the state and its habituated modes of organising information.

In all these theories, the policy process is something that proceeds within a construed reality. The explanatory burden of understanding how policy is made is placed on answering questions about construal: about its internal logic, how it responds to economic pressures, its place within subject-constituting practices and so on. All these questions must turn to the examination of the policy document for an answer, for any question about construal is a question about the semiotic order of the policy process, and the policy document covers much of the genres which organise the semiotic order. Hence studies of the policy process from the perspectives of the above theories adopt close reading-based methods of discourse analysis or ethnographic investigations such as that of Cambrosio, Limoges and Pronovost or Iedema.

The argument above that existing methods of close reading-based discourse analysis are limited in the amount of insight they can provide into the behaviour of text systems has been made in the context of policy studies by Freeman and Maybin. They argue that though these studies pay attention to how documents are constructed from pre-existing structures of worldviews and values, much less attention is given to how documents are constructed from the 'practices and routines by which it [the document] is produced and reproduced' (Freeman & Maybin 2011: 159). These studies treat discourse as 'disembodied', by ignoring the practices and routines through which documents are produced and interpreted. Discourse analysis thus elides the question of how exactly documents 'reproduce' discursive norms amongst the policy officials who produce and interpret policy documents. Understanding this reproduction is taken no further than simply demonstrating the presence of a norm in a document. As a result, they encourage more studies along the lines of actor network theory guided ethnography (Freeman & Maybin 2011: 160-162).

As mentioned above, ethnographic methods can go further than close reading-based discourse analysis in exploring the practices and routines through which policy documents are produced and interpreted. However, they can only capture a very small portion of the total web of practices and routines. Thus, Cambrosio, Limoges and Pronovost are able to see from their ethnographic study the importance of the total text system (intertextual web in their words) in the SSD's construal of the reality of biotechnology and the Quebec state's approval of the development of a biotechnology policy plan. However, they talk about the text system mainly to reinforce their argument that the making of biotechnology policy relies on organisation's internal representations of biotechnology (Cambrosio et al. 1990: 216-219). They are unable to give an in-depth account for the specific structure of this text system, the genre chains which compose this structure, the details of how representations of biotechnology move through the text system, how the text system changes over time, and so on. While the above theories of the policy process require an understanding of the text systems used in the construal of reality within which policy is made, the methods used to understand text systems remain limited.

2.4 From Semiosis to Scorekeeping

In the previous sections arguing that discourse analysis as it currently stands has limitations as a method of investigating text systems, I have accepted Critical Discourse Analysis' positioning of discourse analysis as a method of investigating semiosis and the concepts which accompany this positioning: construal, construction, semiotic orders and genre. In this section I argue that discourse analysis should be positioned as a method of investigating discursive scorekeeping practices rather than semiosis. I argue that the focus on semiosis leads to an understanding of discourse analysis that is overly

theoretically complex. In other words, Critical Discourse Analysis' understanding of discourse analysis requires a hefty set of commitments to positions about metaphysics/ontology, causality, and signification, when a serviceable understanding of discourse analysis that does not require such commitments is possible. Accepting Critical Discourse Analysis' positioning of discourse analysis as the investigation of semiosis carries the burden of having to either a.) justify Critical Discourse Analysis' critical realist foundations or b.) criticise that foundation and then formulate a distinct set of metaphysical/ontological and semiotic foundations. Ideally, stating the purpose of discourse analysis should not require resolving the most intractable problems currently troubling metaphysics/ontology and semiotics.

I claim that positioning discourse analysis as the sociological investigation of discursive scorekeeping practices is more theoretically economical and comprehensive. It allows one to articulate the connection between signs and social processes and the role discourse analysis plays in analysing this without having to commit to strong claims about causality, ontology and semiotic signification. The only commitment required is that sign processes are embedded in certain kinds of rule-following practices that mereologically constitute (rather than 'have a causal effect upon' in critical realist language) larger social structures. This is analogous to understanding the face-to-face practices described by Goffman (1956), or to the relations and practices that define wage labour, as constituting larger social structures.

Before explaining this, I discuss Derrida's conception of semiosis. Critical Discourse Analysis conceptualises semiosis in opposition to the idea that semiosis is nothing but an internally driven 'play of differences', exemplified by Derrida's notion of difference. I then argue for positioning discourse analysis as a method for the investigation of discursive scorekeeping practices, and then reconsider text systems and genres in terms of scorekeeping.

2.5 Semiosis as Infinite Recursion

Derrida's description of semiosis is encapsulated in his notion of différance (Derrida 1973), which describes the recursive character of signification. The notion of signification Derrida comments upon is taken from Saussure, who argued that a sign should be thought in terms of a signifier – a sound, mark, etc. – and a signified – the concept pointed to by the signifier (Saussure 2011: 67). So, the act of signification involves using signifiers to point to concepts. Derrida argues that the concept pointed to in an act of signification is never truly made 'present' – the presence of the concept to be signified is always 'deferred' (Derrida 1973: 136, 138-143). To unpack what is meant by 'deferred' here, one needs to go over Saussure's account of the synchronic relations which contain a sign, i.e. the relations between

a sign and other signs at a single point in time, as opposed to the diachronic relations between a sign and other signs at past and future points in time.

A key point of Saussure's notion of signification is that nothing about a signifier, or a concept, gives any indication about the concept, or signifier, it ought to be matched with. This is what Saussure calls the arbitrary character of signs (Saussure 2011: 67-68). The only indication that allows people to match signifiers and concepts are the conventionalised/habituated (and therefore more or less stable) differences between the ways particular signs are used (Saussure 2011: 68, 120). The only thing that allows one to match 'tree' with the concept *tree* is knowledge of the difference between how 'tree' is conventionally used and how other signifiers are conventionally used. This is the synchronic aspect of Saussure's notion of signification. One cannot understand the substance of one sign without understanding how it differs from every other sign in the semiotic system: the substance of sign x_1 is given by its difference from x_2, whose substance is given by x_2's difference from x_3, and so on.

Derrida argues that this implies signifiers do not really point to concepts. Since signification only works through synchronic relations of difference with other significations, signification is really nothing more than a referral to another signification (Derrida 2011: 140). This suggests the act of specifying a sign's meaning is a recursive operation, i.e. an operation which requires the performance of an identical operation to be fulfilled. So, specification of the meaning of sign x_1 requires specification of x_2, which in turn requires specification of x_3, and so on, leading to infinite regress. Contrary to the 'metaphysics of presence' (Derrida 1976: 49) which is the target of Derrida's arguments (or rather than a concept), a signifier presents an infinite series of specifications. Thus, the concept one would expect to be made present by a signifier is infinitely deferred. The infinite recursion underlying the illusion of signifying concepts entailed by Saussure's account of the synchronic relations between signs is what Derrida articulates through '*différance*', a word which fuses *difference*, as in synchronic difference, with the *deferral* of the signified that results from the recursive character of signification (Derrida 1973: 136-137).

Derrida's différance is partly the result of his reading of Peirce's semiotic (Derrida 1976: 48) (Scott 2019: 1), in which it is noted that Peirce's triadic conception of the sign implies an infinitely recursive capacity – a capacity which Peirce explicitly calls 'semiosis' (Peirce 1958: 1874). For Peirce, the sign is one element within a triadic relation: between itself and its object (that which determines the sign) and its interpretant (broadly, the effect of the sign upon the interpreter); the range of logical relationships with other signs the initial sign is placed into by an interpreter (the initial sign's inferential significance); and the perlocutionary acts performed by the interpreter in response to the sign (Scott 2019: 9). In brief: object → sign → interpretant. An example Peirce uses to illustrate this triadic relation is that of an officer instructing his firing squad to 'Ground arms!' (Peirce 1958: 1869). The object of the sign 'Ground arms' is the intention held by the officer for the firing squad to place the butt of their weapons

on the ground. The sense in which the object 'determines' its sign varies according to the sign's type, so the sense in which an object determines an icon (defined by likeness to its object, e.g. a painting) is different to the sense in which an index (defined by physical connection to its object, e.g. a weathervane) is determined (Peirce 1955: 102-103). In Peirce's typology of signs, the 'arbitrary' conventional sense of determination (as in Saussure's conception of signification) is what defines symbols. The interpretant of 'Ground arms' includes: the perlocutionary act of grounding arms, the recognition by members of the firing squad that they are now obliged to ground arms, as well as the inferential relationships with other signs containing that recognition. The squad apprehends, for example, that this obligation holds only given their position in a military hierarchy, that this obligation would not hold if the utterer of 'Ground arms' were not a superior officer, that this obligation would not hold if the members weren't part of the military, etc.

In this triadic conception of the sign, the interpretant of a sign is yet another sign. Just as the axioms of Euclidean geometry are signs, those expressions which can be produced from those axioms (such as Pythagoras' theorem) are also signs, which have their own interpretants (that is, the range of geometric statements that can be produced using Pythagoras' theorem). One only comprehends Pythagoras' theorem if one is capable of correctly using it to produce other geometric expressions. Thus, comprehending it is a recursive process; which is to say, understanding a sign requires the ability to produce its interpretant, which, as another sign, also demands the ability to produce its interpretant, and so on (Peirce gives a long example of a mathematician grappling with the map colouring problem to illustrate this process (Peirce 1958: 1877-1879). Derrida's différance uses the recursion entailed by Peirce's triadic conception of the sign to argue that there are no conditions under which the loop between signified and signifier, or object, sign and interpretant, generated by the recursive operation that grasps the meaning of a sign, can be exited. Derridean semiosis, then, is an expansion of Peircian semiosis: an infinite regress of sign production, where attempts to refer and explicate are moments within the regress which lead to the next moment.

2.6 Provisional vs. Stable Models of Semiosis

Critical Discourse Analysis is opposed to the Derridean notion that actions like referring and explicating are nothing except recursive moments in an infinite regress. Through this Critical Discourse Analysis can maintain that semiosis is not only determined by its internal recursive operations, but also by external reality via referring operations through which speakers can summon the presence of, or refer to, bits of external reality (Fairclough et al. 2010: 4). The line of reasoning used to justify this holds that the recursion that results from a sign system's synchronic structure of differences does not lead to infinite regress. There are circumstances in which the loop between signifier and signified can be exited,

namely the circumstance of successful reference (Fairclough et al. 2010: 5). In such a circumstance, what is signified is a genuine presence of a referent, not a deferral to another sign. This is articulated through Critical Discourse Analysis' adoption of critical realism, especially the work of Andrew Sayer and his comments on the signifier-signified-reference triangle (Sayer 2000: 37). This is an attempt to rescue the metaphysics of presence from Derrida's critique by reconceptualising Saussurean signification as a triadic relation between signifier, signified and referent.

Critical Discourse Analysis notions like semiotic orders and construal vs. construction, and its recourse to critical realism, are ways of articulating the place of semiosis in processes beyond semiosis' internal recursive operations. The notion of semiotic orders is a way of articulating how semiosis is 'embodied' in organisational text systems and styles of individual conduct which cannot be fully explained in terms of recursive semiotic operations (Fairclough et al. 2010: 7). The purpose of the distinction between construal and construction is to highlight how semiosis only constitutes a part, rather than all, of social processes. The products of semiosis – texts, etc. – are categorised under 'construal' since such products construe the world in certain ways. Those processes which cannot be characterised in terms of the play of difference between signs are categorised under 'construction', and semiosis is understood as the feedback loop between construal and construction. Through reference, constructions, understood as a reality *external* to construals, constrain semiosis (Fairclough et al. 2010: 5).

Derrida and Critical Discourse Analysis offer two ways of understanding sign processes. On the one hand, the meaning conferred upon a sign by interpreters is always provisional. People may act as though the content of a sign is stable, but this stability is always temporary. Différance means the same operation through which the stability of an initial sign's content is attained, which requires the production of another sign (i.e., a definition, an interpretant, a reference, etc), can always be applied to the sign which stabilises the meaning of the initial sign. Since there are no conditions under which such operations cannot be repeated, the stability of a sign's content is always threatened by an infinite regress of stabilising operations and so is always only provisional. This regress is what semiosis is. In opposition to this view, Critical Discourse Analysis takes signs' contents to be stable rather than provisional, fixed through a triadic relationship between signifier, signified and referent. Semiosis therefore not only involve loops between signifier and signifieds/interpretants, but also involve the referential mappings (between signs and bits of reality) which in turn constrains the recursive movement described by différance.

In between these provisional and stable models of semiosis one can identify partially provisional models such as Brandom's inferentialism. Here, the content of a sign is taken to be the role it can play in inferences – the range of inferences in which it can be a premise or conclusion (Prien 2010: 434). Brandom distinguishes this inferential content from the inferential significance it has for an interpreter. This is the range of inferences the interpreter takes to be permissible given some sign, which is not

necessarily what is in fact permissible (Prien 2010: 436). Since a sign can have different inferential significances for different interpreters, this would suggest the stability of a sign's content at some point in time is temporary, to be given a different significance once used at a different point in time. Brandom argues that what stabilises the meaning of a sign is a discursive process in which interpreters map the inferential significances they each personally associate with the sign onto each other (Prien 2010: 443-444). So, if an interpreter *A* says 'amanita virosa', another interpreter *B* can search their repository of known signs and find that the range of inferences expressed in *A*'s use of 'amanita virosa' has the greatest overlap with the range of inferences *B* associates with 'destroying angel' – so *B* can match *A*'s 'amanita virosa' with their own 'destroying angel'. This matching takes place through 'recurrence commitments' (Prien 2010: 446). If *A* says 'Amanita virosa is not a poisonous mushroom', *B* might reply 'You're telling me the destroying angel is not poisonous?'. In their reply, *B* is committed to the intersubstitutability of 'amanita virosa' and 'destroying angel', i.e. *B* treats 'destroying angel' as a recurrence of 'amanita virosa'. Differences between the inferential significances of the matched signs (which are, in this case, 'amanita virosa' and 'destroying angel') can then be worked through by *A* and *B* offering and responding to justifications for the assertions/inferences which constitute the significance they assign to their use of 'amanita virosa'/'destroying angel'. It is this discursive practice which stabilises the meaning of 'amanita virosa'/'destroying angel'. Through argument – the 'game of giving and asking for reasons' (Brandom 2001: xviii) – *A* and *B* negotiate the inferential role of 'amanita virosa'/'destroying angel', elevating subjective inferential significance to intersubjective inferential contents. Inferential contents (i.e. meaning) is therefore a consequence of, rather than a condition of, the discursive practice through which subjective inferential significances are pitted against each other. Here, rather than the dynamic between signifiers and signifieds, or signifiers, signifieds and referents, what constitutes semiosis is the argumentative process which converts individually determined inferential significances into inferential contents. From this perspective, the meaning of signs is not fixed prior to discursive processes; they are fixed as a result of such processes and are open to being revised by such processes – hence, partially provisional.

2.7 Simplifying the Position of Discourse Analysis

The purpose of going through these different ways of understanding semiosis is to underline how difficult it is to state an account of semiosis without delving into views about meaning over which there is considerable disagreement. Each of the possible ways of explaining semiosis discussed are incompatible. Derrida's recursive Saussurean notion of meaning, Critical Discourse Analysis' referential theory of meaning, and Brandom's inferentialism are irreconcilable. There is little consensus on which of these is the most acceptable. Positioning discourse analysis as a method of investigating semiosis, as Critical Discourse Analysis does, therefore requires dealing with positions like these three

views on meaning, either by defending one of them or formulating/defending yet another irreconcilable position on meaning. This is well beyond the scope of this thesis. A simpler alternative is to reposition discourse analysis as a method of investigating discursive scorekeeping practices. To recap, discursive scorekeeping is the practice engaged in whenever communication happens, whether face-to-face or through written texts, and involves the following (Lewis 1979: 344-345):

1.) At a point in time during communication, there is a record of all sign content which has been expressed by interlocutors up to the point in time. This record is the discursive score.

2.) The discursive score at a point in time constrains what sign-uses are correct/incorrect for the next point in time, where correctness can be understood in many ways: e.g. truth-value, speech-act felicity etc. In turn, expressions' contents along with their states of correctness update discursive scores.

3.) 1 and 2 mean instances of communication progress in an ordered way that can be expressed, albeit imperfectly expressed, through rules like 'if the discursive score at a point in time is … and if … is expressed by an interlocutor, then the score at the next point in time will be…'.

4.) Interlocutors work to steer the score in a certain direction – they may work to produce consensus, to persuade, and so on.

As previously discussed, there are a variety of ways in which one can understand the character of the content of interlocutors' expressions and discursive scores. Accepting discursive scorekeeping does not require any commitment to a particular position on meaning. Given critical realism's emphasis on reference, it might settle for truth-conditional semantics to characterise this content, in which expressions are understood as truth-functions whose status as true or false depends upon their logical form and reference. This would lead to a picture of scorekeeping consistent with Stalnaker's dynamic pragmatics. A Derridean might import the apparatus of Saussurean signification to characterise this content, emphasising that the discursive score is only ever a deferral rather than a record of expressed contents, while inferentialism already has its notion of deontic scorekeeping. Discussing scorekeeping rather than semiosis allows currently intractable problems such as the best way to understand sign content to be bracketed off.

What is brought to the foreground through this bracketing is the basic type of social action involved in communication. This provides a clear way of talking about how signs, texts, meanings etc. are 'embedded' in social structures such as class, organisations and so on, which in turn allows clarification of the purpose of discourse analysis as a method of investigating this 'embedding'. Clarification of the nature of this embedding is the motivation behind Critical Discourse Analysis' adoption of critical realism:

> Social theorists and discourse analysts routinely defend semiotic analysis on the grounds that semiosis has real effects on social practice…Yet answers to the question of how semiosis produces effects are generally conspicuous by their absence. (Fairclough et al. 2010: 2).

Critical Discourse Analysis' concern with explaining how the realm of signs is embedded within social structures leads it to the language of effects, causes and critical realist arguments about causality and what is real. It is this language of effects which makes Critical Discourse Analysis' positioning of discourse analysis as the investigation of semiosis dependent upon formulating/defending an entire philosophical position upon which there will likely never be consensus. But one should not have to solve once and for all the best way to describe the structure of reality, whether that be through critical realism or any other metaphysical/ontological position to be able to describe how the use of signs are embedded in social structures. Nor should one have to categorically demonstrate that there is a foundation to the content of signs other than an infinity of recursive operations.

One does not then have to take recourse to saying the realm of signs has effects upon social structures/practices, and then be sent into the ontological labyrinth of having to specify the nature of these effects in terms of causality, reality, actuality etc. Instead, one can say that all kinds of signs are elements within instances of discursive scorekeeping, which are social practices which sit beside other kinds of social practices like trading, voting, working etc. This latter position could then lead into detailing the scorekeeping practices. That could follow a path of articulating which signs are an element of scorekeeping, using the rules which govern what conditions lead to certain kinds of semiotic information getting added to discursive scores[12], and the rules which govern what kinds of judgments about the correctness of the signs are permitted given particular discursive scores[13]. From this perspective, it is more appropriate to say signs are a constitutive part of certain kinds of social structures characterised by rule-following practices rather than say signs have causal effects upon social structures. The relation between signs and social structures is mereological rather than causal. Texts/signs are constitutive elements of certain kinds of social practice in the same way that exchanging money, or owning property, or buying things are constitutive elements of economic social practice. Perhaps one can break down rule-following practices into networks of causal effects, and perhaps critical realism provides the way to do this. But it is unclear what extra utility over a rule-following explanation an account of the connection between signs and social practices in terms of causal effects provides in exchange for the additional justificatory burdens outlined above. This does not mean the use of terms

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[12] e.g. Lewis' rules of accommodation (Lewis 1979: 340) or Stalnaker's aforementioned pragmatic assertion rule.
[13] e.g. The correctness of the statement 'The present king of France is bald' can be judged (in terms of true or false) only if the discursive score at the time of the statement's utterance includes the presupposition 'France currently has a king' and that presupposition is true. If it is false then one cannot judge whether 'The present king of France is bald' is true or false. Since France has no king, the statement cannot be true. However, the appropriate response to 'The present King of France is bald' isn't to say it's false, since 'It is false that the present king of France is bald' still presupposes that France *does* have a king. The appropriate response is to simply point out France has no king. (Strawson 1950: 330-331)

such as 'cause', 'effect', 'affected by' etc. should be banished from discourse analysis. The point is that there is no need to specify their meaning according to the strict directives of any particular perspective of ontology, causality etc. Other than the requirement that the connections described by such terms be understood as mediated by rule following practices, any specification of their meanings at a level below an ordinary, everyday specification is unnecessary.

Discourse analysis, then, ought to be positioned as a method of investigating discursive scorekeeping rather than semiosis. This allows one to satisfy the motivation behind Critical Discourse Analysis' adoption of critical realism and concern with semiosis – to articulate the connection between texts/signs/meaning and social structures/practices and discourse analysis' role in investigating this connection – while maintaining a much more theoretically efficient conception of the object of discourse analysis. This conception is not dependent upon being committed to any specific metaphysical/ontological perspective and can be adapted to a variety of positions about sign content and the provisionality/stability of sign content. This in turn allows the language of construction, construal and semiotic orders, which the previous section introducing text systems relies upon, to be clarified. Construal becomes the content contained in discursive scores and interlocutors' sign uses, and construction comes to mean the context of rule bound interlocutor relations through which content is conferred upon signs and discursive scores, as well as the other kinds of practices which sit beside interlocutor relations. The emphasis that Fairclough et al. (2010) place on how the reality of social constructions often escapes how those constructions are construed, or represented, can then be interpreted as either the difference between the content of signs/scores and the scorekeeping context in which such content is embedded, or the difference between scorekeeping practices and other kinds of social practices. How people might discuss the context of scorekeeping which contains all communication might not be accurate, and the social relations distinctive of scorekeeping – distinctive of the activity through which construals are produced – are not the same as other kinds of social relations. Finally, semiotic order becomes a synonym for discursive scorekeeping: with 'discourses' corresponding to sign/score content; 'styles' perhaps corresponding to the performative front (in the sense discussed in Goffman's (1956) theory of impression management), projected by interlocutors during scorekeeping instances; and 'genres' covering a particular subset of the rules governing the movement between sign content and discursive score.

2.8 Genres, Register and Scorekeeping

It is worth expanding upon this last point about genres. For Critical Discourse Analysis, genre is more expansively conceived than the previously discussed notion of genre. The latter was as a schematic structure of expectations, in which genre describes the expectations about how a text should develop

over time. Fairclough frequently emphasises how a genre encapsulates a total way of acting/interacting semiotically/linguistically (Fairclough 2003: 17), suggesting he is interested not only in the schematic structures which express expectations about text development, but also the context of social relations containing such expectations.

In Systemic Functional Linguistics terms, Critical Discourse Analysis' expansive notion of genre includes the notion of register, a notion used to talk about how uses of language vary according to social situation, i.e. 'diatypic' variation (Shore 2015: 60). The difference between how language is used in personal and professional contexts is an example of diatypic variation. The aspects of social situations which bear upon texts are understood in terms of registerial variables: field, tenor and mode (Shore 2015: 63). Field describes the topic of an instance of text and the type of activity engaged in by that instance, e.g. an instance of text might be of the activity type *lecture* and be about the topic *sociology*. Tenor describes the social relations between interlocutors, e.g. lectures are held between students and teachers. Mode describes the medium of texts: spoken conversation, written conversation as in e-mails/online messaging, written documents, speeches etc. Diatypic variation across texts is to be accounted for in terms of differences between the field, tenor and mode of those texts (Shore 2015: 63). A register corresponds to a group of texts which share similar field, tenor and mode values (Eggins 2004: 90). For example, a sociology seminar is a register which groups together all texts which occur given: a field characterised by pedagogical discussion about sociology; a tenor of tutor/students; and a mode of spoken conversation.

From this perspective, the schematic structures of genres are the result of the continuous recurrence of particular registers. As social life unfolds, people notice that some patterns of text development frequently co-occur with certain registers. Thus, such patterns come to be associated with a register, and this association allows people to form expectations about how a text is to develop given awareness of registerial context (Eggins 2004: 56-57). These expectations further acquire a normative character, such that deviation from those expectations becomes incorrect. So, the schematic structures that define genres express what sorts of discursive activity are typical of and appropriate to the social situations Systemic Functional Linguistics analyses in terms of register.

Let us decompose the Critical Discourse Analysis notion of genre found in 'semiotic order' into generic structure, i.e. schematic structures, and registerial context. To say genres can be understood as a particular subset of the rules that govern the movement between sign uses and discursive scores then means that scores are in part the output of some rule that takes as input registerial variables and/or generic structure. Furthermore, judgments of the correctness of sign uses in part depend upon those aspects of discursive score which result from the rules governing registerial variables and generic structure. To begin illustrating how this might work, I discuss Lewis' comments on salience rankings of possible referents of terms that pick out just one object/entity (denoting terms), like definite

descriptions (expressions of the form 'the *x*' like 'the cat' or 'the author of *Neuromancer*') or proper names.

Lewis points out that there are often situations in which there are several candidates for what a denoting term refers to (Lewis 1979: 348). In such situations, interlocutors must order possible candidates from most to least likely to be the definite description's/name's denotation. Lewis takes such salience rankings to be one possible component of discursive scores. He illustrates this with an example of a conversation about cats. If someone remarks 'Our New Zealand cat lives with the Creswells. And there he'll stay, because Miriam would be sad if the cat went away' (Lewis 1979: 348) in a room with a cat in it, there are two candidates for the denotation of 'the cat' – the cat in New Zealand and the cat in the room. In this case it is clear the New Zealand cat is the most salient of the two candidates. If the cat in the room starts running around excitedly, and someone says 'The cat is going to pounce on you' immediately after the discussion about the cat who lives with the Creswells, the cat in the room becomes the most salient since it is impossible for the New Zealand cat to pounce from New Zealand to the United Kingdom (Lewis 1979: 349). So, salience rankings determine the correctness of statements: the truth or falsity of 'Miriam would be sad if the cat went away' depends on the salience rankings assigned to the two candidate cats (false if the cat in the room is ranked the most salient, true if the New Zealand cat is ranked the most salient). Furthermore, one can formulate a rule which expresses some circumstances under which salience rankings are changed. With 'the cat is going to pounce on you', at the point in time at which 'the cat' has been uttered but '...is going to pounce on you' has not, the most salient candidate is the New Zealand cat given the previous discussion about the Creswells. But, after 'is going to pounce on you' is uttered the most salient candidate switches to the cat in the room because of the unacceptability of the idea of a cat pouncing from New Zealand to the UK. Given this, Lewis formulates the 'rule of accommodation for comparative salience':

> 'If at time *t* something is said that requires, if it is to be acceptable, that *x* be more salient than *y*; and if, just before *t*, *x* is no more salient than *y*; then [...] at *t*, *x* becomes more salient than *y*.' (Lewis 1979: 349)

Registerial variables can also affect salience rankings. Consider a situation involving two workers at a software company's customer service department, *A* and *B*. *A* is unsure how to handle a particular customer request, so *A* asks *B* 'Could you get Duncan to come over here?'. There are two people called Duncan in the building, Duncan the line manager of *A* and *B* and Duncan the technical support specialist. Both Duncans are known to *A* and *B*, so there are two candidates for the referent of 'Duncan'. It is clear to *B* that Duncan the line manager is the most salient Duncan, and this is because part of what characterises the professional relationship between *B* and *A* is the fact they are both line managed by Duncan the line manager. If the relationship between *B* and *A* were instead characterised by them both being part of the technical support team, Duncan the technical support specialist would be the most

salient. If the only connection between *A* and *B* were that they both worked in the same building, and they were not part of any particular team or managed by the same person, both Duncans would have an equal salience ranking, and *B* would have to ask *A* to specify which Duncan they were talking about. Here, the pertinent registerial variable is tenor.

Suppose, for some reason, *B* gives greatest salience to Duncan the technical support specialist (perhaps *B* was thinking of an e-mail Duncan the technical support manager had sent), and *B*'s response to *A* is 'Duncan is busy helping a customer with software problems.' At the time at which 'Duncan…' has been uttered but the rest of *B*'s response has not, *A* gives Duncan the line manager the greatest salience due to the tenor of *A* and *B*'s exchange. By the time *B*'s utterance is complete, *A* gives the other Duncan greatest salience according to the rule of accommodation for comparative salience. That Duncan the line manager, who is not responsible for technical support, is busy providing technical support, is unacceptable. For *B*'s statement to be acceptable, *A* has to reverse their previous salience ranking. In this situation, one can see that the correctness of *B*'s statement (correctness here again concerning truth-value) depends on the tenor of *A* and *B*'s exchange. If *A* and *B* had been both part of technical support, *A* would not have had to apply the rule of accommodation for comparative salience and reverse the initial salience ranking for *B*'s response to be correct.

One can understand the role of generic structure in discursive scorekeeping in terms of expectations and correctness as relevance. There are situations in which a particular configuration of registerial variables, along with some additional conditions (e.g. presenting a good to be bought to a cashier) produces within interlocutors expectations about how their exchange is to proceed, which can be expressed as a generic structure. These expectations can be considered as part of the score of the exchange. The normative character of these expectations means they fix the correctness of subsequent sign uses. In this case, correctness does not amount to judgments of truth or falsity – it amounts to judgments of relevance. The registerial variables of a lecture on physics, along with an initial statement 'Today we will be discussing the curvature of space-time', produces among the students the expectation that subsequent utterances will be about the curvature of space-time. If the lecturer then went on to discuss at length the labour theory of value, the students would judge the utterances constituting that discussion as irrelevant with respect to the produced expectations. So, generic structure represents an ideal instance of scorekeeping in which, for any given point in time during this instance, there were no sign uses that were irrelevant with respect to the expectations (expressed as some element of generic structure) produced just before that point in time.

2.9 Text Systems and Scorekeeping

I have earlier discussed text systems in terms of Critical Discourse Analysis' notion of genre chains, i.e. as networks of genre chains. In light of the above observations on scorekeeping, genre chains can be redescribed as chains between discursive scorekeeping instances. So, a text system is the network of scorekeeping instances which emerge from a series of conditions which regulate what circumstances initiate a chain of scorekeeping instances, and when a scorekeeping instance triggers other scorekeeping instances. For example, the following conditions might underlie a school's text system:

1. Given a teacher student tenor, if there is an exchange between teacher and student in which the teacher commands the student to produce a piece of work to be submitted to the teacher by some point in time following some generic structure (e.g. 'Produce an essay discussing the significance of olives in Pinter's *The Collection* within 500 words'), the student is obliged to produce the work according to the specified generic structure and then submit it by the specified point in time.

2. If, as a result of 1, a student hands in a piece of work to a teacher at the point in time specified in 1, the teacher is obliged to read the piece of homework.

3. If the reading of homework triggered by 2 follows the generic structure specified in 1, the teacher is obliged to produce a feedback form in accordance with some generic structure to be submitted to the student by some point in time. If the homework reading fails to follow the generic structure specified in 1, the teacher must command the student to resubmit.

More abstractly, a text system's conditions is a list of conditions of the form 'if $y_1, y_2, y_3, ..., y_n$ is the case, then a collection of scorekeeping instances where each instance has features $x_1, x_2, x_3, ..., x_m$ (e.g. a particular configuration of registerial variables, a particular generic structure, particular score contents, time of instantiation/completion) is initiated in some manner'. Let such conditions be called text conditions. The initiating 'if…' statement could specify another scorekeeping instance with a particular set of features, but it need not do so. A genre chain might be triggered by something other than a scorekeeping instance, even if all other elements in the chain must be scorekeeping instances. As explained in the previous discussion about conventional vs. preferential genre chains, the manner of triggering might be obligation, but it need not be.

This chapter has been about establishing text systems as the appropriate object of study for the approach to the Question of Necessity I have been developing. I have argued that questions about the behaviour of text systems and how they mediate discourses have not been examined at the necessary scale, despite them being the object of extensive theorising in terms of genre and semiosis concepts in Critical Discourse Analysis. Much of the reason for this is that the close-reading methods which discourse

analysis tends to rely on cannot process the appropriate quantity of text necessary to represent a significant portion of some text system. I have also evaluated the theoretical apparatus of semiosis concepts within which Critical Discourse Analysis discusses text systems as an element of semiotic orders. I argued that thinking of text systems from the perspective of scorekeeping rather than semiosis concepts is preferable as the scorekeeping perspective does not require taking on as much theoretical baggage. In doing this I conceived of text systems as networks of scorekeeping instances, where a text system is ordered by the text conditions characteristic of the domain of social relations in which it is used. I have thus integrated the notion of text systems within a pragmatist approach to the Question of Necessity that shifts focus away from texts' 'directly encoded' content towards the networks of interlocutor relations in which texts are used. In Chapter 1 I sketched out some of the methodological implications of a pragmatist approach – through elaborating text systems I have sought to flesh out some of these methodological implications.

Chapter 3: Discursive Scorekeeping and Foucault

I have claimed that the Foucauldian approach to discourse analysis exemplifies an approach to the Question of Necessity that is predicated upon a pragmatic understanding of meaning. This suggests that the Foucauldian approach can be fitted within a scorekeeping framework. In this chapter I explain this. The line of reasoning followed is that the concerns of the methodological procedures found in Foucault's discussion of governmentality and advocated for in *Archaeology of Knowledge* resemble some key aspects of the scorekeeping framework and the pragmatist views of meaning more generally. The implication here is that despite the differences between the genealogical phase represented by Foucault's discussion of governmentality and the archaeological phase represented by *Archaeology* (Gutting 1990) (Portschy 2020), across both phases there is a continuous pragmatist concern with moving away from analysing texts solely in terms of their readable contents towards analysing texts in terms of the interlocutor-organisational relations in which they are used.

The purpose of integrating the Foucauldian approach into the scorekeeping framework is to enable the combination of the valuable insights on the Question of Necessity found in the governmentality framework with the linguistic analyses offered by pragmatist perspectives. As this thesis' empirical focus is on how language is used by the British state between 2000-2020, engaging with Foucauldian work on neoliberalism, governmentality and language is a necessity. However, work on governmentality tends not to proceed from detailed descriptions of linguistic patterns/structures. This means it is not naturally suited to being used in combination with NLP techniques, since the purpose of such techniques is to uncover measurable patterns in linguistic data. A version of the governmentality framework more attuned to linguistic analysis therefore needs to be produced so that the linguistic patterns revealed by the NLP techniques can be interpreted from a governmentality perspective. I use the scorekeeping framework for this. The reason I emphasise the pragmatist parallels between *Archaeology* and governmentality is because the more linguistically oriented governmentality framework I develop can be understood as an 'archaeologised' governmentality framework. The method of analysis expounded in *Archaeology* centres the statement as the 'atomic' unit of discourse (Foucault 1978: 79), making it a far more linguistically oriented mode of analysis than the governmentality framework. My development of a linguistically oriented governmentality framework can therefore be seen as a reading of governmentality from a somewhat archaeological perspective.

I begin this chapter with an explanation of Foucault's arguments about governmentality.

3.1 What is Governmentality?

Foucault states that by 'governmentality' he intends to express three things (Foucault 2009: 108-109): (1) the range of organisations and practices employed by some authority to manage populations (2) the historical 'force'/'tendency' constituted by an increasing concern with the question of how to manage populations, a concern that is behind the development of the practices and knowledges (e.g. statistics) required for that purpose, and (3) the current era of liberal government. Foucault dates the current era back to the middle of the 18th century (Foucault 2008: 28), as resulting from the continuous refinement, throughout the 15th, 16th and 17th centuries, in thought about and practice of the management of populations. The key term to unpack here is 'population', since Foucault identifies an exercise of power as governmental (rather than sovereign, disciplinary etc.) only if the exercise is motivated by a concern with population. This motivation is premised on conceiving of groups of individuals in terms of measurable features such as a birth rate, death rate, and so on (Foucault 2009: 60-63). An economic version of this conception might consider things like productivity, efficiency etc. to be the relevant features to be measured, whereas a more sociological/political version might be more concerned with measuring voting patterns or various kinds of social stratification. From this perspective, individual behaviours are interesting only to the extent to which they explain fluctuations in the features ascribed to a group: e.g. the only kinds of individual behaviours of interest to the economist are those that lead to fluctuations in supply, demand, productivity and so on. So, one thinks of some group of people as a population only if one ascribes a series of measurable features to the group, and one understands individual behaviours only in relation to their possible effects upon the ascribed features. Other kinds of power are not premised upon conceiving of groups of people in this way (Foucault 2009: 4-6). While the exercise of disciplinary power might be motivated by an interest in controlling groups of people, this motivation is not premised upon ascribing measurable features to groups, it is premised only upon ascribing measurable features to individuals (e.g. height, age etc). Similarly, juridical power is certainly motivated by an interest in controlling large groups of people but is fundamentally premised upon labelling individual actions as either forbidden or permitted, not upon ascribing measurable features to groups.

As indicated in his explanation of 'governmentality', Foucault argues that what separates liberal government from preceding modes of government is its conception and management of the market in terms of population. He contrasts the management of grain markets according to physiocratic[14] principles in the 18th century to previous modes of management in this vein. Prior to management according to physiocratic principles, to prevent famine grain marketplaces were tightly controlled by the state using juridical and disciplinary measures;

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[14] Physiocracy is an economic theory developed by a group of 18th century French economists – the physiocrats.

price control, [...] control of the right to store [grain]; the prohibition of hoarding with the consequent necessity of immediate sale; limits on export, the prohibition of sendings grain abroad, [...] (Foucault 2009: 32).

Corresponding to this is a conception of famine as a consequence of bad fortune and/or the result of the worst aspects of human nature – such as greed that leads to the hoarding of grain to drive prices up – hence the need to regulate market activities concordantly (Foucault 2009: 31). From a physiocratic perspective, however, grain shortages, the increase in prices that result, hoarding, exporting, etc. are to be seen as features of an economy that extends beyond the marketplace (Foucault 2009: 36, 40). Prior to physiocratic management, the local grain market is the object of government; afterwards, the world economy, the total production cycle of grain is also to be targeted by the government. Crucially, things like grain shortages, price rises, exports, etc. are taken to be natural features of the total grain economy, rather than the results of greedy individual behaviours or bad luck. This change in how the exchange of grain is conceptualised brings about the 'population-isation' of thought about grain exchange. From this perspective, price rises, hoarding, exporting etc. are not to be suppressed, but to be left alone as natural mechanisms of the grain economy. (Foucault 2009: 41-42)

Since the mid-18th century, limited government has characterised the government of Europe, UK and the USA (Foucault 2008). According to this tenet, the state limits its scope of government in terms of its conception of production and exchange as an autonomous economy with population level characteristics. This marks a significant shift from preceding absolutist modes of governmentality: e.g. in Prussia and France in the 17th and first half of the 18th centuries, the state did not mark out an area of activity upon which it should not directly govern (Foucault 2008: 7). Foucault goes on to argue that 20th century developments in liberal government, such as ordoliberalism or Anglo-American neoliberalism, have fundamentally been concerned with sharpening/moving the boundary drawn between the acceptable area of state government and the area of economics that ought to be left to its own devices (Foucault 2008). This analysis has formed the basis of discussions of contemporary liberal government e.g. (Miller & Rose 2008, Joseph 2018, Joseph & McGregor 2020, Davies 2014, Power 1997).

3.2 Linguistic Practice and Governmentality

I previously argued that the central purpose of discourse analysis is to provide an answer to the question: how are linguistic practices necessary for the enactment of power relations? I gave a critique of approaches to answering the question that follow broadly Barthesian lines, according to which the linguistic practices capable of maintaining or producing power relations are the encoding and interpretation of covert semantic information. For example, take a power relation between *A* and *B*,

where *A* can influence *B*'s behaviour such that *B* acts in *A*'s interests rather than their own, that is somehow maintained in part by *B* reading some text. The Barthesian (Barthes 1972) approach to explaining such a relation would involve claiming that:

1. Beyond the immediate semantic content of the text (where 'immediate semantic content' refers to something like a mereological, Saussurean relation between sign and signified, e.g. the concept of a tree is the immediate semantic content of the word 'tree'), there is a second-order semantic layer encoded in the text that presents a view of the world that naturalises the power *A* has over *B* (Barthes 1972: 113-114, 127-130). In such a view, the power *A* has over *B* is not the result of a series of historical, political decisions, it is simply a natural and immutable feature of the world.

2. When *B* reads the text, they interpret that second-order semantic layer without being conscious of the second-order nature of the layer (Barthes 1972: 127-128). This unconscious interpretation of the second-order semantic layer means *B* does not question the naturalised content of the second-order layer, and therefore is less likely to question the power *A* holds over them. Thus, the encoding and unconscious interpretation of a naturalising, second-order semantic layer are the primary linguistic practices which enable the text to help maintain the power *A* has over *B*.

Discussions of liberal government that build upon Foucault's work on governmentality, and indeed Foucault own deliberations (especially in *Archaeology of Knowledge* (Foucault 1972)), present a very different approach to the question of how linguistic practices maintain/produce power relations. Miller and Rose give a clear articulation of this approach in their discussion of political rationalities and technologies (Miller and Rose 2008: 29-35). Foucault demonstrates the difference between governmental, juridical and disciplinary power by distinguishing the kinds of arguments upon which each type of power is predicated. What separates governmental from juridical or disciplinary power is that the former is predicated upon arguments for understanding things in terms of population, while the latter is not. These arguments are what Miller and Rose call rationalities (Miller and Rose 2013:15–16).

However, Foucault does not only focus upon rationalities; he also describes the practices through which each type of power is exercised. Thus, Foucault associates governmental power with statistical practices (Foucault 2009: 274), in which population-level measures (e.g. averages) are defined and statistical techniques are then used to induce the value of population-level measures. Government is then practised in response to induced values. So, governmental control of people in response to an epidemic involves defining, inducing the values of, and attempting to control mortality rates, basic reproduction numbers, vaccine effectiveness rates, and so on. For disciplinary power, the central notion through which it is exercised is an idealised normal. In contrast to population-level averages, the value of an ideal normal is not induced via measurement, it is defined in advance (Foucault 2009: 4-6). For example, a piano

master may tell their student that, when playing the piano, they must position themselves so that their forearms are parallel to the ground, and this means the student must set their seat height to 48 centimetres. In this case the norm's measure – seat height of 48 centimetres – is not induced by measuring the average seat height of a random sample of piano players; it is set in advance according to the ideal standard to 'ensure your forearms are parallel to the ground', and thereafter the student is disciplined to comply with that standard. Therefore, in addition to particular kinds of rationalities, governmental power is distinguished from disciplinary power by techniques of averaging/normalising. Techniques of averaging/normalising are examples of what Miller and Rose call 'technologies' (Miller and Rose 2013:32).

These technologies are always constituted by textual practices. Measuring population averages involves counting people, recording their counts through forms, recording the features of counted people, and so on. Getting averages from these counts require specialised forms of textual notation, i.e., mathematical notation. So, a Foucauldian approach to the question of how linguistic practices constitute social relations starts with the textual practices which constitute technologies. If, to control an epidemic, a state wants to introduce a vaccine into the population, multiple power relations will need to be set up, between state officials and scientists, between clinicians and patients, between managers and doctors, etc. The purpose of these power relations is to enable the working of epidemiological technologies, such as measuring vaccine uptake rates, basic reproduction numbers, evidence of side-effects. This will always involve textual, and therefore linguistic, practices. Thus, a doctor administering a vaccine to someone will need to record the person being vaccinated by filling in a form and submitting it to their line manager, whereby the overall technology of measuring vaccine uptake can proceed. Here, the power relation between line manager and doctor is exercised through the doctor's obligation to the manager to fill out a form, and the doctor fulfilling their obligation by doing so and submitting it. The overall technology of measuring vaccine uptake proceeds via the power relation between manager and doctor, which in turn is exercised through the textual practice of filling out forms. Linguistic practices constitute power relations because technologies involve setting up power relations that are exercised through textual practices.

In contrast to the Barthesian approach, semantic encoding (second-order or otherwise) and interpretation are not in themselves particularly important in maintaining power relations. They are important only to the extent they are elements within an overall arrangement of linguistic practices, e.g. an overall arrangement of practices surrounding texts like forms, e-mails, meeting minutes, etc. It is the overall arrangement of a collection of linguistic practices that is important in the Foucauldian approach to the question of how those constitute power relations. There are no particular types of linguistic practice within an arrangement, such as semantic encoding or interpretation, that are more important than other practices in the arrangement in maintaining power relations. This focus upon overall arrangements of linguistic practices means that the object of analysis for Foucault is the dependence of

what is uttered/written upon these arrangements rather than the content of what is uttered/written. Foucault is not interested in the content of texts like forms in itself; he is interested in how such textual content is embedded within technologies which are constituted by linguistic practices like: filling in forms; interlocutors holding the contextual assumptions about population required to understand and fill out forms; the hierarchical relations among interlocutors that structure the filling of forms, etc. Herein lies the resemblance between the methodological procedures behind Foucault's arguments about governmentality and the methodological implications of predicating an approach to the Question of Necessity upon a pragmatic understanding of meaning. Foucault's focus on technologies resembles the scorekeeping focus upon how the content of what is said/written is embedded within the continuous updating of interlocutors' contextual assumptions and the character of interlocutors' relations. Furthermore, the notion of technologies implies a mereological approach to the Question of Necessity. Linguistic practices are necessary for the enactment of power relations because textual practices are a constitutive part of the technological relations through which governmental power relations are enacted.

3.3 Scorekeeping and the Archaeology of Knowledge

Similar resemblances are found in *Archaeology of Knowledge*, in which Foucault describes the methodological procedures he uses when analysing texts. He emphasises that his approach to text analysis is not a form of linguistics, in that it is not concerned with specifying a system of rules which can be used to generate an infinite number of well-formed, coherent sentences (e.g. generative grammar) (Foucault 1972: 27). This makes it clear that Foucault does not regard meaning as consisting in nothing more than an output of such a system of rules. That is, he does not take meaning as semantic content directly encoded into the sentences generated by such a system of rules.

Also worth noting are Foucault's comments on the nature of 'statements' found in *Archaeology of Knowledge* (Foucault 1972: 79–117). Here again there are striking resemblances between these comments and the scorekeeping framework. We see the same shift of focus from what is generally taken to be the semantic content of sentences – references, truth-conditions, logical forms – to a more pragmatic focus on the interdependence between content and contextual information. Thus, Foucault emphasises that a sentence, construed as merely an expression of semantic, logical content, does not qualify as a 'statement' without an 'associated field' (Foucault 1972: 98–99). The range of things Foucault lists as constituents of a statement's associated field is similar to the range of things taken to determine discursive score. Thus, those include being able to place a sentence within (a) the total sequence of statements within which a sentence appears, (b) the range of statements to which the sentence is a response ('...either by repeating them ['them' referring to the statements being responded to by the sentence], modifying them, or adapting them, or by opposing them, or by commenting on

them…' (Foucault 1972: 98)), (c) the range of statements that can be stated as a response to the sentence and (d) the range of statements with which the sentence shares a 'status', e.g. status as ''literature', or as an unimportant remark that is barely worthy of being forgotten, or as a scientific truth valid for all time, or as prophetic words, etc.' (Foucault 1972: 99). These are understood as the necessary conditions for understanding the sentence as a statement. Conditions (a), (b) and (c) in particular resemble the things that govern/are governed by discursive score in the scorekeeping framework, and the notion that a sentence counts as a statement only if conditions (a), (b), (c) and (d) are the case resembles the scorekeeping notion that sentences are only properly interpretable given a discursive score.

Other resemblances to the scorekeeping framework can be found in Foucault's discussion of how to group statements as belonging to a single type of discourse: i.e. what justifies understanding a collection of statements as belonging to a singular neoliberal discourse or a singular psychiatric discourse. He notes that attempting to group statements as constituting a single discourse based on whether those statements relate to/presuppose a singular theme/object/concept (e.g. 'madness', 'evolution') is fruitless. Even if a collection of statements all mention something like 'evolution', there is no guarantee each mention of 'evolution' will have an identical meaning or be embedded in/presuppose identical, or even merely logically consistent, arguments (Foucault 1972: 31–36). Thus, the biological notion of evolution as discussed in the 18th century is quite different from the 19th century notion, with the former being concerned with defining similar species in terms of kinship and the latter being concerned with understanding the process through which organisms adapt to their environment (Foucault 1972: 36). It may indeed be useful to think of 18th and 19th century writings on evolution as belonging to the same discourse, but not because they express the same/logically consistent arguments/concerns.

Rather, Foucault moves away from grouping statements as a discourse purely based on what can be learnt by simply reading them (attending to themes, arguments etc.). In his discussion of the development, since the 19th century, of how the objects of psychopathological analysis are conceptualised – i.e., the emergence, change and disappearance of psychopathological categories like 'monomania', 'imbecility', 'intelligence quotient', 'paranoia' – the focus of analysis is not limited to what can be extracted through simply reading texts about those terms. The focus is also on 'authorities of delimitation' (Foucault 1972: 41–42), the distinctive 19th century configuration of organisational/institutional authorities (such as professional medicine, laws, religion) which enabled the legitimisation of psychopathological analysis. What motivates Foucault to categorise statements about monomania, intelligence quotients, imbecility, paranoia, etc. as part of the same discourse is that their appearance and legitimacy all stem from the same configuration of authorities. Going deeper into the organisational structures which constitute this configuration of authorities, Foucault notes that it is only because of the mundane, bureaucratic procedures/relations which constitute the configuration of authoritative organisations that psychopathological categories are used: i.e. those are constituted by the relations between medical and judicial decisions, the relations between judicial and police

interrogations/investigations, the practices of therapeutic and punitive confinement in hospitals/prisons, etc., (Foucault 1972: 44). These procedures/relations are the necessary organisational conditions for the appearance and widespread, legitimated use of psychopathological categories. Whether descriptions of objects of analysis share necessary organisational conditions or not forms one the methodological principles used by Foucault to categorise such descriptions as belonging to the same discourse.

A similar mode of categorisation is used for 'enunciative modalities', which is similar to the Systemic Functional Linguistics notion of genre. Foucault accordingly lists 'biographical accounts', 'cross-checking of signs', 'experimental verifications' as examples of enunciative modalities (Foucault 1972: 50). It is noted that some enunciative modalities can only serve their purpose if they are produced by the correct kind of person. For example, a medical statement that is not produced by a qualified doctor is useless. Medical statements can serve their purpose only if they are produced by a qualified doctor (Foucault 1972: 50–51). The social role of the enunciative mode's producer is not the only relevant role; the mode's usefulness is also predicated on the roles of everyone through which the mode circulates. Thus, the usefulness of a medical statement also may also depend upon the roles *patient*, *employer* (if the purpose of the medical statement is to justify an employee's absence), and so on.

Two points are noted about these roles. First, each role presupposes a distinct range of other roles and organisational structures. Achieving the status *doctor* requires university qualifications and legal recognition, both of which can only be bestowed/confirmed by qualified lecturers, professors, lawyers, judges, etc. This in turn means the social roles required for enunciative modes to be useful are defined by a range of organisational relations (Foucault 1972: 51–52). The medical statement is useful only if it is produced by a doctor, which in turn means the medical statement is useful only given the existence of the inter-organisational structures formed by networks of hospitals, universities, courts, workplaces etc. Second, the production of an enunciative mode depends upon a standardised range of interlocutor relations being set up between the range of roles relevant to the mode. So, the production of a medical statement depends upon the interlocutor relations typical of patient-doctor relations, in which the doctor

> is the questioning subject and, according to a certain programme of information, he is the listening subject; according to a table of characteristic features, he is the seeing sobject, and, according to a descriptive type, the observing subject […] (Foucault 1972: 52).

Foucault uses these observations to formulate a principle of grouping enunciative modes similar to the principle for grouping descriptions of object of analysis. A collection of enunciative modes is of the same discourse if it depends on the same configuration of social roles, interlocutor relations, and inter-organisational structures. As with the emphasis on technologies in Foucault's arguments about governmentality, the focus these methodological principles have upon how statements are embedded

within interlocutor/organisational relations resembles the scorekeeping focus on how sentences are embedded within the interlocutor relations underlying the continuous updating of discursive scores.

3.4 Governmental Technologies and Scorekeeping

In summary, there are two main reasons for the resemblance to the scorekeeping framework found in Foucault's work. First, in Foucault's work there is a shift in methodological focus away from only relying on examining those aspects of text that can be apprehended through reading, i.e. semantic content, argumentative structures, themes, topics, etc. Second, there is a shift in methodological focus towards understanding how the expressions that constitute texts are dependent on the manner in which texts are integrated within patterns of organisational/interlocutor relations. Both points resemble the scorekeeping perspective that semantic content is not enough to account for sentences' meanings. Rather, accounts of meaning should focus on how sentences' meanings are dependent upon interlocutor relations (specifiable through registerial variables) and the continuous updating of discursive scores and interlocutor assumptions contained within those relations. I take these resemblances as licence to integrate Foucault's arguments about governmentality into a scorekeeping framework. Doing this enables me to use the scorekeeping framework to explicate the interdependence between text and organisational context highlighted in Foucault's focus on technologies in greater detail than is typical. While this interdependence is frequently emphasised in work about governmentality and neoliberalism (e.g. Miller and Rose 2013:29–32), exactly how the content of the expressions which constitute texts is governed by how texts are embedded within organisational structures is generally rarely discussed.

A convenient place to start integrating the governmentality framework into a scorekeeping framework is with technologies. Since technologies are constituted by networks of textual practices, I take a technology to be a collection of scorekeeping instances. For example, epidemiological technologies involve counting the number of people who've received a vaccine during an epidemic and using these counts to ascertain the value of population measures like vaccine uptake rates, basic reproduction numbers, etc. Those, in turn, involve setting up a collection of scorekeeping instances: form filling, organisational meetings (e.g. meetings within the Scientific Advisory Group for Emergencies and the UK Health Security Agency), production/reading of texts, and so on. As discussed in section 2.6 in the previous chapter, I take a text system to be the network of scorekeeping practices governed by some series of text conditions; one can also describe technologies in terms of the text systems surrounding each constituent scorekeeping instance. So, an essential component of the epidemiological technology of measuring vaccine uptake is the scorekeeping instance of a doctor filling in a form that records every time they give a vaccine. This recording happens only given very specific text conditions: the doctor fills out the form only if someone visits them and receives a vaccine. Once this form is completed its

submission to the doctor's line manager doubtless constitutes the condition of some other scorekeeping instance that is part of the broader process of turning the form into counts that can be used to calculate vaccine uptake rates. If one can list all the conditions which initiate all the scorekeeping instances which enable the measurement of vaccine uptake, then one can describe the vaccine uptake measurement technology as a text system. Such scorekeeping instances will include conditions like 'if a person comes to receive a vaccine from a doctor, then the scorekeeping whereby the doctor records the name, age, sex etc. of the person who received the vaccine is initiated'.

While this provides a way of explaining what constitutes technologies, understanding technologies as collections of scorekeeping instances does not provide a way of distinguishing governmental technologies from other kinds (e.g. disciplinary and juridical technologies). For a scorekeeping perspective to be able to provide a way of distinguishing governmental technologies, it must integrate the notion that technologies are predicated upon particular kinds of rationalities. This is so since what separates a governmental technology from other kinds is that it is predicated upon a rationality that understands things in terms of population. The relation of technologies being *predicated* upon rationalities needs to be put into scorekeeping terms. One way of understanding this relation *predicated* is that the practice of a technology predicated on a rationality R requires those involved in the technology to treat the statements distinctive of R as true. Such an understanding can be put into scorekeeping terms through the notion of presupposition: that those involved in practising a technology-predicated-on-R treat R's statements as true means R's statements feature as presuppositions in the discursive scores of the scorekeeping instances that constitute the technology-predicated-on-R.

It is worth briefly explaining how presuppositions fit into the scorekeeping framework. Consider the statement 'The king of France is bald'. For this statement to be evaluable as true or false, one must evaluate the assertion 'France has a king' as true (Strawson 1950:330–31). If the assertion 'France has a king' were false, one would not be able to say that 'The king of France is bald' is either true or false, since to say either '*It is true* the king of France is bald' or '*It is false* the king of France is bald' requires accepting that 'France has a king' is true. That it is false that France has a king indeed means 'The king of France is bald' is unacceptable in some way, but this unacceptability is not falsehood. This is the classic account of presupposition provided by Strawson: a statement A presupposes a statement B if for A to be either true or false, B must be true. Strawson's account of presupposition has since been subject to much criticism, and there are currently many accounts of presupposition. Stalnaker's dynamic pragmatics and Heim's dynamic semantics are both in part attempts to provide alternative accounts of presupposition. Nevertheless, I stick with Strawson's account here for illustrative simplicity. The point here is not to provide a correct account of presupposition, it is to give an impression of how presupposition works in scorekeeping instances.

Lewis notes that if a statement that requires a presupposition to be 'acceptable' (e.g. evaluable as true or false) is uttered during a conversation, interlocutors will immediately recognise the requirement for a presupposition and make the required presupposition. Saying 'The king of France is bald' in a conversation will lead to interlocutors making the required presupposition 'France has a king'. Of course, it is likely interlocutors will immediately reject this presupposition (by saying something like 'What do you mean, 'the king of France'?'), but nevertheless 'the king of France is bald' introduces its required presupposition into the conversation (Lewis 1979:339). In other words, making a statement in some text/conversation whose acceptability requires a presupposition automatically introduces the required presupposition into the text's/conversation's discursive score. Lewis calls this the 'rule of accommodation for presupposition':

> if at time *t* something is said that requires presupposition *P* to be acceptable, and if *P* is not presupposed just before *t*, then – *ceteris paribus* and within certain limits – presupposition *P* comes into existence at *t*. (Lewis 1979:340)

It follows that a technology is predicated on *R* if statements of *R* figure as presuppositions in the discursive scores of the scorekeeping instances that constitute the technology. To say that the statements of *R* feature as presuppositions in the discursive scores of the scorekeeping instances that constitute a technology-predicated-on-*R* means the acceptability of some of the statements in those scorekeeping instances depends on the introduction (according to rules like the rule of accommodation for presupposition) of statements of *R* as presuppositions in those instances' discursive scores. Technologies are governmental if they are predicated on rationalities that understand things in terms of population.

As an example, suppose that during a pandemic, the state decides to pursue a lockdown policy: close all shops except for those essential to subsistence, make everyone work from home, ban gatherings of more than 3, etc. The enactment of this policy will involve technologies of all kinds: governmental, disciplinary and juridical. In this array of technologies, at least one constitutive scorekeeping instance will be some kind of cabinet meeting about what policy to pursue given statistics about the number of new cases per day, hospital capacity, basic reproduction numbers, and so on. Within this meeting, one would expect sentences like 'The basic reproduction number is currently 1.8!' and 'We should pursue a total lockdown policy immediately' to be uttered. Following Strawson's account of presupposition, the ability to evaluate the truth of these sentences requires presupposing things like: 'There is a population with a measurable degree of susceptibility to infection'; 'The population's susceptibility to infection can be controlled'; 'Full lockdowns are the appropriate response to basic reproductions numbers greater than 1.5'; etc. These presuppositions are introduced into the discursive score of the meeting as soon as the sentences that require them are uttered. Since these presuppositions frame the pandemic/how to respond to the pandemic in terms of a population with a measurable, controllable

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degree of susceptibility to infection, we can recognise these presuppositions are of some epidemiological, governmental rationality. This in turn means that whatever technology the meeting is a constituent scorekeeping instance of is part of a governmental technology.

A complication is that not all the scorekeeping instances that constitute a technology predicated on R will necessarily feature statements of R as presuppositions. It is only necessary that some of the scorekeeping instances feature statements of R as presuppositions. When a doctor records someone receiving a vaccine as part of the overall technology of measuring vaccine uptake, no presuppositions in terms of population are required. Nevertheless, it is at least true that scorekeeping instances which do make presuppositions concerning population are crucial to the measurement of vaccine uptake, and that the purpose of scorekeeping instances which do not make such presuppositions is to enable the working those instances that do make such presuppositions. Eventually the data gathered by the doctor recording who receives a vaccine will be used to calculate vaccine uptake rates, which must involve presupposing the existence of a population with measurable epidemiological features. So, to say a technology is predicated on R means that (a) there is a core set of scorekeeping instances which constitute the technology in which statements of R feature as presuppositions, and (b) any scorekeeping instances in the technology that do not feature statements of R as presuppositions nevertheless have the purpose of enabling the practice of the core set of scorekeeping practices of (a).

The pragmatist reading of Foucault's work developed in this chapter – especially my pragmatist reading of technologies and rationalities – forms the basis of the empirical analysis of the British state's vocabulary performed in Chapters 5 and 6. Adding a pragmatist understanding of text systems to Foucauldian arguments about governmentality provides the theoretical tools needed to interpret the output of the NLP procedures used from a governmentality perspective. These procedures produce descriptions of lexical patterns; measures of how distinctive of a domain of organisations a word is, how consistently a word appears over time within a domain of organisations, what senses are most typically expressed by a word, and so on. Analysis of lexical patterns is not something the governmentality framework was designed to do. When it comes to text analysis, the governmentality framework works at the scale of arguments rather than vocabulary. It is designed to uncover the arguments concerning how to understand and control various kinds of subjects (e.g. individuals, populations) that underlie governmental/disciplinary/juridical knowledge. The closest Foucault comes to a lexical scale of text analysis is in *Archaeology of Knowledge*, in which analysis is conducted at the scale of the statement, stopping just short of the lexical scale. Pragmatist linguistics and philosophy of language, on the other hand, work at the scale of words as well as arguments and statements, and therefore comes with the theoretical equipment needed to analyse how the interpretation and utterance of lexical items is constrained by the interlocutor relations in which they are used. Incorporating the scorekeeping framework into the governmentality framework extends the governmentality framework's

scope of text analysis to include lexical analysis, thus enabling interpretation of lexical patterns from a governmentality perspective.

This chapter concludes the first half of this thesis. The primary purpose of the first half has been to prepare the pragmatist-governmentality theoretical foundation which contains my empirical analysis of the language of the British state. Aside from presenting and discussing this empirical analysis, the second half of this thesis is concerned with the more narrowly methodological and technical concerns that must be addressed before empirical analysis can be done. Such concerns involve issues like formulating the empirical question about the spread of discourses to be addressed through text analysis, how exactly to use large quantities of text to make inferences about the spread of discourses, what statistics to use to analyse large quantities of text, and so on. To address these concerns, I for now depart from the theoretically concerned narrative followed in the first half and begin a second narrative that starts with the question of how to use text to make inferences about the large-scale behaviour of discourses across text systems. I tie these two narratives together in Chapter 6.

Part 2

Chapter 4: Understanding Text Systems via Linguistic Variation

So far, I have made two main points. First, I compared two influential approaches in sociological discourse analysis – the Barthesian approach and the Foucauldian approach – to the question of how linguistic practices are necessary for the enactment of power relations. For short I refer to this question as the Question of Necessity. While the Barthesian approach argues that second-order semantic encoding and the unconscious interpretation of second-order content are the linguistic practices through which power is exercised (Barthes 1972: 113-114, 127-130), the Foucauldian approach argues power is exercised through elaborate systems of textual procedures – technologies (Miller and Rose 2008: 32). In these procedures no linguistic practice like semantic encoding or interpretation in particular bears the burden of being the means of the exercise of power. Rather, it is the total arrangement of linguistic practices which constitute textual procedures that matters, and that such networks are necessary for the enactment of governmental power relations as they are constitutive parts of such relations. So, I suggested that the Foucauldian approach to the Question of Necessity is more plausible than the Barthesian approach as it is consistent with a pragmatist perspective on text that avoids the problems of second-order semantic content outlined in Chapter 1. This was the first main point made in the first half and is the reason I adopt a Foucauldian perspective for the rest of the thesis.

If power is exercised through textual procedures, then relevant to the Question of Necessity is understanding the overall, structural features of the systems constituted by textual procedures, i.e. text systems, and understanding how these features affect how language is used within text systems. However, discourse analysis tends to proceed by analysing samples of text too small to be representative of a significant portion of some text system. This means standard kinds of discourse analysis by themselves simply cannot comment upon questions concerning the effects of structural features of text systems on language use. The example of such a question I gave concerned the movement of discourses. It is accepted that since the 1970s neoliberal discourse has increasingly spread into states (from think tanks, academia etc.). Since all state organisations (and all organisations of a certain size in general) use text systems, the movement of neoliberal discourse into states entails a movement into the text systems of state organisations. What does such a movement into text systems involve? How do the structural features of text systems affect the movement of discourses? This was the second main point made in the previous chapters.

So far, I have relied on metaphors of discourses 'moving' and 'spreading' to articulate the kinds of concerns that are omitted by discourse analysis. I now clarify what I mean by these metaphors. Consider the following example; within some community, an organisation has generated a rationality R. Over time, R 'spreads' from the initial organisation to other organisations in the community. What does this mean? From a Foucauldian perspective, this means that technologies predicated on R are now practised by multiple organisations in the community, whereas before they were only practised by the initial

organisation. Here, 'spread of R' means 'adoption of technologies predicated on R' (I also take 'adoption of R' to mean 'adoption of technologies predicated on R'). However, this adoption does not happen in a vacuum. Organisations have histories – they had text systems before the adoption of R predicated on other kinds of rationalities. This raises questions such as the following: how do the text systems already in use by organisations condition the adoption of technologies predicated on R? One would expect that different organisations would adopt technologies predicated on R in different ways, given that different organisations have different purposes. How many of organisations' differences in adoption can be explained by the differences between organisations' text systems?

Thus, when I say that discourse analysis in general does not say much about how discourses move or spread within text systems, I mean that discourse analysis does not say much about how the adoption of new rationalities by collections of organisations is conditioned by the text systems already in use by those organisations. This question of how the adoption of rationalities is conditioned by text systems is the empirical focus of this chapter.

I am particularly interested in the changes to an organisation's vocabulary that would be involved in the organisation's adoption of a rationality R, since the computational methods being tested out here are naturally suited to analysis of how individual words are used. One of the main points of interest of large language models is that they produce embeddings of word occurrences that encode useful information about co-occurring word occurrences and the grammatical structures containing the occurrence, meaning they produce embeddings that encode a lot of information about occurrences' contexts. How this feature can be utilised within a Foucauldian approach to the Question of Necessity is therefore a central focus. There are of course many other kinds of linguistic activity that would be involved in the adoption of R, e.g. setting up standardised patterns of interlocutor relations and text system conditions, processing the logical and pragmatic interrelations between what is stated within scorekeeping instances predicated on R and statements of R, and so on. But these are not things that can be traced with any kind of computational approach that is not reliant on extremely labour-intensive labelling of data. Much of the appeal of large language models is that they are self-supervised, meaning they can be deployed within methodological procedures that do not require any kind of labelling (though of course large language models do well on supervised tasks, i.e., tasks that require labelled datasets). Thus, this chapter is concerned with the following questions:

A. What changes in a group of organisations' vocabularies are involved in the adoption of a rationality by the group?

B. How are the changes in vocabulary involved in the adoption of a rationality by a group of organisations conditioned by the text systems already in use by the group?

In this chapter I consider the question of how to analyse samples of text large enough to represent a significant portion of some text system. I argue that natural language processing (NLP) techniques adapted to the analysis of linguistic variation – a mode of analysis developed in variationist sociolinguistics – enables one to use large quantities of text data to make inferences about the structural features of text systems. In Chapter 5 I demonstrate this by using variationist analysis to examine the text systems of the British state. These text systems are represented by a dataset of British state documents published between 2000 - 2020, composed of legislation and the documents of 12 central government departments. In response to questions A and B, I focus on just one structural feature of state text systems – their division of labour. So, the empirical focus of this chapter is on how the division of labour of state text systems conditions the changes in vocabulary involved in the adoption of rationalities. To illustrate what this role involves, I examine the interplay between text systems' division of labour and the rationalities of crisis neoliberalism – in particular the rationalities, analysed by Joseph and McGregor (2020), exemplified by the terms 'resilience', 'sustainability' and 'wellbeing'. I explain what this all means in greater detail in Chapter 5.

4.1 The Variationist Approach

Before explaining the reasoning behind using analysis of linguistic variation to understand the structural features of text systems, I explain what variationist analysis involves.

The foundation of variationist analysis is the tracking of differences in how people use language through linguistic variables, where differences in how some aspect of language is used are construed as different numerical values held by some variable that represents the relevant aspect of language use (Labov 2006: 30-37). For example, differences in the pronunciation of 'r' in words like 'farmer' can be represented by a variable which has a value of 1 if 'r' is pronounced rhotically, as in West Country English, or 0 if pronounced non-rhotically, as in Estuary English. Differences in the pronunciation of 'r' across some collection of categories (individuals, groups, organisations etc.) can then be quantified by collecting samples of speech from each category, scoring all occurrences of 'r' in a category's sample a 1 or 0 depending on each occurrence's pronunciation and then giving each category an overall 'rhoticity score' by calculating the proportion of occurrences that score a 1 in each category's sample. Once linguistic variables have been defined, one can investigate what collections of categories covary with differences in the values of linguistic values. Labov, in his study of New York English (Labov 2006), which pioneers this kind of variationist analysis, finds that the pronunciation of 'r' covaries with socioeconomic class, with upper classes making greater use of rhoticity than lower classes (Labov 2006: 141). In summary, the variationist approach involves the construction of a stratified dataset of text, the

definition of quantifiable linguistic variables, and analysis of how the values of the linguistic variables vary according to the dataset's strata.

This kind of quantitative variationist approach, known in sociolinguistics as first wave sociolinguistics, is an old approach and has since been criticised and improved upon through second and third wave sociolinguistics (Eckert 2012). Second wave sociolinguistics notes that while first wave analysis is effective for understanding overall patterns in how language is used within a population, it does not provide much detail about how such patterns are a consequence of the 'mechanics' of interpersonal communication (e.g. face-to-face communication) (Gumperz 1982: 25-26, 29-32) – e.g. how such patterns are a symptom of how people use linguistic variants as parts of conversational strategies designed to navigate the politics of interpersonal relationships involving people from different social groups (e.g. the politics of interpersonal relationships between people of different genders, classes, ethnicities and so on). Second wave sociolinguistics also argues that first wave analyses' reliance on stratifying speech samples according to sociological categories like socioeconomic class do not necessarily directly reflect the emic categories people use to organise themselves into groups (Milroy 1987: 13-15) (Eckert 2012: 91). While etic categories such as socioeconomic class are useful, and do say something about the organisation of people, people do not necessarily form social networks with socioeconomic class in mind. They are more likely to form networks with categories like 'friend', 'family', 'colleague' etc. in mind, despite the fact the resulting social networks are usefully thought of as being stratified by socioeconomic class. Gumperz notes a study of an apparently homogenous Norwegian community which contained 'fundamental differences in social values among the individual residents' (Gumperz 1982: 27), suggesting the locals did not think about their membership of a 'homogenous Norwegian community' much when deciding with whom they shared the greatest number of values (Gumperz 1982: 26-27).

Finally, third wave sociolinguistics argues that both first and second waves do not pay enough attention to how linguistic variables are used not only to reflect membership of some group, but also to produce group distinctions (Eckert 2012: 93-94). Implicit in first and second wave work is the notion that a variant of some linguistic variable simply indexes the group which the variant's speaker belongs to. So, a speaker using a rhotic 'r' does not indicate much more than the possibility the speaker is from the West Country, or of a particular socioeconomic class, or of a particular friendship group etc. Eckert, whose work is an important example of third wave work, argues that though this may be true at the point in time when the variant first comes to the attention of people outside the group from which the variant originated, as time goes on variants accumulate many other kinds of meaning (Eckert 2012: 94). This accumulation happens because people, once aware of some group's variant, use the variant, its association with some group, and the qualities associated with the group, for their own ends. Eckert calls this process 'stylistic practice' (Eckert 2008: 456-457) and cites a study she did of students in a high school in the suburbs of Detroit (Eckert 2008: 458) to illustrate how linguistic variation is used in

the stylistic practices of students. She discusses how 'burnouts', a clique within the school, adopted phonological variants associated with young people from the urban areas of Detroit rather than the suburbs (Eckert 2008: 458-459). Burnout students did this to distinguish themselves from other cliques, like 'jocks', by associating themselves with the qualities they associated with urban Detroit youngsters – toughness, independence, wildness and alienation (Eckert 2008: 459). Here, the adoption of urban phonological variants is used to produce the distinction between 'burnouts' and 'jocks' rather than index membership of the urban Detroit youth group.

In summary, we have the following criticisms of quantitative variationist analysis: (1) that it does not reveal much about interpersonal conversational strategies, (2) that it relies too heavily on etic categories and that (3) that it does not say much about how the groups associated with some collection of linguistic variants are constituted, rather than merely indicated, by the collection of variants. It is worth briefly commenting on the extent to which these criticisms reveal the limitations of adopting quantitative variationist analysis as a method of understanding the structural features of state text systems. Regarding (1), it is indeed true that conversational strategies must play some role in the textual procedures through which governmental power is exercised, and that quantitative variationist analysis will have trouble revealing much about this role. The most immediate reason for this is lack of data – there is no access to the conversations state professionals have with each other. However, even if such conversations were available, such conversations must be reduced to written form for quantitative analysis, which limits the researcher's ability to understand the interpersonal politics that might be at play behind the conversations. Ethnographic methods which allow the researcher to directly observe conversations and interview interlocutors are certainly more suitable for analysing this interpersonal dimension of textual procedures. Regarding (2), it is again true that there will always be some collection of emic categories that won't be accessible to the researcher relying on quantitative variationist analysis. Though the categories employed in my analysis of state text systems are arguably emic categories, since they are categories that emerge out of the division of labour used by the state (e.g. 'Ministry of Justice', 'Legislation' etc.) rather than categories constructed by the researcher, it is doubtless true that there are a range of informal alliances, working groups etc. which influence the division of labour at some level which are only accessible to researchers through ethnographic methods. The issues raised by (3) are only a problem if there is access to the informal emic groups just discussed. It is implausible that any collection of linguistic variants has much of a role in constituting the more formal aspects of the division of labour of the state, e.g. the division between the government of education and the government of health.

4.2 Adapting Variationist Analysis to the Investigation of Text Systems

I now explain the reasoning behind using variationist analysis to address the problem of how to analyse samples of text large enough to represent significant portions of text systems with the purpose of commenting upon their overall, structural features. The central question posed by this problem is: if one cannot rely exclusively on making inferences from what one can glean from the close reading of limited numbers of text to reveal something about the structural features of text systems – i.e. rely exclusively on making inferences from the argumentative structures, rhetorical strategies, grammatical constructions, narratives, schematic structures, and so on, revealed through close reading – what other kinds of information can serve as a basis for making such inferences?

There is good reason to think linguistic variation may be able to serve as a basis for making such inferences. A text system can only be represented by a large enough sample of the texts composing the system. Given some pre-existing knowledge of the system's structure (e.g. knowing the state's system will be structured by its division of labour, e.g. be divided by department), one can divide this sample into strata, with each stratum representing some part of the structure. So, a text system ought to be represented by a stratified sample of the texts composing the system, where the chosen strata reflect some structural feature of the text system. As previously mentioned, one of the questions I'm interested in is how the adoption of rationalities is conditioned by text systems' structural features. Let us consider how a representative, stratified dataset can be analysed to shed some light on this question, and thereby illustrate how linguistic variation can serve as a basis from which inferences about text systems' structure can be made.

Since rationalities are linguistic objects – essentially collections of logically interrelated arguments/statements – one would expect to be able to associate the texts that express a rationality with a distinct configuration of linguistic variants; particular word choices, particular word senses, particular grammatical constructions, and so on. For example, one would expect documents expressing a neoliberal rationality to have more shared vocabulary with each other than with documents expressing a Keynesian rationality. One would further expect a rationality's signature configuration of linguistic variables to feature in the technologies predicated on the rationality – to find that the texts which express a rationality R share vocabulary with the statements made within technologies predicated on R. So, technologies predicated on R share some portion of the linguistic variables distinctive of R. Given this, it is possible one can make inferences about how the adoption of rationalities is conditioned through the following steps:

1. Given the assumption that rationalities and their corresponding technologies have a signature configuration of linguistic variables, choose some collection of linguistic variables associated with the rationality of interest to track in the stratified dataset.

2. For the chosen collection of linguistic variables, examine the variation in their values across the strata of the stratified sample.

3. Isolate patterns in how the variations revealed in 2 covary with the dataset's strata. Since such patterns give information about how the variables associated with a rationality are associated with the strata used to represent some structural feature of the text system, it should be possible to use such patterns to make inferences about how the structural features represented by the strata condition the rationality of interest.

The possibility of adapting variationist analysis to the analysis of text systems illustrated here is conditional upon (a) constructing a dataset representative of a text system stratified by a collection of strata that represents some structural aspect of the system and (b) defining a useful set of linguistic variables. Recent work within NLP which makes use of variationist analysis (see (Nguyen et al. 2021) for an overview of such work) offers clues on how to perform these steps. I briefly discuss variationist NLP literature to illustrate this.

The focus of variationist NLP literature is on developing and applying algorithmic methods for understanding linguistic variation. These algorithmic methods are generally tested on social media data, which provides an abundance of easily accessible, well organised text data, with many application programming interfaces being developed to allow (some) access to the data harvested by social media companies. Such data has allowed NLP researchers to carry out variationist analyses on a much larger scale than previously possible and define novel linguistic variables. For instance, Zhang et al. (2017), in their analysis of Reddit, develop measures of how unique an occurrence of some word is to a subreddit, and how much of a 'fad' an occurrence of some word is within some subreddit – i.e. how unique an occurrence is to a particular point in time (Zhang et al. 2017: 3). That the word 'Trump' is more likely to occur in 2016 than other years within some subreddit means it is more fad-like than a word which is as likely to occur in 2016 as in any other year. The former measure is called a measure of 'specificity', while the latter is called a measure of 'volatility'. Zhang et al. measure variation across subreddits in the overall specificity and volatility of the words used by each subreddit to produce a typology of subreddits, in which subreddits are categorised according to the overall specificity and volatility of their respective vocabularies. Lucy and Bamman (2021) extend Zhang et al.'s word choice specificity measure to word senses. They devise an algorithmic 'word sense induction' procedure that can, given a dataset and a word, automatically sort each occurrence in the dataset of the word into clusters, where each cluster approximates a sense of the word (Lucy and Bamman 2021: 542-543). This allows frequency counts of occurrences of particular senses of a word to be automatically produced, which allows measurement of how specific to a stratum the use of a word sense is and, therefore, measurement of variation in word sense choices.

What's important about these novel linguistic variables is that they can be used to measure lexical variation, which intuitively makes sense as a way of tracking the use of rationalities, since, as previously mentioned, one would expect technologies predicated on a particular rationality/texts expressing a particular rationality to have a somewhat distinctive lexicon. Aside from an increased abundance of text data, the production of these novel linguistic variables has been enabled by improvements in NLP algorithms. Lucy and Bamman's word sense induction procedure relies on neural nets based on transformer architecture, an architecture introduced in 2017 (Vaswani et al. 2017) which has since enabled the production of a number of pre-trained language models (e.g. BERT, GPT) which have set a new standard for completing various NLP tasks such as sentiment classification, next sentence prediction, assessing semantic similarity, and so on. So, condition (b) of adapting variationist analysis to the study of text systems could possibly be satisfied by simply using the word/sense specificity variables found in NLP adaptations of variationist analysis and the algorithms (e.g. pre-trained neural language models) NLP researchers have used for the measurement of these variables.

NLP's use of social media data offers a model for satisfying (a). The incorporation of public discussion into social media platforms is part of the broader socio-technological trend of digitalisation discussed in the introduction, which has resulted in (aside from data being produced as part of the everyday workings of platform corporations, e.g. social media data) individuals and organisations publishing their texts online, e.g. blogs, newspapers, academic journals, states and so on. While this data is not as well organised as platform corporation data, and there isn't a range of APIs available that makes sifting through this kind of data a straightforward affair, digitalisation has also resulted in a huge ecosystem of open source – and therefore publicly accessible and editable – software and freely available programming languages that researchers can use to cobble together tools to collect and organise very large quantities of this data themselves (it is this ecosystem that provides access to the NLP procedures discussed above). While the granularity of dataset stratification possible through these tools is entirely dependent on the designs of the websites hosting the texts (e.g. if a website does not list the author of a document, it will be impossible to have a dataset stratified by author), and therefore not likely to approach the level of detail found in platform corporation data, these tools nevertheless allow researchers to produce datasets large enough to be somewhat representative of text systems.

4.3 Linguistic Diffusion and the Adoption of Rationalities

The variationist approach also offers a way to approach the question of what changes in vocabulary are involved in the adoption of rationalities. A central topic in variationist sociolinguistics is linguistic diffusion, which is concerned with studying how elements of language – phonemes, words, syntactic structures – spread within various kinds of 'space'. Most discussion concerns geographic linguistic

diffusion, diffusion between socioeconomic classes and diffusion within social networks. I understand the changes in vocabulary involved in the adoption of rationalities as diffusion processes, and this perspective underlies the empirical analysis. Before explaining this in more detail I briefly discuss existing literature on linguistic diffusion.

Current discussion of diffusion is part of a broader discussion on linguistic change, which is concerned with understanding language change – how new languages are formed, how pronunciation changes, how new words are formed, and so on. Contemporary sociolinguistic models of diffusion have their roots in critiques of the tree model of linguistic diversification (Bloomfield 1933: 310–17), which aimed to explain the formation of some collection of languages by reconstructing the ancestor language shared by the languages. So, the genesis of modern European and South Asian languages (e.g. English, Hindi) is explained by positing the common ancestor language Proto-Indo-European. Gradually speakers of Proto-Indo-European separated into distinct communities (through, for example, migration) with no contact with each other. This lack of contact meant each community pursued their own independent path of linguistic development, drifting away from the original Proto-Indo-European (François 2015: 165). Reconstructing common ancestor languages is done using the comparative method, in which languages are compared to see if they share a range of features. If a group of languages are found to share features not present in languages outside the group, they are taken to be descended from the same common ancestor language.

While the tree model is undoubtedly an effective part of the comparative method for reconstructing ancestor languages, as a descriptive model for language diversification and change it has problems. Most relevant here is its assumption that a language is an internally homogenous entity, which precludes the tree model from being able to explain how languages' internal variations drive language change and diversification. Dialectologists have shown that languages are not homogenous and that apparently uniform aspects of a language in fact vary – thus the pronunciation of 'r' in English varies according to geographic area. Since English speakers *are* in contact with each other, separation of speakers of a common ancestor language cannot be the reason for this variation (Bloomfield 1933: 314). Rather, there is some process internal to the English-speaking community that explains the variation in the pronunciation of 'r'.

This line of reasoning is behind the wave model of linguistic change, first articulated in (Schmidt 1872), which underlies current discussion of diffusion. In the wave model, individual speakers of a language come up with new linguistic innovations – let such speakers be called innovators. Others who are in contact with innovators then adopt the innovation. The reasons for adoption are various – as second and third wave sociolinguistics argue, one reason may be that adoption helps construct/index a group identity. Those who are in contact with the first contacts of the innovator also adopt the innovation, and this process continues, meaning the innovation diffuses out from the social network surrounding the

innovator into other networks like a wave spreading from a pebble falling into a puddle (François 2015: 169). This line of reasoning entails a 'principle of density' (Bloomfield 1933: 327–28). If linguistic innovations spread through interaction between innovators/those who have been exposed to the innovation, then one would expect innovation diffusion to tend to begin in populous areas where there are dense networks of interaction, such as cities or towns, and tend to end where interaction networks are sparse, such as in the less populated boundaries between towns/cities. In variationist sociolinguistics Bloomfield's principle of density was formalised by Trudgill in his gravity model of innovation diffusion (Trudgill 1974). Here, the capacity of innovations in one geographic area to spread to another is modelled as a function of the population of and distance between both areas.

Central to the notion of diffusion is understanding speakers of a language not as a homogenous community displaying minimal deviation from an ideal standard language, but as a collection of multiple groups who each speak a 'variant' of the language. One can take this further. Not only is it true that speakers of a language display variation, but it is also true that the boundaries between variants are messy, frequently overlapping (Hudson 1996: 39). Thus, while one might expect to be able to draw a clear geographic boundary between different English variants – i.e. accents, dialects – that do not overlap, in truth this is not possible as the features one associates with a variant will not have exactly the same geographic distributions (i.e. isoglosses) as each other. The only clear, non-intersecting boundaries separating speakers of a language lie between the speech of individual speakers, i.e., idiolects. So, languages should be understood in terms of collections of mutually intelligible idiolects. Discussion of diffusion is therefore about understanding how these mutually intelligible idiolects influence each other, and how this influence drives collective changes to groups of idiolects to produce accents, dialects, new languages, and so on.

Population of and distance between geographic areas are not the only factors of diffusion that have been investigated. Labov's curvilinear principle (Labov 2001: 190) is a principle about how socioeconomic class conditions diffusion. Based on decades of analyses of phonetic change in New York, Norwich, Panama City, Philadelphia and Cairo, Labov finds that phonetic changes tend to originate in the middle of the socioeconomic hierarchy, in upper working and middle classes, and diffuse outwards towards the top and bottom classes. Second wave analysis based on social networks also considers diffusion. In her analysis of Belfast vernacular Milroy concludes that dense, multiplex social networks – i.e., networks in which every member knows many of the other members and members relate to each other in more than one way (e.g. two people may relate to each other as colleagues and friends rather than just as friends) – work to maintain local vernaculars. In contrast sparse networks with low degrees of density and multiplexity have less local vernacular norm enforcing capacity, meaning innovations are more likely to diffuse through sparse rather than dense, multiplex networks (Milroy 1987: 182). Understanding diffusion via social networks is the approach most frequently used in computational investigations of diffusion (e.g. (Del Tredici and Fernández 2018), (Bizzoni et al. 2021), (Laitinen,

Fatemi, and Lundberg 2020), (Eisenstein et al. 2014), (Fagyal et al. 2010)), which also tend to use social media datasets. The popularity of second wave social network analysis is likely because the high granularity of stratification of social media datasets makes constructing the graphs needed for social network analysis straightforward.

In summary, work on diffusion is about uncovering patterns in how individuals adopt various kinds of linguistic items, and how individual choices in adoption aggregate to produce overall changes in dialects and languages. Important here is that individual choice in adoption is the central mechanism through which linguistic diffusion happens – hence the focus on mutually intelligible idiolects. This does not mean work on diffusion assumes individuals behave independently of collective, social structures. Much of the point of investigation into diffusion is to understand how individual choices in adoption are conditioned by social structures, hence Labov's focus on socioeconomic class and second and third waves' focuses on group identities and social networks. The point is that linguistic items move between individuals before they move between groups, even if groups condition individual behaviour. That individual choice in adoption is the central mechanic of linguistic diffusion is what justifies taking the vocabulary changes involved in the adoption of rationalities to be essentially a process of diffusion. Such vocabulary changes are the result of people choosing to adopt particular rationalities, which entails choosing to adopt the vocabularies associated with particular rationalities. Again, choice in adoption is the mechanism through which rationalities, and therefore the vocabularies associated with particular rationalities, spread between organisations.

However, an important difference between general linguistic diffusion and the diffusion of vocabulary that results from the adoption of rationalities is that the latter works through organisational choices rather than individual choices. Given the fact that the organisations which practice technologies are generally constituted by hierarchical relations, it is not necessary for every member of an organisation to make the choice to adopt a particular rationality. It is only necessary that those at the top of the organisational hierarchy (e.g. an executive board) make the choice – everyone else simply complies. Even in organisations that are not hierarchically structured (e.g. organisations in which every decision must be voted upon by all members) it cannot be said that such an organisation's adoption of a rationality is mediated by individual choices. If a decision must be voted upon, the range of choices that might be raised in response to the decision must first be reduced to some kind of *n*-ary (e.g. a binary *yes-no*) that can be voted upon, then the individual choices represented by each vote must be aggregated to construct a majority and a minority choice, and then those who made the minority choice must comply with the majority choice. In an organisational context, that compliance is a necessary part of organisational decision making, whether hierarchical or voting-based, means rationalities, unlike linguistic items in general linguistic diffusion, are adopted by groups without first being adopted by

individuals. Thus, the central mechanic through which the diffusion of vocabularies involved in the adoption of rationalities happens is organisational choice in adoption.

Chapter 5: The Diffusion of the Vocabulary of Crisis Neoliberalism and the Division of Labour of the British State

I now turn to illustrating how variationist analysis can be used to investigate text systems through a study of some of the vocabulary changes involved in the adoption of a particular kind of governmental rationality – what Joseph and McGregor (2020) call crisis neoliberalism. The focus is on understanding how these vocabulary changes are conditioned by the division of labour of the state's text systems. This chapter has two main purposes. The first is to further refine the questions that motivate the data analysis – *What changes in a group of organisations' vocabularies are involved in the adoption of a rationality by the group*? *How are the changes in vocabulary involved in the adoption of a rationality by a group of organisations conditioned by the text systems already in use by the group*? This involves explaining the particular kinds of governmental rationalities and organisations of interest – crisis neoliberal rationality and the legislative organisations and central departments of the British state – and the aspects of vocabulary diffusion focused on. The second purpose is to present the results of the data analysis. I reserve discussion of the results of the data analysis and how they help answer the motivating questions, as well as discussion linking the results of the data analysis with the arguments made in earlier chapters, for Chapter 6.

I begin with a brief explanation of crisis neoliberalism. In section 5.2 I explain the study's focus on the diffusion of crisis neoliberal vocabulary within state text systems in more detail, highlighting three central concerns of the study. In section 5.4 I explain the linguistic variables used to conduct the study. In sections 5.5 onwards I conduct the study.

5.1 Resilience, Wellbeing and Sustainability and Crisis Neoliberalism

The rationalities surrounding 'resilience', 'wellbeing' and 'sustainability' have been discussed in depth in the work of Joseph and McGregor (2020). Since their work builds upon Foucault's arguments on neoliberalism, I first explain Foucault's arguments before discussing Joseph and McGregor's comments on 'resilience', 'wellbeing' and 'sustainability'.

As explained in the first half, the Foucauldian approach to discursive power argues that discursive power is the exercise of power through textual practices, which are organised into particular arrangements to enable the working of juridical, disciplinary or governmental technologies. These arrangements of textual practices, and the arrangements of linguistic practices which structure them, can be more precisely thought about in terms of discursive scorekeeping (Lewis 1979). The textual practices which constitute these technologies are predicated on rationalities, where a rationality is some

collection of arguments united by a particular technique of analysis, e.g. governmental rationalities are arguments which rely on analysing social activity in terms of populations. A technology is predicated upon some rationality in the sense that carrying out the textual practices which constitute the technology requires treating the arguments of the rationality as true. For example, the movement away from mercantilist technologies of economic government towards liberal technologies during the 18th century was only possible because of the state's treatment of liberal rationalities, e.g. the arguments of the physiocrats, as true.

Foucault argues that neoliberal governmentality is characterised by rationalities which argue for extending liberal economic analyses to areas of social activity beyond what was traditionally thought of as economic activity by liberal rationalities (Foucault 2008: 239-244). Foucault cites Becker's notion of human capital as an example of this extension, in which an individual's capacity to labour is thought of as capital – as a mechanism which provides its individual with some output of utilities (e.g. wages) given some inputs (e.g. the food required to main one's capacity to labour). In classical liberal economics, the notion of capital is reserved for the analysis of economic production. It is used to talk about things like factory machines, which given some input (e.g. raw materials) produces revenue for the firm which owns the machine. Labour sits alongside capital as a factor of production, i.e. as something required by a firm to produce the goods/services it sells, but labour is not further analysed as another kind of capital that is owned by the individual labourer rather than that firm the labourer works for (Foucault 2008: 223-227). Understanding labour in this way allows Becker to conduct economic analyses of activities like education and child rearing, activities beyond the domain of economics according to classical liberal economics. Such activities can now be analysed in terms of investment in human capital (Foucault 2008: 232).

Current discussion on liberal government has used Foucault's arguments about neoliberal governmentality to characterise the changes that have been taking place in the British state since the mid-1970s. As previously mentioned, since then there has been a switch from a direct state delivery model of service provision to an outsourced model of service provision (Morphet 2021). The purpose of moving to an outsourcing model was to introduce market mechanisms into the provision of state services and was justified by an economic analysis of the state. An example of a moment in this switch is compulsory competitive tendering (CCT), introduced in the 1988 Local Government Act, which obliged local authorities to allow private companies to bid for contracts for carrying out refuse collection (Morphet 2021: 101-102). This meant ending the monopoly local authorities had over refuse collection and therefore creating an auction market for refuse collection contracts, which is premised upon an analysis of the state as a rational, self-interested actor in a competitive market (Morphet 2021: 101-104). The movement towards an outsourcing model of service provision in the British state is therefore taken to be an exemplary example of a movement towards neoliberal governmentality.

Joseph and McGregor argue that in the past 30 years the use of 'wellbeing', 'resilience' and 'sustainability' in states has increased and that this indicates the growth of rationalities which strike a balance between maintaining the extended economic analysis characteristic of neoliberal governmentality and attempting to address neoliberalism's failure to deal with economic, political and environmental crises (Joseph & McGregor 2020: 2-3). I summarise the rationalities that Joseph and McGregor argue are behind the increased use of these words:

1. Joseph and McGregor note there are several senses of 'wellbeing' in use in states, all of which are a response to a critique of neoliberal government's reliance on economic measures to evaluate the consequences of economic policy (Joseph & McGregor: 13-14). This critique argues that relying on economic measures such as GDP to evaluate economic performance is not good enough. Though one can estimate how economic policies affect individual lives through per capita estimates, such measures still provide little detail on economic policies' effect upon 'wellbeing' – they do not say much about things like happiness, life expectancy, job quality, housing quality, and so on. Attempts to implement this kind of criticism into government has resulted in the construction of various measures designed to capture those aspects of 'wellbeing' not captured by per capita economic measures, which in turn allows for the design of governmental technologies that target these aspects of 'wellbeing' (Joseph & McGregor 2020: 14, 16-17). One sense of 'wellbeing' attempts to isolate multiple measurable proxies to 'well-being', such as life expectancy, education level, per capita income, and so on. The human development index represents this sense of 'wellbeing' (Joseph & McGregor 2020: 17), which has been used in the United Nations Development Programme, a UN organisation which attempts to enact policies that reduce poverty, improve 'sustainable' economic growth, and so on. Another sense takes 'wellbeing' to be an individual's subjective experience of happiness that results from the individual's actions (Joseph & McGregor 2020: 18). Authors like Joseph, McGregor and Davies associate this sense of 'wellbeing' with a change with neoliberalism's conception of the individual as a rational, self-interested actor. Rather than taking the conception to be an accurate description of individual behaviour, it is taken to be as an ideal in the image of which imperfect, irrational individual behaviour is to be moulded (Joseph & McGregor 2020: 28-30), (Joseph 2018: 45), (Davies 2014: 152). Here, 'wellbeing' is an outcome that can be achieved by influencing people to act in accordance with the ideal of economic behaviour. One can see the adoption of this sense of 'wellbeing' in the implementation of 'nudge' policies, e.g. the policies recommended by the Behavioural Insights Team in the UK., set up by the Cabinet Office in 2010 (Joseph & McGregor 2020: 29-30).

2. The use of 'resilience' is adapted from uses found in ecology, engineering, psychology and sociology. Common to these uses is the notion that people or systems have a default state and mechanisms that allow people/systems to return to the default state in response to some

disturbance (Joseph & McGregor 2020: 40). In ecology, 'resilience' is used to describe how ecosystems rearrange themselves into new default states in response to disturbances – for example, the default ratio of the populations of different animals in a forest may change after a wildfire, disease etc. (Holling 1973). In psychology, it has been argued that people have a default level of wellbeing that people return to after a traumatic event such as the death of a family member (Joseph & McGregor 2020: 43). In the British state, 'resilience' has informed security policy, in which threats to security such as terrorism, natural disasters etc. are seen as a permanent feature of an irredeemably unpredictable and complex globalised world. Building 'resilience' as an organisational capacity is advanced as the appropriate response to such a world, which involves building awareness among organisations of the risks they face so they can respond to threats autonomously, without too much reliance on state intervention (Joseph & McGregor 2020: 45-47). More concretely, this involves requiring organisations to undertake various kinds of risk assessment, e.g. the *2004 Civil Contingencies Act* requires local authorities, emergency services, health services etc., to produce community risk registers and business continuity plans.

3. Uses of 'sustainability' in the state are driven by attempts to respond to climate change and poverty. The key rationality here is encapsulated by the term 'sustainable development', which argues that while economic development is necessary to tackle poverty, economic development cannot continue to destroy the environment (Joseph & McGregor 2020: 76-77). New Labour's *Sustainable Communities: Building for the Future* (Office of the Deputy Prime Minister 2003) is an example of an implementation of the 'sustainable development' rationality in the British state. This was an urban regeneration plan that targeted areas that experienced economic decline as the UK moved from a manufacturing to a services economy. The central concerns of this plan were tackling problems with housing (e.g. lack of supply, abandonment, poor quality (ODPM 2003: 7-12)) and developing the economies of post-industrial areas, while keeping a check on the environmental impacts tackling these problems might have by using measures of biodiversity, preserving greenbelt areas, assessing flood risks and so on (ODPM 2003: 52). It's worth noting that the plan is very much part of the general movement towards neoliberal government pursued by New Labour, with the primary instrument behind economic regeneration being establishing more public private partnerships between local authorities and companies through Sustainable Community Strategies (ODPM 2004: 8). As well as to pursue some notion of environmentally agreeable economic development, 'sustainability' has been used in plans to mitigate and adapt to climate change (Joseph & McGregor 2020: 79-80). The Kyoto Protocol (United Nations Framework Convention on Climate Change 1998) is an example of mitigation, being an international treaty that commits countries to reduce their carbon dioxide emissions. The U.N's 13th Sustainable Development Goal (United Nations

General Assembly 2015) is an example of adaptation, which aims to strengthen resilience against the increase in natural disasters caused by climate change. Like resilience, responsibility for mitigation and adaptation has often been shifted away from the state in favour of a 'government from a distance', nudge approach. Joseph and McGregor cite New Labour's 2005 *Securing the Future* document as an example (Joseph & McGregor 2020: 82), which emphasises the need to 'enable, encourage and engage' (DEFRA 2005: 26) people to make more sustainable choices. More concretely, this involves providing training on sustainability, increasing the cost of environmentally damaging activities through fees like the London congestion charge and providing funding for sustainability projects (DEFRA 2005: 26-27).

'Crisis neoliberalism' therefore refers to the kinds of rationalities and technologies indicated by the use of these three words in states – rationalities and technologies which balance supporting the core characteristics of neoliberal government with criticising orthodox neoliberalism's inability to deal with the crises of a complex, unpredictable world. The vocabulary changes involved in the adoption of crisis neoliberalism are the focus of empirical analysis.

5.2 The British State's Division of Labour and Vocabulary Diffusion

Given the argument made previously claiming that vocabulary changes that result from the adoption of rationalities can be understood as processes of linguistic diffusion, I understand the vocabulary changes involved in the spread of crisis neoliberalism as vocabulary diffusion. In this section I explain the state's division of labour a little more to sharpen the empirical focus, highlighting three central concerns about how this vocabulary diffusion is conditioned by the state's division of labour.

An obvious feature of states in general is that their work is split up among several specialised organisations. Thus, there is a department that specialises in the government of education, a department for the government of health, for housing and so on. There is the division between the work of the policy process, which is carried out by specialised departments, and the work of voting upon whether to pass the bills that emerge from the policy process, carried out by the organisations that constitute legislatures. There is also the hierarchical-regional division of labour between central government departments and local authorities. Most recent literature on this division of labour has focused on its neoliberalisation – especially relevant here is work done on multilevel governance, e.g. (Hooghe & Marks 2001), (Bache & Flinders 2004), agencification, e.g. (Verhoest et al. 2012), the hollowing out of the state and outsourcing, e.g. (Rhodes 2005), (Morphet 2021).

As previously discussed, the empirical focus is on how the division of labour of state text systems conditions the vocabulary diffusion involved in the adoption of rationalities. The particular division of

labour I focus on is reflected in the strata according to which my dataset is stratified: the division between legislative work and departmental work, and the division between departments across government of the economy, education, health, housing and so on. As one would expect, this division is reflected in the text systems of the organisations involved in the division: hence the state's text systems will include legislation, documents about the government of health, of the economy, of education and so on. Thus, one can speak of the state's text systems as having a division of labour. Of course, this is only a very small and simple aspect of the state's total division of labour. Literature on the neoliberalisation of the state's division of labour has shown how the outsourcing of state services, the corresponding proliferation of non-departmental agencies and the integration of national state organisations into international/transnational state systems means the state's division of labour involves a complex array of national/transnational/international state and non-state organisations – even if one sticks with the state of just one nation – and this is of course reflected in the state's text systems. Unfortunately, limited time meant it was not possible to construct a dataset that properly reflects this complexity, so I stick with the one simple aspect of the state's division of labour reflected in the dataset's 13 strata.

So, the empirical question I address is: *how does the 13 strata division of labour of the British state's text systems condition the vocabulary diffusion involved in the adoption of crisis neoliberalism?* This focus on vocabulary naturally lends itself to analysis using the aforementioned lexical variables defined by Zhang et al. and Lucy and Bamman – specificity and volatility of word choice (type specificity and volatility), and specificity and volatility of a sense choice (sense specificity and volatility). I use these variables to approach the empirical question with respect to three aspects of the state's text systems/diffusion of rationalities' vocabularies:

1. The general division of vocabulary across all 13 categories that results from the state's division of labour. Grasping this division means understanding how the dataset's total vocabulary – i.e. all words used in all documents in the dataset – are distributed across the 13 strata; seeing if there are portions of this vocabulary that are highly distinctive of certain departments or legislation. The point here is to get an overall picture of how this vocabulary's distribution is structured by the division of labour represented by the 13 strata.

2. The 'sense generation' inherent to the organisational choices that mediate the diffusion of rationalities' vocabularies. Any choice to adopt some vocabulary is simultaneously a choice to adopt particular senses in which the words of the adopted vocabulary are to be used. Choosing to use the word 'wooden' is simultaneously a choice to use 'wooden' in the sense of 'the table is wooden', or in the sense of 'the actor's performance was wooden', or some other sense. What senses of the words of crisis neoliberalism are generated as a result of their diffusion?

3. The position of an adopted rationality's vocabulary, within the overall division of vocabulary, that results from the diffusion of the rationality's vocabulary. What is the 'end state' of the

diffusion process that results from the adoption of a rationality? How is an adopted rationality's vocabulary integrated into the state's division of vocabulary as a result of the diffusion of the adopted rationality's vocabulary?

A key assumption that I maintain is that particular rationalities have a characteristic vocabulary. So, for crisis neoliberalism, one can imagine compiling a complete list of all words used as a consequence of the production of statements that take crisis neoliberal rationalities to be true. This would include both statements that express a crisis neoliberal rationality and statements that are uttered within technologies predicated upon a crisis neoliberal rationality. If we subtract from this list all words included because of the requirements of using the language in which the rationality is articulated, i.e., stop words such as 'and', 'or', 'if' etc., we can call this list the complete vocabulary of the rationality. Additional rules for filtering out words one might consider not particularly characteristic of the discourse can be added, e.g. only include words that occur more than a certain number of times within documents which articulate/are predicated upon crisis neoliberalism.

It would be very challenging to compile a rationality's complete, or even near complete, vocabulary. Doing this presupposes knowledge of what documents articulate/are predicated on the rationality, and this is not knowledge that can be gathered quickly at a large scale, since ultimately one has to read documents to understand the rationalities they articulate/are predicated on. It is far more practical to analyse subsections of rationalities' complete vocabularies, i.e. rationalities' partial vocabularies. I therefore focus on the diffusion of a small partial vocabulary of crisis neoliberalism of just 5 words; 'resilience', 'resilient', 'sustainable', 'sustainability' and 'wellbeing'. For brevity, I refer to these 5 words as the 'target vocabulary'.

5.3 Data

The dataset used is sourced from three websites: gov.uk, legislation.gov.uk and webarchive.nationalarchives.gov.uk. Web scrapers were used to download .pdf files from these websites[15]. Gov.uk was used to retrieve documents produced by central departments primarily from 2010-2020, webarchive.nationalarchives.gov.uk was used to retrieve central department documents produced between 2000-2010 and legislation.gov.uk was used to retrieve legislation passed between 2000-2020. In sum, 13 strata for variationist analysis were retrieved from these websites – 12 central department strata and 1 for legislation – with each stratum containing documents produced between 2000 and 2020. Stratified samples were produced from the downloaded documents using the 13 strata,

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[15] Customised web scrapers were made using the Python module scrapy. QPDF was used to convert .pdf files into .txt format for analysis.

with each stratum in each year containing a sample of 25000 sentences, meaning across all years 525000 sentences were sampled from each stratum. Minimal pre-processing using regex and Python's standard library – removing stopwords, numbers, punctuation, and converting to lowercase – was performed. After pre-processing, the dataset has a vocabulary size of approximately 660 thousand words and a total of 92 million tokens.

5.4 Type Specificity, Sense Specificity and Word Sense Induction via BERT

Following (Zhang et al. 2017) and (Lucy & Bamman 2020), I measure two kinds of lexical variation: type variation, differences between the word choices made by communities, and sense variation, differences between the range of meanings expressed by communities when using a given word. Lucy, Bamman and Zhang use pointwise mutual information (PMI) measures to track differences in word and sense choices. Before explaining these measures are calculated from word/sense frequencies, I briefly explain the intuition behind using PMI measures to track differences between communities' word/sense choices.

Underlying the decision to use PMI measures – and the current NLP paradigm of using neural probabilistic language models such as BERT for linguistic analysis in general – is a distributionalist approach to linguistic analysis in which linguistic elements are grouped according to co-occurrences. Thus, the words 'frog', 'tadpole', 'spawn', 'pond' might be grouped together because they frequently co-occur within some corpus of texts. From this perspective, one can come up with a notion of association – two words are more or less associated depending on the number of co-occurrences they share. So, 'frog' and 'amphibian' can be said to be more associated with each other than 'frog' and 'silicon', since the former pair are going to be more likely to appear next to each other or share co-occurrences like 'pond' (as a result of topical similarity) than the latter pair.

PMI is a measure of the extent to which outcomes of a pair of random variables are associated beyond association as a result of chance. In NLP/information retrieval, PMI is used as a way of formalising this distributionalist approach to assessing how associated two words are within a collection of texts according to how often the two words co-occur with each other. In this context, it is used make a comparison between the probability of observing the two words co-occurring with each other in some text and the probability of observing the two words together assuming that they are independent of each other, i.e. the probability of observing the two words together assuming that they only co-occur by chance rather than as a result of any substantial linguistic/topical/logical etc. relation. In other words, it is a comparison between the joint probability of observing two words and the product of the probabilities of observing each of the two words individually:

$$PMI(word_1; word_2) = \log \frac{P(word_1,\ word_2)}{P(word_1)P(word_2)}$$

So, if there is an association between *word₁* and *word₂* beyond chance co-occurrence, then the joint probability $P(word_1, word_2)$ would be higher than the probability of observing *word₁* and *word₂* together by chance – given by the product $P(word_1)P(word_2)$ – resulting in a high *PMI*. If there is no such association, then the joint probability of observing the two words together is the same as the probability of observing the two words together by chance, and $P(word_1, word_2) = P(word_1)P(word_2)$, resulting in a low PMI. This comparison between the joint probability of observing two words and the probability of observing the two words if they were independent of each other is equal to comparing the conditional probability of observing one of the pair of words given that one has already observed the other word to the probability of observing the first word individually. So, $PMI(word_1, word_2)$ can also be written as:

$$PMI(word_1; word_2) = \log \frac{P(word_1\ |\ word_2)}{P(word_1)} = \log \frac{P(word_2\ |\ word_1)}{P(word_2)}$$

This is the version of PMI used by Lucy, Bamman and Zhang et al. Instead of using PMI to understand the extent to which two words are associated beyond chance, they use it to understand the extent to which a word/sense is associated with a particular subreddit beyond chance (Lucy & Bamman 2021: 541) (Zhang et al. 2017: 3). For example, this application of PMI would give a high score to the association between 'Donald Trump' and the subreddit r/the_donald and a low score to the association between 'Donald Trump' and the subreddit r/chess. I now turn to explaining how the PMIs between words/senses and subreddits are calculated. Zhang et al.'s application of PMI to measuring the association between words and subreddits, or 'communities', is:

$$T(term) = \log \frac{P(term\ |\ c)}{P(term)}$$

Here, *term* is the word whose specificity $T(term)$ to some community c is being measured. $P(term\ |\ c)$ is the conditional probability that *term* is used by community c, and $P(term)$ is the probability *term* is used by all communities being analysed. $P(term\ |\ c)$ is calculated by counting the number of occurrences of *term* in the documents of a department c, counting the number of occurrences of all words used in the documents of c, and then dividing the former by the latter. $P(term)$ is calculated by counting the number of occurrences of *term* in the documents of all departments, counting the number of occurrences of all words used in the documents of all departments, and then dividing the former by the latter (Lucy & Bamman 2021: 541).

$T(term)$ can be normalised so that it only returns values between 1 and -1. Pointwise mutual information based scores, like the specificity scores being discussed, tend to overemphasise the score of infrequent words, giving such words either a very high or very low score. Normalising such scores reduces this tendency (Lucy & Bamman 2021: 541). This is done by dividing $T(term)$ by -log $P(term, c)$, where

P(term, c) is found by counting the number of occurrences of *term* in the documents of department *c*, counting the occurrences of all words used in the documents of all departments, and dividing the former by the latter. So, the normalised specificity score *T*(term)* in relation to *c* is:

$$T^*(term) = \frac{T(term)}{-\log P(term,\ c)}$$

Zhang et al. extend this notion of specificity of a word choice to a community *c* to specificity of a word choice in *c* to a particular time *t*, which they call the 'volatility' of a word used in *c* at *t*, $V_t(term_c)$ (Zhang et al. 2017: 3):

$$V(term_c) = \log \frac{P(term_c \mid t)}{P(term_c)}$$

Here, $term_c$ is the frequency of occurrences of *term* in *c* only. $P(term_c \mid t)$ is calculated by getting the frequency of occurrences of $term_c$ at *t*, and dividing this by the frequency of occurrences of all words in documents of *c* at *t*, while $P(term_c)$ is obtained by dividing the frequency of occurrences of $term_c$ across all times by the frequency of all occurrences of all words used in *c* across all times. Again, $V(term_c)$ can be normalised (into $V^*(term_c)$) so that values measuring volatility lie between 1 and -1:

$$V^*(term_c) = \frac{V_t(term_c)}{-\log P(term_c,\ t)}$$

Here, $P(term_c, t)$ is obtained by dividing the frequency of occurrences of $term_c$ at *t* by the frequency of all occurrences of all words used in *c* across all times.

Lucy and Bamman measure sense variation by adapting Zhang et al. 's measures of type specificity to get a measure of sense specificity – how unique the usage of some target term to express a particular sense is to some community (Lucy & Bamman 2021: 545). While getting the type specificity of a target term relies upon counting occurrences of the target term, getting the specificity of a particular target sense of the target term requires first isolating the senses expressed by occurrences of the target term in the dataset, and then counting the number of occurrences which express the target sense. Given a list of senses for some word retrieved from some dataset, one can define the specificity *S* and normalised specificity *S** for each listed sense in relation to some community:

$$S(sense) = \log \frac{P(sense \mid c)}{P(sense)}$$

$$S^*(sense) = \frac{S(sense)}{-\log P(sense,\ c)}$$

In the same way one can extend type specificity to get a measure of type volatility, one can get the volatility of a sense used in *c* at *t* by comparing the probability of a sense used in *c* appearing at *t* to the

probability of the sense appearing in the total history of *c*. So, the volatility of a sense in *c* at *t*, *W*(*sense_c*), is:

$$W(sense_c) = \log \frac{P(sense_c \mid t)}{P(sense_c)}$$

Normalised:

$$W^*(sense_c) = \frac{W_t(sense_c)}{-\log P(sense_c, t)}$$

The remaining question is how does one generate a list of senses to be measured from a dataset? Lucy and Bamman frame this question as a problem of word sense induction – what kind of algorithmic procedure can automatically (i.e. without a predefined list of a word's senses) retrieve senses of a word given a dataset of occurrences of the word (Lucy & Bamman 2021: 539-540)? They provide an unsupervised solution making use of BERT and k-means.

BERT provides embeddings for each inputted token (i.e. a word or morpheme – BERT occasionally splits inputted words into morphemic tokens), where a token's embedding encodes information about the token's collocations and grammatical relations with other tokens (Devlin et al. 2018). BERT is a pre-trained algorithm – the reason why its embeddings are able to encode tokens' linguistic features 'out-of-the-box' (i.e. without a user having to train BERT themselves) is because its authors have already trained BERT on the BooksCorpus and English Wikipedia (Devlin et al. 2018: 5). While BERT can be trained ('fine-tuned') further to learn the linguistic features of other datasets, this pretraining means that researchers can retrieve useful embeddings from BERT without having to train/fine-tune BERT themselves. Lucy and Bamman use out-of-the-box BERT embeddings – they input sequences from their reddit dataset into BERT without any additional fine-tuning procedure to retrieve embeddings.

After retrieving embeddings, k-means[16] is used to sort each token's embeddings into clusters, where embeddings are sorted into the same cluster if, by cosine similarity, they are more similar to each other than to other embeddings. K-means is used on a sample of the embeddings retrieved from BERT – Lucy and Bamman use a sample of 500 embeddings for each token (Lucy & Bamman 2021: 544). Then, each cluster's centroid – i.e. the vector which has the smallest possible distances to each embedding in the cluster – is taken to represent a sense of the relevant token (Lucy & Bamman 2021: 539). Other occurrences of the token beyond the sample of 500 are assigned to a sense via cluster matching, in which the occurrence's embedding is retrieved, the differences between the embedding and all centroids induced from the sample of 500 are found, and then the embedding is taken to be of the sense represented by the centroid with which it has the smallest difference (Lucy & Bamman 2021: 544).

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[16] Scikit-learn's implementation of k-means (sklearn.cluster.KMeans) was used.

Lucy and Bamman find that though this word sense induction procedure does not perform as well as the current state-of-the-art – Amrami and Goldberg's (2019) substitution-based procedure – on the standardised datasets for testing word sense induction procedures (SemEval 2010 Task 14 and SemEval 2013 Task 13), it nevertheless performs well while using significantly less computational resources than the substitution-based procedure (Lucy & Bamman 2021: 544-545). Thus, Lucy and Bamman report that their procedure took them 28.85 minutes to complete the cluster matching phase, while the substitution-based procedure took them 23.05 hours. This is the reason why Lucy and Bamman's word sense induction procedure was chosen over the state-of-the-art.

I adapted parts of Lucy and Bamman's code[17] to my purposes to apply their BERT based word sense induction procedure to my dataset. All written and adapted code is in Python. The Hugging Face implementation of the original BERT model (bert-base-uncased) introduced by (Devlin et al. 2018) was used both in my adapted code and Lucy and Bamman's original code.

5.5 Legislative and Departmental Vocabularies

I begin analysis with a discussion of the division of vocabulary that accompanies the state's division of labour. To understand what division of vocabulary means, consider a state with an extremely simple division of labour – it consists of two departments, an education department and a health department. One can isolate the state's entire vocabulary by collecting all documents used by the two departments and listing all words (note – not all *occurrences* of all words) used in the documents. Some of this vocabulary will be exclusive to the education department, and some of this vocabulary to be exclusive to the health department – e.g. the education department will not discuss 'pandemic preparedness'. Of course, much of this vocabulary will be shared, if only because both departments use the same language. Discounting words that are shared by virtue of this, e.g. 'and', 'of', 'it', some of this vocabulary will be shared by the two departments because they may have to coordinate with each other, e.g. when governing children's health in school, or because they are both following the same policy direction, e.g. they may both be implementing austerity economics. Speaking in terms of type specificity, as a result of the state's division of labour a portion of the state's vocabulary will have a high type specificity with respect to the education department (and, therefore low specificity with respect to the health department), a portion with high type specificity with respect to the health department (and therefore low with respect to education) and a portion which has comparatively low specificity with respect to both departments. Such a division of vocabulary can be understood as an outcome of the sum of all word choices unique to state organisations made as a consequence of the state's division of labour.

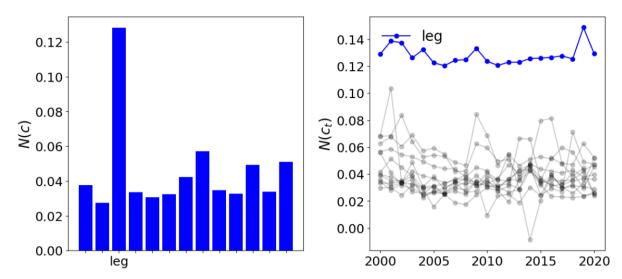[17] https://github.com/lucy3/ingroup_lang

Figure 1 – A comparison of the distinctiveness of legislative vocabulary and departmental vocabulary: The bar chart on the left shows the higher distinctiveness of legislative vocabulary ('leg') compared to other categories. The line plot on the right shows that this is a consistent pattern – legislative vocabulary scores the highest yearly distinctiveness for all years.

The purpose of this section is to sketch out the most noticeable features of the state's division of vocabulary. I look at the state's division of vocabulary at two levels – stratum-level and word-level. At the stratum-level, for each of the dataset's 13 strata, I measure an average of the specificity of the most frequent words of a stratum. I then compare each stratum's average specificity with each other. Thus, following Zhang et al. I use the stratum-level measure distinctiveness to measure average specificity (Zhang et al. 2017: 3). The distinctiveness of a stratum c at a point in time t is $N(c_t)$, which is the average type specificity of all sentences in c_t. The type specificity of each sentence is defined as the average specificity of all words in the sentence. Overall distinctiveness $N(c)$ of a stratum c is therefore the average distinctiveness of the stratum across all points in time. At the word-level I do not look at averages of the specificity/volatility scores of strata's most frequent words – I consider the specificities and volatilities of individual words.

Before proceeding with sketching out the overall features of the state's division of vocabulary, a couple of points about the interpretation of the dataset's 13 strata and measurement need to be made. First, I speak of the dataset's 13 strata as representing specialised state tasks rather than particular state organisations since it is not true that each of the 13 strata necessarily represent the documents of a single organisation. Legislation is the result of the House of Commons, House of Lords, legislation committees etc., and central departments often involve private firms when producing documents. It is therefore more accurate to take the dataset's 13 strata as representing specialised state tasks rather than individual organisations.

Second, as previously mentioned, a problem with the specificity and volatility scores used by Zhang et al. and Lucy and Bamman is that they exaggerate the scores of infrequent words. Such words tend to score either very highly or very low, which poses a problem for statistical analysis. Though Lucy and
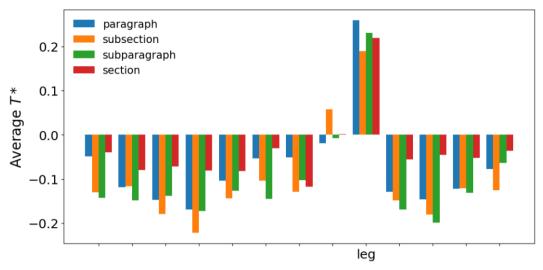
Figure 2 – The specificity of subsection indexing words in legislation compared to departments : Bar chart showing that words used in subsection indexing score the highest average yearly specificity scores in legislation.

Bamman's normalisation of these scores somewhat mitigates this problem, both Zhang et al. and Lucy and Bamman had to remove infrequent words by only using the measures on the most frequent x% of each subreddit's vocabulary, cutting off the rest of each subreddit's vocabulary from measurement. Lucy and Bamman only use these measures on each subreddit's most frequent 20% of words, Zhang et al. use the measures on each subreddit at a point in time's most frequent 5% of words. Deciding what sort of cut off point to use depends on one's dataset, and requires some experimentation – unfortunately there is not a standard kind of cut off point that can be used for all datasets. For this thesis' dataset, it was found the best approach to mitigating the problem of infrequent words was to (1) retrieve a complete vocabulary of the entire dataset, listing all words used across all strata, and (2) use the measures only on the top 1% of this vocabulary by frequency across all strata and points in time. So, all scores used here are based on the top 1% of most frequent words across all strata and years.

The bar chart in Figure 1 plots the distinctiveness scores for each stratum. Of note is that legislation ('leg') has a higher distinctiveness score than all departmental strata. This pattern is not the result of a few years of legislation having a particularly high distinctiveness – the line plot in Figure 1 compares the yearly distinctiveness scores of legislation (coloured blue) to the yearly distinctiveness scores of departments documents (coloured grey), and it shows the pattern holds for each individual year. This consistent difference in distinctiveness between legislation and departmental documents means that, compared to departmental documents, a greater proportion of legislation's vocabulary is not/rarely found outside legislation. This suggests something about the purpose of legislation demands more specialised word choices. This can be clarified with respect to the state's division of labour as follows:

1. The state's division of labour means all tasks that need to be completed by the state are sorted into clusters, with the completion of each cluster of tasks being the responsibility of some collection of organisations. As previously mentioned, there are a myriad of principles according

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to which this sorting happens, e.g. according to regional hierarchies, according to the purview of central departments, according to judgments based on ideas of market efficiency, and so on.

2. The completion of a task always has linguistic requirements. For example, one task might be constructing a new system of means-tested welfare. This task is only complete if the references of terms like 'people eligible for jobseeker's welfare', 'people eligible for disability welfare', 'people eligible for housing welfare', and so on, are fixed. Fixing the references of such terms is a linguistic requirement for the construction of means-tested welfare.

3. Compared to departmental tasks, legislative tasks have a greater number of linguistic requirements that are more or less unique to legislative tasks. These unique linguistic requirements in turn require unique word choices, hence legislation has a higher distinctiveness $N(c)$ than departmental documents.

An example of a linguistic requirement that is roughly unique to legislation is the practice of thoroughly indexing the various subsections of a document so that subsections may be easily referred to within the document, e.g. 'Paragraph 3 states…', 'In accordance with sub-paragraph 3a…'. It is doubtless true that subsection indexing is also used in departmental documents, however it is not used as thoroughly or as consistently as in legislation, thus terms used for subsection indexing, such as 'subparagraph', 'paragraph', 'section' and 'subsection', on average (across all years) score a much higher type specificity with respect to legislation compared to departmental documents (see Figure 2).

The extensive use subsection indexing in legislation follows from the tasks required of legislation; for legislation to be effective as a set of laws that can be consistently used, such that applications of some law do not contradict previous applications of the same law, the potential for ambiguity in the interpretation of legislation must be minimised. Minimisation of ambiguity requires that there be a common point of reference for definitions, which is something that is provided by things like strict naming conventions and subsection indexing. Unlike legislation, acting as a reference point for rules whose repeated applications must, as far as possible, be consistent with each other is not the sole task of departmental documents. Of course, acting as some kind of reference point for rules/guidelines is the purpose of some departmental documents, but the scope of such rules/guidelines is much narrower than legislation, and departmental documents have other kinds of tasks as well, e.g. persuading that a policy direction is desirable, evaluating organisational performance etc. This means that the requirement for consistency across departmental documents is not as urgent as the requirement for consistency across legislation, so the kinds of practices underlying the high distinctiveness with respect to legislation of subsection indexing terms are not found in departmental documents to the same extent.

There is also a difference between the relationship between word-level type specificity T^* and normalised volatility V^* found in departmental documents and the relationship between T^* and V^*

Table 1 – Comparison of the relationships between a word's Top V* and Top T* in legislation and departmental documents

Dependent Variable	Number of Observations	R^2
top V*	49219	0.323
Independent Variables	Regression Coefficients	99% Confidence Intervals
Intercept	0.0558	0.0552, 0.0564
top T*	0.3498	0.3439, 0.3558
leg	0.0131	0.01118, 0.01505
leg x top T*	-0.2942	-0.3109, -0.2774

found in legislation. To illustrate this, I constructed a linear model, the results of which are shown in Table 1. To produce the model, I first constructed a vocabulary listing all words shared by all strata and used across all years by each stratum. Then, for each word in this vocabulary, I isolated the top *T** and *V** scored by the word in each stratum and used ordinary least squares regression to fit a linear model to these top *T** and *V** scores. Thus, the model captures the relationship between words' top *T** and *V** scores, with *top V** as the dependent variable and *top T** as the independent variable. Since the point of this model is to understand how the relationship between *top T** and *top V** differs between departmental documents and legislation, I include a dummy variable *leg* that takes on a value of 1 if the particular *top V** and *top T** scores which are plugged into the model are of legislation and 0 if otherwise, and an interaction term *leg* x *top T** to capture the extent to which the relationship between *top V** and *top T** is affected by whether one is considering words used in legislation or words used in departmental documents.

Due to the large sample size ($n = 49219$) I do not focus on the *p*-values of the model's R^2 and regression coefficients, since when *n* is very large any relationship between dependent and independent variables, no matter how weak, is found to be significant by null hypothesis significance testing (Halsey 2019: 2) (Hofmann 2015: 727). Thus, the largest *p*-value in the model – the result of testing the significance of the relationship between a word's top *V** and whether the word is used in legislation or not – is 4.02 x 10^{-68}, despite the regression coefficient for this relationship being very small. All other regression coefficient *p*-values were small enough for the software used to report as 0. As is typical in such situations, I instead focus on the model's effect sizes (given by the regression coefficients of the independent variables) and their confidence intervals (Halsey 2019: 3) (Hofmann 2015: 727).
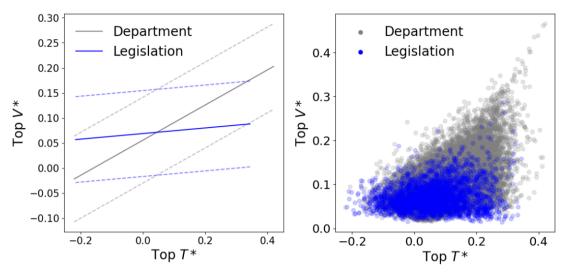
Figure 3 – Visualisation of difference between departmental documents' and legislations' Top T* and Top V* relationships: Plots visualising the regression results displayed in Table 1. The line plots on the left visualises the relationship between legislation's *top T** and *top V** scores compared to that of departmental categories. Compared to departmental documents, the tendency for words with a high *top T** to also have a high *top V** is negligible. The scatter plot on the right visualises the data points from which the regression model was calculated.

The results of the linear model suggest that there is a moderate tendency for words with a high *top T** to also have a high *top V**. The regression coefficient for *top T** suggests that if a word's *top T** increases by some amount, it's *top V** will increase by over a third of that amount. Whether the scores

of a word being considered are of legislation or not makes little difference to the word's expected *top V** – one would not expect a practically significant difference between the *top V** of a word used in legislation and the *top V** of a word used in departmental documents. However, whether a word is of legislation or not does affect the extent to which a high *top T** is accompanied by a high *top V** – if a word used in legislation's *top T** increases by some amount, the corresponding increase in *top V** will be 0.2942 less than the increase one would expect if the word was used in departmental documents. Unlike words used in departmental documents, the tendency for words used in legislation with a high *top T** to also have a high *top V** is negligible. The plots in Figure 3 visualise this. The line plot shows the relations between *top T** and *top V** estimated by the linear model for legislation and departmental documents (dashed lines are 99% prediction intervals), and the scatter plot shows the data points to which the linear model was fitted.

That in departmental documents there is a tendency for words with high *top T** to also have a high *top V** suggests such words are not only distinctive of particular departments, but also distinctive of particular, temporary tasks. For example, it might be the case that a department starts using a word because it needs to perform some kind of policy evaluation. In such a case the word will not only be highly specific to the department, but also to the period of time in which the policy evaluation took place, thus scoring a high volatility score. In contrast that there is a negligible relationship between words used in legislation's *top T** and *top V**s suggests words that are highly specific to legislation are
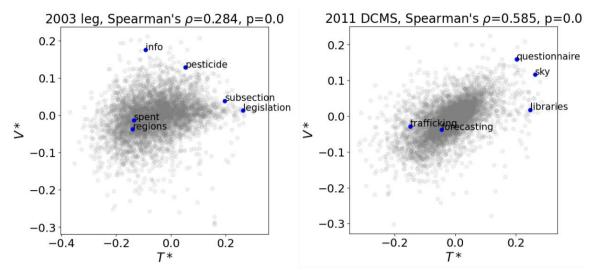
Figure 4 – V* and T* scores of example words in legislation and the DCMS*:* Example words showing the difference in *V** between words that have a high *T** in legislation and words that have a high *T** in the DCMS.

a stable feature of legislative text systems and tend not to be attached to temporary tasks. Figure 4 shows examples of words that illustrate this – in 2003 legislation 'legislation' and 'subsection' score a high *T** (compared to other words used in 2003 legislation) but do not have a particularly high *V**. Given the consistent need for subsection indexing and references to 'legislation' one would expect to be required for making legislation, this is unsurprising. In contrast, in 2011 DCMS documents 'questionnaire' and 'sky' score both a high *T** and a high *V** because they are used for DCMS tasks distinctive of 2011. The scores of 'questionnaire' are likely the result of the development of the 2011 Taking Part survey while the scores of 'sky' are likely the result of the DCMS's reviews of/statements on the proposed merger between Newscorp and British Sky Broadcasting, which took place between 2011 and 2012 – both tasks that are limited to 2011. On the other hand, since the management of libraries is a permanent responsibility of the DCMS, 'libraries', though highly specific to DCMS, does not score a particularly high *V**.

5.6 Legislative and Departmental Senses

I now turn to understanding the most noticeable aspects of the state's division of labour at the sense level. This means seeing if the patterns found at the word level are repeated at the sense level and understanding the relationship between the specificity of words and the specificity of words' senses. For sense analysis I use the word sense induction procedure developed by Lucy and Bamman. Again, to mitigate the problem of infrequent tokens having exaggerated scores, senses are induced only for words that are in the top 50% of a stratum's most frequent words, appear at least 500 times overall, and appear in at least 6 strata. To choose the number of clusters *k* with which to use k-means to induce senses for a single word, I followed Lucy and Bamman in choosing the *k* between 2 and 10 that scored the minimum residual sum of squares (Lucy and Bamman 2021:542).

However, I use a modified version of Lucy and Bamman's sense specificity score *S** as *S** does not take into account the fact that a given word's induced senses are essentially subsamples of the word's occurrences, meaning a word's *T** score and the *S** scores of the word's senses are not independent. If there is an association between the word and a stratum beyond chance association, then one would expect there to also be an association beyond chance association between the word's senses and the stratum, since each occurrence of a sense is also an occurrence of the word. So, one would expect the very strong correlation (Spearman's $\rho = 0.7855$) Lucy and Bamman find between subreddits' fractions of words with a high *T** and fractions of words whose most frequent sense has a high specificity *M** (Lucy and Bamman 2021:549). Since *S** (and *M**) and *T** are not independent as a result of sense occurrences simultaneously being occurrences of the sense's word, one would expect there to be a correlation between subreddit's fractions of words which score a high *T** and fractions of senses/words which score a high *S*/M**.

To account for this, I use a modified sense specificity score in which the specificity of a sense in a stratum is given by the pointwise mutual information of the sense and a stratum conditioned on the sense's word:

$$PMI(sense;\ c \mid term) = \log \frac{P(sense,\ c \mid term)}{P(sense \mid term)P(c \mid term)} = \log \frac{P(sense \mid c,\ term)}{P(sense \mid term)}$$

Here, the PMI of a sense and a stratum is determined by considering the probabilities of observing the sense in the stratum on the condition that one has already observed the sense's word. Given that one has observed a term in a text, what is the probability that the term expresses a particular sense and appears in a particular stratum? Conditioning the probabilities used to determine the PMI of a sense and a stratum this way means the frequencies of senses corresponding to words other than the word corresponding to the sense under consideration are excluded from calculations. So, *P*(*sense* | *c*, *term*) is calculated by finding the frequency of *sense* in stratum *c*, summing the frequencies of all other senses expressed by *term* – where *term* is the word that expresses *sense* – in *c*, and dividing the former by the latter. *P*(*sense* | *term*) is found by summing the frequencies of *sense* across all strata, summing the frequencies of all other senses expressed by *term* across all strata, and dividing the former by the latter. Again, the resulting PMI score can be normalised to obtain sense specificity score *S\#*:

$$S^{\#}(sense) = \frac{PMI(sense;\ c \mid term)}{-\log\ P(sense,\ c \mid term)}$$

P(*sense*, *c* | *term*) is calculated by finding the frequency of *sense* in *c*, summing the frequencies of all other *senses* expressed by *term* across all strata, and dividing the former by the latter. The same modification can be applied to sense volatility score *W** to obtain sense volatility score *W\#*:

$$PMI(sense_c;\ t \mid term) = \log \frac{P(sense_c \mid t,\ term)}{P(sense_c \mid term)}$$

$$W^{\#}(sense_c) = \frac{PMI(sense_c;\ t\ |\ term)}{-log\ P(sense_c,\ t\ |\ term)}$$
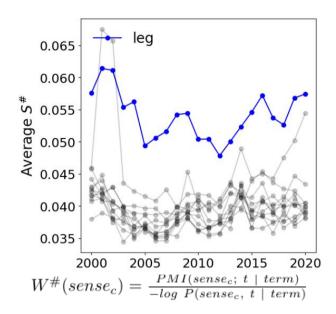
Figure 5 – Comparison of specificity of legislative and departmental senses: This line plot shows legislative senses consistently scoring a higher $S^{\#}$ than departmental senses, except for 2001 and 2002, in which departmental senses still scored the second highest $S^{\#}$.

Using these scores, one can see that there is only a weak correlation between words' top T^* scores and their top $S^{\#}$ scores of their most frequent senses (Spearman's $\rho = 0.253$, 99% CI: 0.239-0.267, $n = 30266$, $p=0.0$), suggesting there isn't much more than a weak tendency for words that are highly specific to also largely express highly specific senses. If a word's use is highly specific to a stratum, this does not mean that the sense expressed by the word is also highly specific to the stratum compared to the senses expressed when the word is used in other strata. Unfortunately, as there are only 13 strata, there were not enough data points to check if strata with a high fraction of words scoring a high T^* also tend to have a high fraction of words whose most frequent sense score a high $S^{\#}$ (since statistical power would be very low with such a small sample size), however the weak correlation at the word level between T^* and most frequent sense's $S^{\#}$ makes it doubtful that there would be such a tendency. The ways in which the specificities of senses deviate from the specificities of the words corresponding to each sense is explored in more detail in section 5.7.

Nevertheless, the patterns found at the word level regarding the overall distinctiveness of legislative vocabulary compared to departmental vocabulary and departmental/legislative relations between words' specificities and volatilities are also found at the sense level. Senses used in legislation consistently score a higher average $S^{\#}$ than departmental senses over time, with 2001 and 2002 being the exceptions in which legislative senses scored the second highest rather than highest average $S^{\#}$ (see Figure 5). However, the difference in the overall specificities of legislative and departmental vocabulary

Table 2 – Comparison of the relationships between a sense's Top W# and Top S# in legislation and departmental documents

Dependent Variable	Number of Observations	R^2
top W#	79561	0.198
Independent Variables	*Regression Coefficients*	*99% Confidence Intervals*
Intercept	0.1060	0.1049, 0.1071
top S#	0.2658	0.2609, 0.2707
leg	0.0345	0.0308, 0.0382
leg x *top S#*	-0.2276	-0.2403, -0.215

is not very large – using the standardised difference between means outlined in (Bonett 2008: 101)[18], one can see that the mean *top S#* of legislative senses is a modest 0.202 (99% CI: 0.155, 0.249) average standard deviations[19] greater than the mean *top S#* of departmental senses, with the mean *top S#* for legislative senses being 0.228 and the mean *top S#* for departmental senses being 0.194. Furthermore, constructing a linear model with top normalised sense volatility *top W#* as the dependent variable and *top S#, leg* and the interaction term *leg* x *top S** as the independent variables[20] also shows there is some tendency for senses with a high *top S#* to also have a high *top W#* compared to senses with a low *top S#*, though this tendency is much weaker than the tendency found with *top T** and *top V** (see Table 2). What's important here is that whatever small tendency there is for senses with a high *top S#* to also have a higher *top W#* compared to senses with a low *top S#* is negligible when it comes to senses used in legislation.

In summary, there is a broad division of vocabulary between legislation and departmental documents, with legislation having a more distinctive vocabulary than departmental documents. I have suggested that this is a result of legislative tasks having a greater amount of unique linguistic requirements than departmental tasks. Furthermore, unlike words highly specific to specific strata of departmental documentation, there is little tendency of words highly specific to legislation to also be volatile. In general, the portion of state vocabulary specialised for legislative tasks is more stable – i.e. subject to less change – than the portion of state vocabulary specialised for departmental tasks. I have suggested

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[18] I again focus on effect sizes and their confidence intervals rather than statistical significance because of the large sample size (*n* = 79561).
[19] Averaged over the standard deviations of the distributions of $S^#$ scores of both legislation and departmental categories.
[20] Where senses' top $W^#$ and $S^#$ scores were isolated using the same procedure used to isolate words top $V*$ and $T*$ scores.

that this is because words that are highly specific to particular departmental strata tend to relate to temporary tasks, whereas highly specific legislative vocabulary tend to relate to tasks that are always required to produce legislation, e.g. subsection indexing. Though there is only a weak correlation between the specificities of words and the specificities words' senses, both these differences between legislative and departmental vocabulary are repeated at the sense level. Thus the senses expressed in legislation are consistently more specific than the senses expressed in departmental documents, and while there is a moderate tendency for senses highly specific to departmental strata to also be volatile, this tendency is negligible for senses used in legislation.

5.7 Diffusion and Sense Generation

The above sketch of the 13 strata's division of vocabulary gives an impression of the environment into which the target vocabulary of crisis neoliberalism diffuses. This section utilises word sense induction to understand the sense generation that results from the organisational choices that mediate the diffusion of the target vocabulary. A convenient entry point into this discussion is to simply consider changes in the relative frequencies over time of each word in the target vocabulary across all strata. The plots on the left of Figure 6 shows these changes in relative frequencies – each point in each plot represents the relative frequency of a word in a year. Generalised additive models (represented by the blue line) were fitted to the data points to provide a clearer picture of the overall trends within each word's changes in relative frequency. The dashed lines represent 95% confidence intervals. 'Resilience', 'resilient' and 'sustainable' have similar trends in change in relative frequency, displaying two waves of growth, with the first wave tending to happen between 2000 and 2010, and the second wave tending to happen between 2015 and 2020 – besides 'resilient' whose second wave appears to not have peaked before 2020. In contrast 'sustainability' and 'wellbeing' have much less distinct waves of growth – it is better to describe them as having a general upwards trend between 2000 and 2020. Given Joseph and McGregor's arguments about the spread of crisis neoliberalism, it is plain that the increases in the target vocabulary's relative frequencies reflect the target vocabulary's diffusion into the state's text systems.

Since a vocabulary's diffusion happens through people choosing, either as individuals or as members of an organisation, to adopt and use the vocabulary's elements, which in turn entails choosing particular senses to express through the use of the vocabulary's elements (i.e. sense generation), one ought to be able to decompose the changes in the vocabulary's elements' relative frequencies into changes in the relative frequencies of the various senses in which the vocabulary's elements are used. To do this with the target vocabulary I used word sense induction to induce 9 senses for each of the target vocabulary's words, deviating from Lucy and Bamman's automated procedure for choosing a k between 2 and 10
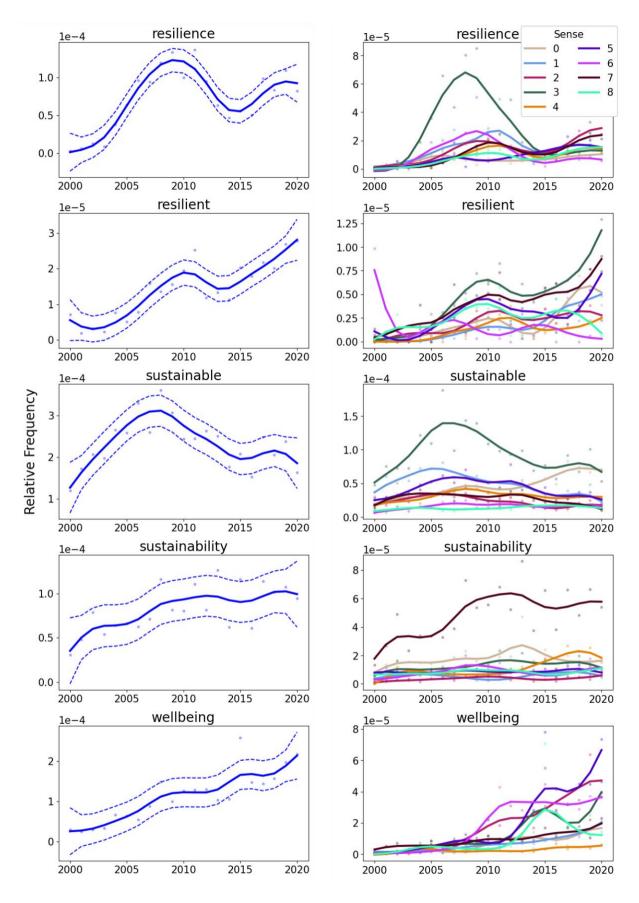
Figure 6 – Relative frequencies of target vocabulary and target vocabulary senses over time: The plots on the left visualise the changes in the relative frequency of the target vocabulary over time. The plots on the right visualise the changes in the relative frequency of target vocabulary senses over time.

according to minimum residual sum of squares. This is because it was found (by reading the sentences clustered into each of the senses) the senses induced for the target vocabulary using minimum residual sum of squares produced senses that would be more useful as multiple senses – in effect 'merging' senses that ought to be considered separate. Thus, a k of 9 was chosen to minimise the problem of merged senses. Of course, this likely leads to the opposite problem of the production of multiple senses that would be more useful as a single sense. However, since the point of analysing the senses of the target vocabulary is to understand its diffusion in as much detail as possible, it was important to induce senses in a manner that captured fine-grained differences between how elements of the target vocabulary were used, meaning avoiding the problem of merged senses was more important than avoiding the problem of separated senses. Values of k beyond 9 were not used to avoid inflating the specificity and volatility scores of each induced sense to the extent that comparing them to the scores of words beyond the target vocabulary would not be possible, therefore making it impossible to assess the place of the target vocabulary's senses within the state's overall division of vocabulary. Nevertheless, for an overall picture of the senses of the state's division of vocabulary I stick with the minimum residual sum of squares procedure for choosing k, since in this situation there is no reason to prioritise avoiding merged senses over avoiding separated senses.

The plots on the right of Figure 6 visualise the relative frequencies of each of the senses that compose the overall relative frequencies of each of the target vocabulary's words. Again, generalised additive models were fitted to provide a clear picture of the overall trends in changes in each sense's relative frequencies. Each coloured line represents the relative frequencies over time of a particular sense, where each sense is indexed from 0-8. This provides a straightforward way of understanding what kinds of word uses are behind changes in a word's overall changes in use frequency. Thus, one can see that much of the first wave in the increase in the relative frequency of 'resilience' is a result of an increase of the sense *resilience 3*.

To understand the kinds of word uses captured by induced senses and the contribution these uses make to the overall diffusion of the target vocabulary, it is necessary to understand the contents of the expressions matched to the induced senses. In what follows I qualitatively consider the contents of induced sense clusters in relation to the most noticeable features of the relative frequency trends shown in Figure 6. A problem with understanding the contents of sense clusters is that each cluster might consist of thousands of expressions, making reliably gaining an overall impression of the contents of sense clusters both labour intensive and difficult. To mitigate this problem, I follow the approach to sense cluster interpretation found in (Montariol, Martinc, and Pivovarova 2021: 4646), in which the *key terms* of each sense cluster – those terms that are most relevant/unique to a cluster – are retrieved. These key terms give an overview of the unique word uses captured by the induced sense. Key terms are retrieved by measuring the term frequency-inverse document frequency (TF-IDF) of each word in the expressions composing each sense cluster, where the TF-IDF of a term in a cluster is:

$$TFIDF_{cluster}(term) = (1 + \log freq_{cluster}(term)) \log \frac{N}{d(term)}$$

Here, $freq_{cluster}$(*term*) is the frequency of the term in a particular cluster, *N* is the total number of sense clusters and *d*(*term*) is the number of clusters the term appears in. The intuition behind TF-IDF is much the same as the intuition behind type specificity. Both aim to capture how unique to some text a term is, hence Lucy and Bamman test TF-IDF as a potential measure for how unique a term is to a subreddit (Lucy and Bamman 2021: 541). Once the TF-IDF of each term in a cluster is found, those terms which have the highest TF-IDF are taken to be the key terms of the cluster. I take the 10 words and bigrams of a cluster with the highest TF-IDF to be the cluster's key terms. Stopwords and words that appear in more than 80% of each word's sense clusters were excluded from TF-IDF calculations. One complication was that there were documents that shared very similar, but not identical, expressions containing the target vocabulary which were all matched to the same induced sense. Terms from these expressions scored the highest TF-IDF for the sense cluster despite them forming a small minority of the expressions of the sense cluster, meaning as key terms they give a misleading picture of the uses captured by the sense cluster. These documents were also excluded from TF-IDF calculations.

I use these key terms to ensure what is concluded from manual inspection of sense clusters represents the main word uses captured by clusters and is not dependent on cherry picking cluster expressions. Though Montariol et al. use cluster key terms to avoid manual inspection of cluster expressions entirely, there is a lot of useful information about the word uses captured by induced senses that can only be gained through reading sense cluster expressions. So, I use key terms as a guide for manual inspection rather than as a replacement. A final thing to note is I mainly consider those senses of a word which contribute the most to the word's increases in relative frequencies, i.e. only on those senses which have the highest relative frequencies during the waves/trends of growth in the use of the senses' word.

Resilience

Sense	Key terms
2	security resilience, preparedness resilience, emergency preparedness, resistance resilience, resilience response, response april, stability resilience, health emergency, readiness resilience, flood resistance
3	local resilience, resilience forums, resilience forum, national resilience, london resilience, regional resilience, category responders, uk resilience, resilience extranet, cabinet office
7	flood resilience, climate resilience, financial resilience, network resilience, cyber resilience, sector resilience, business resilience, infrastructure resilience, director general, energy resilience

The most noticeable aspect of the growth in the use of 'resilience' is that it's first wave of growth is largely the result of the growth of the sense *resilience 3*, which is composed of occurrences in expressions about regional resilience, in which resilience is talked about in relation to some region/area, e.g.:

- 'The Government News Network GNN made a major contribution to improving regional resilience by establishing Regional Media Emergency Forums [...]' (Cabinet Office 2004: 7)
- 'The London Resilience Team includes secondees drawn from the organisations represented at the London Regional Resilience Forum [...]' (London Resilience Team 2005: Section 2, 15)
- '[...] the Regulations provides that general Category 1 Responders which have functions which are exercisable in a particular local resilience area in England or Wales must co-operate with each other in connection with the performance of their duties under section 21 of the CCA [...] (Civil Contingencies Secretariat et al. 2008: 10)

Along with *resilience 3* having a much higher average yearly $S^{\#}$ score in Cabinet Office documents (0.22) than documents of other strata (-0.015), that the first wave of growth in the use of 'resilience' is largely driven by an increase in the use of *resilience 3* corroborates Joseph and McGregor's observation that the Cabinet Office played a central role in the state's adoption of *resilience* (Joseph and McGregor 2020:51) as a conceptual framework for implementing policies designed to manage how various services respond to emergencies (e.g. terror attacks, natural disasters). Within this framework, regional resilience is a way of talking about how services are to be coordinated in a way that enables them to respond to emergencies as effectively as possible – some area is resilient if their responder services are arranged in a particular way, not resilient if not. The optimal manner of coordinating services is set out in various pieces of legislation and Cabinet Office documents, especially the *2004 Civil Contingencies Act*, meaning occurrences of *resilience 3* have a fairly precise definition. Thus, regional resilience is defined in terms of certain organisations, whose establishment/constitution is required/defined by the *Civil Contingencies Act 2004*, e.g. Local Resilience Forums, meeting the standards set out by the *Contingencies Act* and other Cabinet Office documents.

In contrast the second wave of growth (after 2015) in the use of 'resilience' is not dominated by an increase in the use of a particular sense compared to the first wave, and those senses which contribute the most to the second wave of growth do not correspond to a single definition of 'resilience' to the same extent as *resilience 3*. Thus, the two senses which contribute the most to the increase in use of 'resilience' after 2015 are *resilience 2* and *resilience 7*, which correspond to uses of 'resilience' as a general noun/noun phrase (e.g. 'Operational analytical resilience is low' (Cleveland Police 2003: 25)) and uses of 'resilience' as part of a list or conjunction (e.g. 'Through our responsibilities for domestic

security and resilience, policing, drugs, race equality and active communities, our criminal justice system and our immigration and asylum policy, we are in a unique position to [...]' (Home Office 2004: 8)). Though senses of resilience corresponding to more specific notions of resilience do contribute to the second wave of the growth – *resilience 7*, which makes the 3rd greatest contribution to the second wave of growth, corresponds to psychological resilience/resilience as a personal trait (e.g. 'Importantly, their experiences during the teenage years combine to shape their character, their personal attributes, and their level of resilience [...]' (Treasury 2007: 17)) – that *resilience 0* and *resilience 1* contribute the most to the second wave suggests the second wave is largely the result of uses of 'resilience' as a generic noun without a particularly specific, specialised meaning.

Resilient

Sense	Key terms
3	secure resilient, sustainable resilient, cohesive active, national security, resilient extremism, active resilient, safe resilient, communities cohesive, dso, robust resilient
6	resilient layer, unit supported, fixed, bandwidth, layer resilient, supported floor, floating layer, wall, timber, floor coverings,
7	Resilient telecommunications, water act, resilient supply, planning, waterways obligations, support management, supply support, obligations water, management inland, maintain water

Distinctive about the relative frequencies over time of senses of 'resilient' is *resilient 6*, which starts off as contributing somewhat to the overall relative frequency of 'resilient' but ends up generally contributing the least after 2009. Its initial peak in 2000 is potentially misleading – one would need data from the 1990s to see if *resilient 4*'s peak in 2000 is a one off or part of a longer, older trend. Nevertheless, one can see there is a general decline in the use of *resilient 6* compared to other senses between 2007 – 2020. *Resilient 6* consists of uses of 'resilient' that relate to engineering, construction or other fields that are rooted in natural science:

- 'Complaints appear to be growing from the occupiers of flats suffering increased levels of impact noise transmission from the flat above due to the laying of laminate wood floor finishes as a substitute for carpet or other resilient floor coverings [...]' (DEFRA 2003: 12)
- 'The turbine blades for the Jumo 004 were manufactured from a steel-based allow containing some nickel and chromium, though the material used was insufficiently resilient to withstand

the very high temperatures and high tensile stresses encountered in that part of the engine [...]' (RAF 2001: 56)

- '[...] edge switches shall be stacked using specific and dedicated stacking ports to enable high speed communication between each switch in the stack as a part of a dedicated resilient architecture [...]' (DE 2020: 124)

As *resilient 6* has declined, senses similar to the generic *resilience 2* and *resilience 7* have increased in use. So, the senses that have contributed the most to both waves of the growth of 'resilient' are *resilient 3* and *resilient 7*. *Resilient 3* contains expressions that are judgments of how resilient something is, e.g. 'Morale was reported to be surprisingly resilient but officers reflected anxiety about the future' (Ministry of Defence Police Committee 2011: 4), 'Domestic demand remained the most resilient sector' (FCO 2012: 23), 'After a decade of sound macroeconomic policy and the promotion of flexible and open product, labour and capital markets, there is clear evidence that the UK economy is more resilient than in the past' (Treasury 2008: 149). *Resilient 7* contains expressions using 'resilient' as a general adjective, e.g. 'In the UK, resilient house prices and the general strength of consumer spending acted as a brake on similar rate reductions' (Treasury 2003: 17). Like *resilience 0* and *resilience 1*, *resilient 2* and *resilient 3* do not relate to occurrences that relate to an explicit, specific/precise definition of 'resilience'/'resilient' like *resilience 3*.

Sustainable

Sense	Key terms
0	fair sustainable, strong sustainable, affordable sustainable, sustainable structures, sustainable pay, efficient sustainable, new fair, sustainable bands, staff fair, effective sustainable
3	financially sustainable, government sustainable, dcms sustainable, environmentally sustainable, fco sustainable, un sustainable, mod sustainable, sustainable indicators, division, securing future

The use of 'sustainable' resembles the use of 'resilience' in that it is led by a single sense – *sustainable 3* – that relates to explicitly specified characterisations of 'sustainable'. *Sustainable 3* consists of expressions in which 'sustainable' is used as a part of names of documentation/guidelines/programmes/objectives etc.:

- '[...] the Sustainable Communities Plan, published on 5 February 2003, said that consideration was being given to extending the Corporation's power to fund bodies other than housing associations [...] (ODPM 2003: 23)
- 'Prior to commencement of development, a Sustainability Statement shall be submitted to, and approved in writing by the local planning authority, including measures to be incorporated into the development reflection the guidance within the Council's Building for Tomorrow Today Sustainable Design and Construction SPD' (Nowak 2015)
- 'The national accounts measure of net debt is one of the key fiscal aggregates and is the basis for the Government's sustainable investment rule' (Treasury 2003: 46)

That the use of 'sustainable' as part of names for various kinds of documentation/rules/procedures is the main reason for both waves of growth in the use of 'sustainable' suggests both waves of growth involve a proliferation in efforts to give explicit definitions of 'sustainable', since much of the purpose of such documents/rules/procedures is to set out standards people can use to determine when something is 'sustainable' or not. For example, *Sustainable Communities: Building for the Future (*ODPM 2003) sets out a range of targets/standards (for the purpose of urban regeneration) for home construction, use of land, environmental conservation, and so on – a community is sustainable if these standards are met. Though these targets/standards are not fully specified in the Plan, further specification can be found in local authority documents which also have 'sustainable' in the title, e.g. Sustainable Community Strategies, which detail how local authorities and local partnerships intend to satisfy the targets outlined in the Plan, which of course requires further specification of what those targets require. In short, documents that include 'sustainable' in the title/use 'sustainable' to refer to set procedures tend to form intertextual networks which as a collective associate 'sustainable' with a range of standards/targets precise enough to be used in the implementation of policy (in the case of Sustainable Communities documents these standards/targets are used in housing policy).

Another similarity in the change over time in the use of 'sustainable' to the change in the use of 'resilience' is that more generic senses play a greater role in the growth of 'sustainable' after 2015, thus *sustainable 9*, which contains sentences in which 'sustainable' is used in a list or conjunction (e.g. 'Rather, achieving the goals of food and energy security requires the international community to work together to harness the power and the innovation of the global system, underpinned by a renewed commitment to openness and fairness, to deliver more stable, secure and sustainable commodity markets' (Treasury 2008: 6)), becomes the second greatest contributor to the use of 'sustainable' from 2015.

Sustainability

Sense	Key terms
0	sustainability appraisal, approach sustainability, oda, aspects sustainability, sustainability reporting, issues sustainability, focus sustainability, principles sustainability, ensuring sustainability, understanding sustainability
4	fiscal sustainability, session hc, treasury minutes, report financial, term fiscal, economic sustainability, pac report, hc pac, wales session, obr fiscal
7	sustainability appraisal, sustainability reporting, sustainability, transformation, report sustainability, ensure sustainability, fco sustainability, levy sustainability, sustainability fund, aggregates levy , transport

The growth of 'sustainability' is similar to the growth of 'sustainable' in that the sense that contributes the most to growth – *sustainability 7* – largely involves 'sustainability' as part of the names of particular documents/procedures/rules – e.g. 'The UK Government has announced its intention to move to mandatory sustainability criteria and the EU Renewable Energy Directive has proposed some sustainability requirements' (Renewable Fuels Agency 2008: 66), thus *sustainability 7*'s key terms largely capture bigrams related to documents/procedures/rules such as sustainability appraisals, sustainability and transformation partnerships (partnerships of local authorities and NHS organisations that plan NHS spending in England), the Aggregates Levy Sustainability Fund, FCO sustainability reports, and so on. This again suggests that the production of intertextual networks which collectively provide standards for explicitly defining 'sustainability' in various contexts is an important part of the overall use of 'sustainability'.

More generic uses are again a central part of the use of 'sustainability', with *sustainability 0*, which largely covers expressions in which 'sustainability' features as a generic noun (though there is some overlap with *sustainability 7* as shown by key terms 'sustainability appraisal' and 'sustainability reporting'), contributing the second most to overall use of 'sustainability' for most years. However, it's notable that from 2016 onwards the less generic *sustainability 4*, which largely relates to fiscal/economic sustainability, contributes the second most to overall use of 'sustainability'.

Wellbeing

The increase in the use of 'wellbeing' before 2005 is largely led by *wellbeing 7*, which covers uses of 'wellbeing' as a generic noun, e.g. 'Preservation and study of cultural heritage contributes to overall social wellbeing through understanding and appreciation of the past and its legacy' (EFTEC 2005: 1).

Sense	Key terms
2	employee health, good health, promote health, advice, improving health, safety wellbeing, confidence, physical activity, support health, health england
3	subjective wellbeing, measures wellbeing, personal wellbeing, life satisfaction, associated, ons, rating, culture sport, national wellbeing, slightly higher
5	wellbeing valuation, psychological wellbeing, previous survey, wellbeing index, difference comparison, wellbeing feasibility, feasibility pilot, difference cs, staff wellbeing, scale
6	wellbeing board, survey employees, work survey, wellbeing work, joint health, commissioning groups, wellbeing strategy, clinical commissioning, secretary health, cabinet secretary
7	economic wellbeing, social wellbeing, children wellbeing, people wellbeing, economic social, personal wellbeing, different areas, financial wellbeing, tell economic, productivity tell
8	psychological wellbeing, wellbeing work, work feasibility, feasibility pilot, emotional wellbeing, telephone support, work psychological, evaluation group, group work, evaluation telephone

The key terms of *wellbeing 7* list the typical adjectival phrases that result from this generic use of 'wellbeing'. After 2005 more specialised senses contributed the most to the increase in the use of 'wellbeing', with *wellbeing 6* and *wellbeing 2* contributing the most to the increase in 'wellbeing' between 2008 and 2014. *Wellbeing 6* is similar to *resilience 3*, *sustainable 3* and *sustainability 7* in that it involves expressions in which 'wellbeing' form part of the name of documentation/procedures/standards/organisations, thus *wellbeing 6*'s key terms relate to things like health and wellbeing strategies, health and wellbeing boards (local authority committees responsible for producing strategy relating to 'health and wellbeing'), joint health and wellbeing strategies, and so on, e.g.:

- 'There was strong support for exploring the scope for self-assessment following the consultation on the Independence, Wellbeing and Choice social care green paper, and in the White Paper Our Health, Our Care, Our Say' (Henwood & Hudson 2007: 75)
- 'If a health and wellbeing board has specific objections, the NHS Commissioning Board will have to satisfy itself that any such objections have been properly considered' (Behan 2011).
- 'Having health and wellbeing boards at a local level in local authorities also mitigates the possible risk of potentially diverse clinical commissioning groups not working together on the strategic needs of a local population' (*Health and Social Care Bill 2011 Impact Assessments 2011*)

Such documentation/procedures/organisations in general relate to 'health and wellbeing' in particular, and therefore represent an inter-organisational/intertextual effort to provide/implement an explicit definition of wellbeing in relation to health as understood from a medical perspective – hence the organisations mentioned in *wellbeing 6*'s key terms are connected to the NHS. Health and wellbeing boards, for example, require a representative from clinical commissioning groups (also mentioned in *wellbeing 6*'s key terms), which are responsible for the delivery of healthcare in England. *Wellbeing 2* is related to *wellbeing 6* in that it involves expressions about 'health and wellbeing', but these expressions tend to be about the health and wellbeing of particular subjects rather than 'health and wellbeing' documentation/procedures/organisations. Thus, the key terms of *wellbeing 2* relate to mentions of 'employee health and wellbeing', 'safety and wellbeing', promoting/improving health and wellbeing and so on.

From 2014 onwards *wellbeing 5* contributes the most to the growth of 'wellbeing', which covers expressions in which 'wellbeing' is discussed as something to be improved and as an object of research, e.g. as something measurable (and therefore improvable), as something that affects other measurable and desired outcomes, as a concept which needs definition, and so on:

- 'It assesses their potential impact for policy and provides a series of proposals as how to incorporate wellbeing evidence into policy appraisal' (Treasury 2008: Abstract)
- 'Estimate monetary values for those wellbeing impacts using the Wellbeing Valuation approach' (Fujiwara et al. 2014: 6)
- 'The mental health charity Mind launched its Workplace Wellbeing Index earlier this year' (DHSC 2016: 56)

The focus on 'wellbeing' as an object of research is reflected in *wellbeing 5*'s key terms – e.g. 'wellbeing valuation' is the name of a method for pricing the impact of various things upon people's wellbeing, e.g. the price of the decrease in wellbeing that results from flooding, 'previous survey', 'wellbeing index', 'difference comparison', 'difference cs', 'scale' all relate to statistical analyses of surveys designed to gather data on wellbeing. Alongside the growth in *wellbeing 5* one sees the growth of *wellbeing 3* and *wellbeing 8* (though *wellbeing 8* does not continue to make a large contribution to the overall growth of 'wellbeing' from 2018 unlike *wellbeing 5* and *3*). Both these senses again relate to specialised rather than generic uses of 'wellbeing'. *Wellbeing 3* covers expressions about subjective wellbeing – wellbeing as someone's own evaluation of the quality of various aspects of their life – and *wellbeing 8* covers expressions about wellbeing and mental health. It is notable that there is some crossover between *wellbeing 5* and *wellbeing 3 and 8*. Wellbeing as an object of research also features as a theme in both *wellbeing 3* and *8*. Thus, the key terms of *wellbeing 3* include bigrams like 'measures wellbeing', 'associated' (in the context of the expressions of *wellbeing 3* this largely relates to mentions of statistical association), 'slightly higher' (relating to surveys showing certain categories of people rate
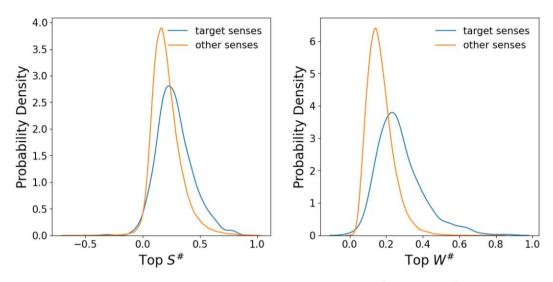
Figure 7 – Comparison of target senses' and other senses' Top S# and Top W# scores: Kernel density estimations of the probability distributions of *top S#* and *top W#* of target vocabulary senses and other senses. Target senses tend to have higher *top S#* and *top W#* than other senses.

their wellbeing as higher than other categories) and so on. Investigating subjective wellbeing as something quantifiable through statistical analyses of surveys underlies many mentions of subjective wellbeing. Similarly, the key terms of *wellbeing 8* include bigrams like 'work feasibility', 'feasibility pilot', 'evaluation group', which relate to 'work feasibility' studies which are designed to assess the effectiveness of various kinds of programmes (e.g. the *Evaluation of the Group Work Psychological Wellbeing and Work Feasibility Pilot* is a study which assesses the success/failure of a programme designed to 'improve employment and wellbeing outcomes for JSA [Job Seekers Allowance] claimants' (NatCen Social Research 2015: 15)). Investigation of the effect of the programmes being tested on participants' mental wellbeing is a central part of these feasibility studies. So, discussion of wellbeing as something to be improved and research into how to measure/improve wellbeing, in particular discussion of and research into subjective and mental wellbeing, contributes the most to the general increase in the use of 'wellbeing' after 2014.

5.7 The Distribution of Senses

I now turn to understanding the place of the senses that result from the diffusion of the target vocabulary within the state's overall division of vocabulary. This involves (a) understanding how the overall specificity and volatility of target senses compares to the specificity and volatility of the senses of the rest of the state's vocabulary, and (b) understanding how individual senses are distributed across strata. Using standardised difference between means one can see that there is a moderate difference between the mean *top S#* of target senses and other senses, with target senses' mean *top S#* being 0.496 average standard deviations (99% CI: 0.375, 0.617) above other senses' mean *top S#*, with target senses having a mean *top S#* of 0.279 and other senses having a mean *top S#* of 0.208. The difference between

Table 3 – Distribution of target vocabulary

	resilience	resilient	sustainable	sustainability	wellbeing
DCMS	**-14.92**	-2.49	-1.41	**17.74****	-0.54
DE	**-6.08**	-2.15	**-21.65**	-1.24	**33.07***
DEFRA	-0.08	2.2	**26.95***	**-3.63**	**-29.99**
DHSC	**-16.05**	**-8.78**	**-40.03**	**-7.49**	**71.68****
DWP	**-18.61**	**-6.32**	**-9.12**	**-6.33**	**34.68***
FCO	**-11.88**	**4.42***	**33.96***	**-5.1**	**-28.09**
MOD	**7.81***	**3.87***	**-6.25**	**5.07***	**-5.06**
MOH	**-22.36**	-1.88	**36.46****	**5.93***	**-29.59**
MOJ	**-6.45**	-2.8	-1.4	**-7.37**	**14.73***
cabinet	**86.99****	**13.32****	**-34.18**	**-15.16**	**-23.67**
home	**13.56***	-1.6	**-19.32**	1.17	**11.45***
leg	**-4.93**	**-3.67**	-4.6	-2.58	**13.41***
treasury	**-10.56**	1.14	**14.99***	**14.15***	**-22.16**

the volatilities of target senses and other senses is greater. The mean *top $W^\#$* of target senses is 1.05 average standard deviations (99% CI: 0.903, 1.2) greater than the mean *top $W^\#$* of other senses, with the mean *top $W^\#$* for target senses being 0.276 and the mean *top $W^\#$* for other senses being 0.168. Figure 7 visualises these differences using the probability distributions of the *top $S^\#/W^\#$* of target senses and other senses estimated using kernel density estimation. Target senses are more specific to particular strata than other senses, suggesting they constitute the more specialised portion of the state's vocabulary. Their greater volatility means the words of the target vocabulary are undergoing a greater degree of change in how they're used than the rest of the state's vocabulary.

An understanding of the specificities of individual senses underlying the overall greater distinctiveness of target vocabulary senses, and the relation between the specificities of target vocabulary words and the specificities of target vocabulary senses can be gained by analysing the frequency distribution across strata of target vocabulary senses and words. I use chi-squared tests of independence to evaluate whether a word/sense is highly specific to a stratum or not. Though there is a statistical test of independence formulated in terms of mutual information (Pethel and Hahs 2014) which can therefore be performed upon specificity scores *T* and *S*, it is not currently implemented in frequently used software libraries. Analysing frequency distributions using the chi-squared test therefore provides an easy-to-use

alternative for understanding the extents to which words/senses are used in different strata. Table 3 displays the frequency counts of each word of the target vocabulary in each stratum and the adjusted standardised residuals[21] obtained from performing the chi-squared test. The overall *p*-value of the test was small enough that it was reported as 0 by the software used[22]. Each cell value is the adjusted standardised residual of the word in a stratum. Residuals in bold are significant at a 99% significance level. Residuals' *p*-values were adjusted using the Benjamini-Hochberg procedure to control family-wise error rate. Residuals which are both significant and indicate an observed frequency higher than an expected frequency (i.e. have a positive value) are marked with an asterisk. Such residuals indicate that occurrences of a word are much more highly concentrated within a stratum compared to other strata. The highest residual scored by a word is marked with two asterisks. A word may be considered as highly specific to a stratum if its residual is both greater than 0 and significant, not particularly specific or generic if not significant and highly generic if both significant and smaller than 0. Most noticeable is how concentrated within a select few strata occurrences of the target vocabulary tend to be. So, for most strata the frequency of 'resilience' is significantly lower than what one would expect if occurrences of 'resilience' were evenly distributed. The frequency of 'resilience' was significantly higher than expected frequencies in only three strata, the MOD, MOH and the Cabinet Office, with the Cabinet Office's residual dwarfing those of the MOD and the MOH. Occurrences of 'resilience' are highly concentrated within the Cabinet Office. A similar pattern is seen with the rest of the target vocabulary, with occurrences of 'resilient' also being significantly concentrated within the Cabinet Office, occurrences of 'sustainable' being highly concentrated in DEFRA, FCO and the MOH, occurrences of 'sustainability' being highly concentrated within the DCMS and the Treasury and occurrences of 'wellbeing' being highly concentrated primarily within the DHSC. This pattern is less pronounced with 'resilient', which does not have as many observed frequencies significantly lower than expected frequencies as other strata.

Table 4 displays the adjusted residuals gained from running 5 chi-square tests on the frequency distribution of the senses of each word of the target vocabulary across all departmental strata. Unfortunately, the expected values for senses in legislation were often under 5, the minimum threshold for running a valid chi-square test, so legislation was excluded. All tests were significant at a 99% significance level, with all 5 *p*-values being less than 1×10^{-50}. Again, residuals' Benjamini-Hochberg adjusted *p*-values were used to isolate those residuals which indicate strata in which senses are highly concentrated at a 99% significance level. Senses also tend to be concentrated within a narrow selection

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[21] An adjusted standardised residual is essentially a measure of how much a word's observed frequency deviates from the frequency one would expect assuming the null hypothesis that there is no relation between use of the target vocabulary and the categories the target vocabulary is used within, i.e. that the target vocabulary is evenly distributed across categories. The higher/lower the residual, the more it deviates from the expected frequency, the more/less specific its word is to a category. If there is no difference between the observed and expected frequency of a word, the word's standardised residual is 0.

[22] The python library SciPy was used.

of strata, though the smaller number of significant residuals indicating observed frequencies less than expected frequencies suggests this tendency is not as severe as in the frequency distribution of target vocabulary words.

The final thing to note is that the strata in which occurrences of a particular sense are highly concentrated are not necessarily the same as the strata in which occurrences of the word corresponding to the sense are highly concentrated. For example, though the use of 'resilience' is not at all typical of the DE (hence it's very small adjusted residual), where 'resilience' is used in the DE the sense *resilience 5* is highly specific to the DE. *Resilience 5* is largely constituted by expressions about the psychological/personal resilience of children[23], e.g.:

- 'The Children's Fund is a complex response to the building of resilience among children and young people which focuses on prevention and is embedded within broader national strategic developments in the reconfiguring of services' (University of Birmingham NECF 2004: i)
- 'As explained above, schools can build pupils' resilience to radicalisation by providing a safe environment for debating controversial issues and helping them to understand how they can influence and participate in decision-making' (DE 2015: 5)
- 'Equally they emphasised the way in which supporting the development of personal and social skills and emotional resilience can help to overcome some of the barriers to learning for children with additional needs' (White et al. 2017: 59)

Though the frequency distribution of target vocabulary words can give a rough, overall picture of the strata which are the most important in the diffusion of such words, this underplays the importance target vocabulary words have in strata where the occurrence of such words is not typical. Analysing the frequency distribution of target vocabulary senses in addition to target vocabulary words gives a more complete picture of how the diffusion of the target vocabulary is spread across strata.

Table 4 – Distribution of target vocabulary senses

resilience	0	1	2	3	4	5	6	7	8
DCMS	2.5	-2.58	**10.99****	**-8.65**	**6.17***	1.69	**-5.97**	0.48	-0.69
DE	**-3.11**	**-4.04**	**-3.19**	**-8.47**	**-3.72**	**36.94****	**-5.01**	-1.78	-0.37
DEFRA	-2.45	**4.31****	-0.17	**-8.52**	**7.04***	**-8.51**	**-3.27**	**9.53****	**5.07***
DHSC	0.5	1.52	1.85	**-4.33**	-2.38	**7.86***	-1.68	-1.55	0.47
DWP	1.09	-0.72	-1.24	**-4.48**	1.04	**8.47***	**-2.73**	**2.81**	-1.11

[23] *Resilience 5* TF-IDF key terms: pupils, school, confidence resilience, self esteem, emotional resilience, mental health, motivation, factors, attainment, children young

	0	1	2	3	4	5	6	7	8
FCO	-0.13	-1.51	**5.65***	**-6.88**	**3.18***	-2.38	**-4.15**	2.56	**7.22****
MOD	1.99	0.05	**3.07***	-1.97	-1.48	2.4	**-3.42**	-0.31	0.84
MOH	-0.42	1.68	0.29	0.38	-1.31	**-2.89**	1.42	-0.9	1.02
MOJ	**11.73****	0.22	0.26	-4.1	-2.44	**5.45***	-2.9	-2.38	-1.68
cabinet	**-9.75**	0.07	-11.2	**27.67****	**-7.72**	**-15.11**	**15.89****	**-8.35**	-7.35
home	**11.06***	-1.47	0.36	-2.39	**-3.08**	**4.82***	-2.44	**-5.12**	2.19
treasury	**2.71**	-0.97	**4.36***	-10.15	**8.28****	-2.86	**-5.23**	**9.22***	-0.51

resilient	0	1	2	3	4	5	6	7	8
DCMS	-0.21	**2.69***	**2.92***	-0.1	-2.55	0.56	-2.41	-1.17	0.13
DE	**5.86****	-1.46	-1.71	1.01	-1.11	-0.99	-0.86	-2.52	1.76
DEFRA	**-3.84**	-0.64	0.47	0.77	2.09	**2.84****	-0.83	-0.82	-0.26
DHSC	0.11	1.62	-2.09	1.2	-1.71	-0.44	0.21	2.31	-2.41
DWP	-0.41	-0.82	-1.03	0.91	-0.92	0.72	-1.16	-1.03	**2.97****
FCO	2.04	**3.13****	-0.39	2.55	**5.68****	-2.25	-3.61	-4.15	-1.21
MOD	**4.1***	-1.37	-0.95	-0.93	-2.05	-0.91	0.42	-0.19	1.84
MOH	-0.91	-2.43	-1.9	-1.32	0.74	-1.3	**12.92****	-1.36	-1.89
MOJ	1.27	-0.63	-0.84	0.45	1.43	-1.61	-0.61	-0.7	1.57
cabinet	-1.04	-1.32	-0.01	-2.02	-1.34	0.83	-1.69	**5.41****	-0.4
home	1.24	-0.3	0.67	-0.37	-1.04	0.41	-1.28	0.56	-0.3
treasury	**-2.74**	1.06	**2.96****	-0.41	-1.43	0.68	-3.56	1.15	1.37

sustainable	0	1	2	3	4	5	6	7	8
DCMS	-0.78	-0.61	**-4.69**	0.78	**10.38****	-1.99	1.06	**-3.74**	-1.16
DE	**5.87***	**-4.11**	-2.25	0.39	0.86	-1.69	-0.84	-0.06	1.67
DEFRA	**-11.88**	**10.43****	1.75	**4.98***	-6.05	-0.45	**4.43****	0.43	**-7.32**
DHSC	**2.83***	**-7.13**	-3.67	**3.55***	**6.02***	-1.67	0.33	**-5.97**	**6.27***
DWP	**-4.18**	**-2.92**	0.99	**6.36***	-0.09	-0.19	-1.52	-1.7	1.15
FCO	0.09	**5.3***	0.67	1.8	-3.46	**3.59***	**-6.38**	-1.07	**-7.09**
MOD	**-3.88**	-2.1	-0.28	**9.59****	-1.96	-2.93	-1.85	-0.99	0.12
MOH	**-15.81**	**7.14***	0.62	-5.63	-5.97	**5.77****	2.8	**15.35****	1.43
MOJ	**46.44****	**-9.18**	**-6.94**	-8.86	-5.31	**-8.14**	**-4.73**	**-7.94**	2.44
cabinet	1.47	-0.04	-0.82	-2.05	1.71	0.52	-0.78	1.06	-0.76
home	1.66	**-4.1**	-0.35	0.1	3	0.49	1.46	**-3.98**	**3.36***

treasury	6.46	-9.08	8.62**	-6.97	5.73*	-0.74	1.8	-4.36	6.83**
sustainability	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
DCMS	**3.4**	-1.43	1.47	-2.13	-2.18	**-3.37**	**3.71***	-0.1	0.37
DE	0.23	0.93	-1.6	0.72	**2.98***	-0.84	**-2.6**	-1.63	2.36
DEFRA	0.27	**-2.84**	1.36	0.93	-7.1	-0.06	**5.11****	2.05	-1.04
DHSC	-1.91	**3.32***	1.01	**-2.66**	2.4	2.01	**-4.89**	1.18	0.28
DWP	-1.89	-1.13	-0.23	1.77	**3.5***	1.93	0.16	-1.48	-1.59
FCO	1.34	0.57	-0.24	**-3.12**	-1.3	-0.07	1.59	-1.29	**4.06****
MOD	-2.3	**-2.82**	-1.37	0.18	**-5.28**	**5.05***	**-3.39**	**3.91***	**2.99***
MOH	**3.2**	**-5.39**	-0.9	**3.96****	-8.6	-2.09	0.2	**4.31****	-0.87
MOJ	0	-0.56	-0.36	0.66	-1.79	-1.9	1.59	1.46	-0.59
cabinet	0.64	-0.53	-0.15	-1.02	-3.8	**6.62****	**3.79***	-2.1	-1.16
home	0.19	0.6	0.37	0.13	-2.15	-1.64	-1.89	**3.54***	-2.11
treasury	**-4.62**	**8.88****	-0.45	0.31	**20.9****	-2.83	-4.56	-7.99	-1.81
wellbeing	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
DCMS	**-5.41**	-1.89	**-5.18**	**19.25****	-3.05	**3.74***	**-7.48**	1	-3.47
DE	**-4.64**	-1.1	**-5.14**	**7.27***	**4.14***	1.43	**-6.95**	**5.27***	**3.26***
DEFRA	2.33	**-4.16**	-1.36	**9.78****	-0.99	0.07	**-5.19**	**3.6***	-4.06
DHSC	**10.06****	**2.64***	**9.65****	-13.34	-7.07	-10.05	**10.8****	-10.25	**4.95****
DWP	**3.04***	**-4.28**	2.12	-2.01	**-3.63**	0.2	1.52	-2.5	**2.75***
FCO	0.27	1.7	-1.95	**-3.24**	0.65	**5.11***	-0.37	-0.42	-1.75
MOD	-1.76	**2.78***	-2.16	**-3.95**	0.98	0.06	**4.54***	0.91	-1.01
MOH	**-3.08**	0.31	**2.88***	-2.01	0.37	-1.4	1.17	2	-1.06
MOJ	**-3.99**	**4.83****	-3.14	-4.04	**12.97****	2.55	-1.74	0.05	-0.19
cabinet	**-4.42**	-0.59	-1.28	0.1	1.32	**5.75****	-0.64	**2.98***	**-4.81**
home	-2.49	2.06	**-3.43**	**-3.77**	**5.34***	**3.64***	**-2.62**	**6.74****	-1.79
treasury	-0.04	-0.46	-1.01	-1.62	0.27	1.34	-0.06	2.51	-0.73

Chapter 6: The Sociolinguistic Structure of Governmentality – Division of Labour, Division of Vocabulary, Division of Linguistic Labour

With the two main parts of the thesis now complete, I turn to bringing the discussions of the two parts together. Following the discussions of Part 1, I use pragmatist perspectives to discuss Chapter 5's examination of the question: *how does the British state's 13 strata division of labour condition the vocabulary diffusion involved in its adoption of crisis neoliberalism?* The overall purpose of this discussion is to argue that the distribution of senses/division of vocabulary analysed in Chapter 5 reflects how the British state's exertion of governmental power predicated on *resilience*, *sustainability* and *wellbeing* is dependent upon how state workers exercise their agency as interlocutors – i.e. linguistic agency – to produce senses of *resilience*, *sustainability* and *wellbeing* that are relevant to the organisational contexts they work within. So, the sense generation inherent in the diffusion of the target vocabulary analysed in Chapter 5 is a crucial part of the process through which *resilience*, *sustainability* and *wellbeing* rationalities are deployed as practical technologies. I also argue that this sense generation is something that emerges from the interlocutor relations that constitute the technologies through which *resilience*, *sustainability* and *wellbeing* are operationalised. I make two points in relation to this. First, these interlocutor relations give rise to what Hilary Putnam calls the division of linguistic labour (Putnam 1975:144), in which the labour of specifying what exactly *resilience*, *sustainability* or *wellbeing* means given a particular organisational context is delegated to a narrow part of the state's division of labour. Second, this sense generation, and the division of linguistic labour underlying this sense generation, arises from the interlocutor relations that constitute the British state's technologies because linguistic agency is relevance maximising. That is, interlocutors constantly work towards interpreting words in a manner that's relevant to their immediate contexts, and thus assign/produce senses adapted to those contexts. I draw on relevance theory (Sperber & Wilson 1995) to argue this.

The overall significance of this chapter is that by drawing upon the pragmatist perspectives discussed in Part 1 and the variationist analysis of the diffusion of *resilience*, *sustainability* and *wellbeing* via BERT in Part 2, it fleshes out the Foucauldian approach to the Question of Necessity. Though Foucauldian work on governmentality is all about how the exercise of power is dependent on certain discourses of knowledge being put to use through elaborate systems of text and organisational relations, exactly how the most basic linguistic practices that characterise linguistic agency – speech acts, interpretation of statements/words, etc. – are involved in the utilisation of discourse for the exercise of power is generally left unanalysed. Through computational text analysis via BERT and pragmatist views on language, this chapter provides an account of the role one kind of basic act of linguistic agency – the interpretation of words – plays in the overall operationalisation of *resilience*, *sustainability* and *wellbeing* rationalities.

As the previous chapter's examination of the state's vocabulary is dense, I begin this chapter with a recapitulation of the previous chapter's analysis of the state vocabulary (6.1). I then discuss division of linguistic labour and sense generation (6.2). The distinction I made in section 5.7 in between 'generic' and 'specific' senses is an important element of the argument I make concerning sense generation and the division of linguistic labour, so I spend a section discussing it (6.3). I end this chapter with discussion of how relevance maximisation lies at the bottom of sense generation and division of linguistic labour, and what discussion of pragmatist perspectives, division of linguistic labour and relevance maximisation add to the Foucauldian approach to the Question of Necessity (6.4, 6.5).

6.1 Diffusion and the British State's Division of Vocabulary

The previous chapter's examination of the state's vocabulary had two main focuses – (a) understanding how the division of labour represented by the 13 strata conditions vocabulary usage in the organisations underlying the 13 strata, and (b) understanding the diffusion of the crisis neoliberal target vocabulary into the organisations underlying the 13 strata.

Regarding (a), I have used 'division of vocabulary' to talk about the pattern of vocabulary use that results from the state's division of labour. In my initial description of the division of vocabulary at the beginning of section 5.5, I focused on one aspect of it – how within each stratum there are words used in the documents of the stratum that are not found to the same extent in the documents of other strata. This is because the range of tasks assigned to each stratum by the state's division of labour each require unique word choices, e.g. that the task of the management of public libraries is assigned to organisations of the DCMS[24] means 'library' is not found in other strata to the same extent it is found in DCMS. This can be mapped out through the specificity scores of the words used in strata, as well as measures of the overall uniqueness of strata's vocabularies (obtained by averaging the specificity scores of the individual words used in a stratum in some way). Words used in a particular stratum to a greater extent than in other strata have high specificity scores in the stratum, words which are more or less used across many strata have middling scores and words which are rarely used in a stratum compared to others have low specificity scores in the stratum. Looking at the overall distinctiveness of strata's vocabularies show that legislative vocabulary is more distinctive than departmental vocabularies, meaning a greater proportion of legislative vocabulary is unique to legislation compared to the proportion of departmental vocabulary that is unique to departmental documents. This means there is a greater proportion of words used in legislation tailored to the unique tasks of legislation (e.g. words used for subsection indexing) than the proportion of words used in departmental strata tailored to unique departmental tasks.

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[24] i.e. the DCMS itself, organisations consulted by the DCMS, organisations answerable to the DCMS, etc.

One can extend one's understanding of the state's division of vocabulary by looking at the volatility of words alongside the specificity of words, as well as the volatility and specificity of the senses in which words are used. It was found that in departmental strata there is a moderate tendency for words with a high top yearly specificity to also have a high top yearly volatility. Words which have been highly specific to some selection of strata at some point within 2000-2020 have also been highly volatile, that is, concentrated within a narrow range of years between 2000-2020. This tendency is not found in legislation – words with a high top specificity are not more likely to have a high top volatility than words with a low top specificity. This suggests that in departmental strata, there is a tendency for the unique tasks that demand highly specific words to be short-term tasks, meaning the highly specific words they demand are only used intensively for short periods of time. The unique tasks of legislation, on the other hand, tend to be long-term or permanent, thus the words demanded by them appear consistently through time. The state's division of labour therefore affects not only the different extents to which particular organisations use particular words, but also how words are used over time. Thus, the division of vocabulary which results from the division of labour has a temporal aspect.

At the sense level these differences between legislative and departmental vocabularies are repeated. So, the senses expressed by the words used in legislation are on average more specific to legislation than the senses expressed by the words used in departmental documents are specific to departmental documents, and whatever small tendency is there for highly specific words to be more volatile than words of lower specificity is only present in departmental strata and not in legislation. The former point has much the same significance as the point that legislative vocabulary is more distinctive than departmental vocabulary – the greater average specificity of legislative senses is a result of the unique demands of legislative tasks. The second point suggests that, compared to legislative vocabulary, not only do the words which compose departmental vocabularies change more often, the way those words are used are also subject to more change. Thus, the *uses* of the words which compose a stratum's vocabulary, as well as the composition of a stratum's vocabulary, is more volatile in departmental strata than in legislation.

In summary two aspects of the state's division of vocabulary were examined. How words/senses are used to different extents across different strata, as measured using specificity scores, and the propensity for words/senses to change given their specificity or stratum, measured with volatility scores.

Regarding (b), I have examined the diffusion of the target vocabulary by looking at the sense generation involved when those working in the organisations underlying the 13 strata decide to use the target vocabulary, and by looking at the position of the target vocabulary within the state's overall division of vocabulary. The first focus involved isolating periods in which the use of target vocabulary words increased as a result of their diffusion into the state (i.e. isolating periods in which the relative frequency of target vocabulary words increased), and then identifying the senses expressed by target vocabulary

words during their periods of growth. As the decision to use a word is simultaneously a decision to express a particular sense, the identification of the senses expressed by a word choice gives a lot of information about the choices involved in the diffusion of the target vocabulary. Manual inspection of induced sense clusters aided by key term extraction through TF-IDF scoring was used to describe the unique word uses captured by induced senses. The second focus was on understanding the overall place within the state's division of vocabulary occupied by the target vocabulary as a result of diffusion. It was found that target vocabulary senses tend to be both more specific and more volatile than the senses of the rest of the state's vocabulary. Within the state's overall division of vocabulary, compared to other senses/words target vocabulary senses tend to be more unique to a select few strata, and the ways in which target vocabulary words are used (as indicated by the senses expressed by them) tend to be subject to more change. A more detailed picture of the range of strata in which the use of target vocabulary words/senses is particularly characteristic was given by examining the frequency distribution of target vocabulary words/senses across strata. Examination of the frequency distribution of target vocabulary words shows that the use of each word tends to be particularly characteristic of 1-3 strata, e.g. the use of 'resilience' is particularly characteristic of the Cabinet Office. Examination of the frequency distribution of target vocabulary senses shows a similar picture – the use of certain target vocabulary senses tends to be highly characteristic of 1-3 strata. As one would expect given the weak correlation between words' type and sense specificity scores, that a word is not characteristic of a stratum does not mean there will be no senses of the word that are characteristic of the stratum.

6.2 Division of Linguistic Labour

While analysis of the state's vocabulary can map out the patterns of vocabulary use that constitute a division of vocabulary, and this amounts to mapping the patterns of vocabulary use that result from the state's division of labour, such analysis does not say much about *how* particular divisions of vocabulary are derived from a division of labour.

For example, one component of the state's division of vocabulary involves the different extents to which senses of 'resilience' are used in different strata – mapped out through analysis of the frequency distribution of senses of 'resilience' in section 5.7. Given this frequency distribution and background knowledge of state organisations one can conclude things like 'the concentration of use of *resilience 3* – which concerns regional resilience as a framework for crisis management – in Cabinet Office documents is a result of Cabinet Office organisations' particular position within the state's division of labour as organisations concerned with security'. It is possible to extend this analysis in all kinds of ways. One way might involve drawing upon work done on securitization. So, one might say the concentration of *resilience 3* in Cabinet Office organisations is a result of the role of such organisations

within the state's division of labour in transforming various issues/subjects into issues/subjects of security – thus NHS organisations are construed as 'category 1 responders'. Another way would be to continue in the vein of current Foucauldian work on neoliberal discourse and analyse how different senses of 'resilience' represent different strategies of constructing neoliberal subjects, recognising the division of labour underlying the different extents to which senses of 'resilience' are used across strata as the social structure necessary for the production of multiple strategies of subject constitution. So, it is possible to come up with all kinds of interesting links between language, division of labour and general political processes such as securitization or neoliberalisation off the back of mapping out the state's division of vocabulary.

However, none of this sheds any light on the sociolinguistic/scorekeeping processes that lead from organisations being structured according to the state's division of labour to there being patterns – describable in terms of division of vocabulary – in how people involved in those organisations use words. Since describing the linguistic practises which constitute power relations is a necessary part of answering the Question of Necessity, describing such processes – i.e. describing the linguistic practises which constitute such processes – is a central concern. Such a description can be reached by using the notions of sense generation and division of linguistic labour. Thus, I claim the division of vocabulary – especially the aspect of the division of vocabulary that involves the target vocabulary – is partially the result of the division of linguistic labour, a process which (a) results from division of labour and (b) happens through sense generation. I begin making this argument with an explanation of division of linguistic labour.

The notion of division of linguistic labour was first discussed by Hilary Putnam in his argument against semantic internalism – the view that the extension of natural-kind terms, i.e. the entities referred to by natural-kind terms, is fixed by the internal, mental states of the individuals who use the terms (Putnam 1975: 135). Natural-kind terms are terms that group together objects in a manner that reflects the objective structure of the natural world. For example, 'H_2O' groups together all liquids composed of molecules that are composed of two hydrogen atoms and one oxygen atom. Such liquids are the extension of 'H_2O'. 'H_2O' groups liquids by chemical composition, which reflect natural chemical structures which behave independently of the social world. It's worth noting that emphasising how natural-kind terms reflect objective features of the natural world does not entail that such terms do not also, in some sense, reflect features of the social world – indeed Putnam's argument is that people's ability to use natural-kind terms reflects social arrangements.

Putnam's argument against the view that internal mental states fix the extension of natural-kind terms is not relevant here. What is relevant are his comments on the social arrangements that make it possible for individuals to master the use of natural-kind terms without having the personal capacity to identify the extension of natural-kind terms. For example, someone unable to distinguish elm trees from beech

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trees is still able to understand that 'elm tree' and 'beech tree' have different extensions, to understand they refer to different genera of tree, and so on (Putnam 1975: 143–44). Putnam argues that this is enabled by the division of linguistic labour between experts who do have the capacity to identify a natural-kind term's extension, and non-experts who do not (Putnam 1975: 144–45). In the case of 'elm' and 'beech', it is botanists who are assigned the linguistic labour of being able to distinguish between the extensions of 'elm' and 'beech'. Non-botanists' ability to use 'elm' and 'beech' correctly without understanding their respective extensions is possible because of their recognition of the expertise botanists have in identifying their extensions. So, with respect to natural-kind terms, the division of linguistic labour is the division, between scientific experts and lay non-experts, of the labour of identifying what objects belong to the extension of natural-kind terms.

More precisely, according to Putnam's account, the linguistic labour involved in the identification of a natural-kind term's extension has two parts; (1) ostensively establishing a range of paradigm referents – i.e. a range of exemplar referents – for the natural-kind term, e.g. in response to someone asking what 'water' means, one might respond by pointing at a glass of water while uttering 'water', thus establishing the glass of water as a paradigm referent of 'water', and (2), extending the class of objects that can be referred to by the natural-kind term from paradigm referents to all objects that share the features common to paradigm referents, e.g. identifying the full extension of 'water' involves identifying what is shared by all established paradigm referents of 'water' – being a liquid and having the chemical makeup H_2O – and noting that any liquid which has the same chemical makeup lies in the extension of 'water' (Putnam 1975: 141–42) (Haslanger 2012: 398). A central assumption in Putnam's account is that the extraction of features common to paradigm referents is intended to capture the natural, objective structures that unite paradigm referents. So, Putnam understands the extraction of features common to established paradigm referents as a process of scientific discovery, with people's understanding of the features properly common to a term's paradigm referents, and therefore people's understanding of the total class of objects that can be said to be in the extension of the term, being constantly refined. Thus natural-kind terms have objective, true extensions that interlocutors can be mistaken about/unaware of (Putnam 1975: 141–42). Because of this, the division of linguistic labour that Putnam considers is limited to the division between scientific experts and laypeople.

One can generalise the notion of the division of linguistic labour beyond natural-kind terms. Engelhardt (Engelhardt 2019: 1859) notes that 'fruit' is not only a natural-kind term. It is also a legal-kind term, in that 'fruit' can be used to group objects in a way that reflects the features of the legal system. For example, a judge/legislator may deem tomatoes to be a vegetable rather than a fruit for the purpose of deciding what kind of export tax should be applied to the tomato trade. In legal contexts, the burden of fixing the extension of 'fruit' resides with judges, not botanists. However, generalising in this way requires a different notion of linguistic labour than Putnam's (Engelhardt 2019: 1863–64). The paradigm referent features used to group tomatoes with vegetables rather than fruit are not selected

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because they reflect some biological structure (plant's ovary) that gives all paradigm referents of 'fruit' a natural unity. One might say the features selected are intended to accurately reflect the fact that people use tomatoes in a way that more closely resembles how people use broccoli or courgettes rather than strawberries or apples, in which case one can still use Putnam's notions of linguistic labour and division of linguistic labour and replace 'botanist' with 'sociologist' (perhaps the legal expertise involved in the reclassification of tomatoes relied on consulting sociological expertise) (Engelhardt 2019: 1862), but even this is not necessarily the case. It might be that the features selected reflect the business interests of fruit industry lobbyists who want to benefit from lower taxes, in which case there is no guarantee that the features used to group tomatoes under 'vegetable' reflects any kind of natural or social reality, which would mean the process of fixing the extension of 'fruit' is not one of scientific discovery. As Engelhardt notes (Engelhardt 2019: 1864), if one can talk about terms other than natural-kind terms having a division of linguistic labour, even if one accepts Putnam's highly idealised picture of the relation between natural scientific enquiry and word use, the kind of linguistic labour described by Putnam can only be one, highly specialised variety of a multitude of different kinds of linguistic labour. Crucially, recognising this means recognising divisions of linguistic labour beyond the division between scientific expertise/layperson – that judges and legislators have the burden of fixing the extension of the legal sense of 'fruit' is not because judges and legislators have more scientific expertise than everyone else, it is because they are part of organisations with greater legitimate political authority than everyone else.

A generalised account of division of linguistic labour therefore requires a generalised notion of linguistic labour that captures what is common to all kinds of linguistic labour, not just instances of natural-kind linguistic labour. Engelhardt notes that the central consequence of extension fixing labour is the introduction of norms which enable judgement of whether a particular use of a term is correct or not (Engelhardt 2019:1866). The result of fixing the extension of 'water' to include all liquids with the chemical structure H_2O is that any use of 'water' to refer to substances that are not liquids, or liquids that have a different chemical structure, is an incorrect use. So, any variety of linguistic labour can be understood as the introduction of term use norms. Natural-kind linguistic labour is characterised by the introduction of term use norms that are themselves subject to norms – 'metanorms' (Engelhardt 2019:1869) – that require that any term use norm ensure that the features common to the correct referents of natural-kind terms reflect an objective structure of the natural world. Legal-kind linguistic labour is not constrained by such metanorms, thus the range of paradigm referent features that can be used to determine a legal-kind term's full extension, and therefore correct/incorrect uses of legal-kind terms, is much broader. Understanding linguistic labour as term use norm introduction does not result in any restrictions on the kinds of activity that can be said to be involved in linguistic labour (Engelhardt 2019:1868), meaning such an understanding can be used as a generalised account of linguistic labour.

So, whether a term is subject to division of linguistic labour or not depends on (a) whether people's ability to judge uses of a term as correct/incorrect (i.e. judge whether the referent of a term's particular use is part of the term's correct extension) is dependent on the introduction of term use norms, and (b) whether the labour involved in performing the acts needed to introduce term use norms is divided (Engelhardt 2019:1859–60). To establish (a) is the case for some term, one must be able to point to the acts through which the term's use norms are introduced and show there is 'meaning deference'[25] (Engelhardt 2019:1860) to those who have authority in determining whether a term's use is consistent with the term's use norms. Thus, if some person is uncertain about whether their use of some term is correct, if the term is subject to division of linguistic labour, the person will defer to whoever they recognise as having the authority to declare their use of the term as correct/incorrect to resolve their uncertainty. To establish (b) is the case for some term, one must be able to demonstrate that the acts needed to introduce term use norms are carried out by a narrow selection of people only. Both conditions (a) and (b) must be satisfied to be able to say some term is subject to a full division of linguistic labour.

If the aspect of the division of vocabulary that involves the target vocabulary is a result of a division of linguistic labour, conditions (a) and (b) must be true of each target vocabulary term. There is reason to think this is so. For condition (a), the distinction between 'specific' and 'generic' senses I briefly sketched out in section 5.6 can be used to describe the acts through which target vocabulary terms' use norms are introduced and to argue that the use of target vocabulary terms in the context of British state relies on meaning deference to the relevant state authorities.

To recapitulate, I classed senses of target vocabulary words as 'generic' and 'specific' according to their degree of ambiguity. So, I classed *resilience 3* – 'regional resilience' – as specific since the conditions for achieving regional resilience are explicitly set out in Cabinet Office documents and legislation. On the other hand, occurrences of *resilience 2*, in which 'resilience' is used as part of a broad variety of adjectival/noun phrases, are not necessarily related to explicit conditions for achieving resilience. I have talked of 'generic'/'specific' rather than 'ambiguous'/'not ambiguous' to capture the tendency for less ambiguous senses to be specialised applications of target vocabulary terms. Thus, less ambiguous senses of 'resilience' tend to be about specific, specialised kinds of resilience like 'regional resilience' or 'psychological resilience'. Senses which concern resilience in general, unattached to a narrow application, tend to be not as thoroughly defined. I also noted that the explication of more specific senses happens across an intertextual network rather than within a single document.

That one can point at specific senses of target vocabulary terms in which the conditions for achieving/being resilience/resilient, sustainability/sustainable, wellbeing are explicitly stated also means one can point to the occurrences of target vocabulary terms (or noun phrases containing target

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[25]Engelhardt uses the term 'semantic deference' – to avoid the semantics vs. pragmatics issue I use 'meaning deference'.

vocabulary terms) whose extensions are fixed. So, the explicit statement of the conditions for achieving 'regional resilience' found across the intertextual networks of Cabinet Office documents and legislation is also a specification of the range of capacities, properties, states, etc. that lie in the extension of 'regional resilience'. It is important that intertextual networks seem to play an important role in the formation of specific senses. This suggests the construction of such intertextual networks, as well as the explicit statement of what constitutes what is described through target vocabulary terms, are acts through which norms that can be used to judge the correctness of uses of target vocabulary terms are introduced.

Furthermore, the distinction between generic and specific senses gives some reason to think that implicit in the use of generic senses is meaning deference to the norms/to state professionals with expertise in the norms introduced through specific senses. The ambiguity of generic senses means whenever an occurrence of a generic sense is used, there is a potential demand for disambiguation. I claim that if this potential is fulfilled, the demanded disambiguation would happen through deference to the norms introduced through specific senses. For example, consider the expression 'This will improve organisational resilience' in some state document that does not provide/cite an explicit definition of 'organisational resilience'. One can likely be confident that the expression means something along the lines of 'This will improve organisations' capacity to recover from some shock'. However, the lack of explicit definition raises questions like 'what kinds of shocks might an organisation have to deal with?', 'what sorts of capacities would allow an organisation to recover from a shock?', 'what counts as 'recovery from a shock'?', and so on. Of course, whether such questions are raised depends on the disposition of the reader – if the expression's use of 'resilience' is subject to division of linguistic labour, as I claim it is, one does not need personal mastery of the content of 'resilience' to be able to appropriately interpret/use occurrences of 'resilience', meaning one does not need answers to such questions to provide an acceptable interpretation of 'This will improve organisational resilience'. But if the reader is disposed to raise the questions, some path of meaning deference will be needed.

One reason to think meaning deference will be paid to the norms introduced by specific senses during disambiguation of target vocabulary terms is because occurrences of generic and specific senses share the same background, state context. If one encountered 'This will improve organisational resilience' outside of a state context, deference to specific senses in state documents would be inappropriate. The role of background context here is the same as the role of background context when deciding whether an occurrence of 'fruit' is of the legal-kind sense rather than the natural-kind sense – if one encountered 'fruit' in the context of reading some legal document about export taxes then judges/legislators would be the appropriate target of meaning deference rather than botanists for the disambiguation of 'fruit'.

However, contextual knowledge is not the only factor in determining the target of meaning deference. Consider *resilient 6*, which concerns technical uses of 'resilient' that relate to engineering, construction

etc. Though one encounters occurrences of *resilient 6* within a state context, the technical character of the content of such occurrences means it is more appropriate to pay meaning deference to engineers, construction specialists etc. rather than ministers, legislators etc. The content expressed by senses plays just as much of a role as knowledge of background context in deciding who to pay meaning deference to. This interplay between deciding what the content of an expression is and background contextual knowledge resembles the kinds of inferential processes described in pragmatist understandings of meaning, in which expression meaning is understood as an inference made from contextual knowledge such as conversational maxims, judgments of relevance, and so on. I suggest recognition of to whom meaning deference is a result of pragmatic inference. A very rough description of the inferential process that leads to a decision on who to pay meaning deference to on encountering *resilient 6* might be:

1.) When reading a document containing the encountered occurrence of 'resilient', the range of assumptions generated during reading – about the document's topic, purpose, organisational context etc. – leads to inferring the occurrence of 'resilient' to be an expression of the sense *resilient 6*.

2.) Taking the occurrence to be an expression of *resilient 6* permits an inference about who to pay meaning deference to – the technical content of *resilient 6* occurrences enables the inference that meaning deference should be paid to those with engineering/construction/etc. expertise.

This description can doubtless be made much more complete by more fully using the tools of relevance theory, Gricean pragmatics, etc., but doing this is beside the point. The point is that the difference between *resilient 6* and generic senses of 'resilience' is that the technical content of the former relates to scientific expertise whose authority overrides that of state organisations despite the state context in which *resilient 6* appears. The reasoning here, then, is that there is meaning deference from users of generic senses of target vocabulary terms to documents expressing specific senses/state professionals who have expertise in the contents of such documents because (1) occurrences of generic and specific senses share a common, state background context in which the organisations/state experts responsible for producing the specific senses have authority over the norms governing the use of specific senses and (2) the content of generic senses is unrelated to any domain of knowledge in which domain expertise overrides state expertise.

Given all this, condition (a) can be said to be true of target vocabulary terms – they are subject to linguistic labour because specific senses capture the acts of intertextual network construction/explicit definition through which term use norms are introduced and there is meaning deference to the norms introduced through specific senses implicit in the understanding needed to appropriately use generic senses. That condition (b) is true of target vocabulary terms is supported by the frequency distributions of the specific senses of target vocabulary terms. Of the senses that contributed the most to increases in the relative frequency of target vocabulary terms, I listed *resilience 3*, *sustainable 3*, *sustainability 7*,

wellbeing 3, *5*, *6* and *wellbeing 8* as specific senses. With 'resilient' no specific senses (among those that contributed the most to the use of 'resilient') were found – I assume that generic senses of 'resilient' involve meaning deference to specific senses of 'resilience', since both terms are inflections of each other. Similarly, I assume that generic senses of 'sustainable' and 'sustainability' involve meaning deference to specific senses of both terms. The chi-square analyses of the frequency distributions of specific senses indicate they are especially concentrated in 1-4 strata, with *resilience 3*, *sustainable 3*, *wellbeing 3* and *6* being especially concentrated in a single stratum even compared to the other strata in which they are also highly concentrated. This implies the labour involved in the introduction of term use norms for each target vocabulary term is also highly concentrated within a narrow selection of strata. So, the linguistic labour underlying each target vocabulary term is divided.

6.3 Intertextual Definition as Linguistic Labour

An important element of the above argument is the claim that the construction of intertextual networks is an important part of the labour of introducing target vocabulary terms' use norms. It is because intertextual networks are an identifiable feature of specific senses' induced clusters that one can, on the assumption that intertextual networks help fix the extension of target vocabulary terms, argue that target vocabulary terms are subject to a division of linguistic labour. However, I have not yet given much reason to accept that building intertextual networks constitutes linguistic labour. In this section I use examples taken from senses *sustainable 3* and *resilience 3* to illustrate the role the construction of intertextual networks plays in fixing the extension of target vocabulary terms. In 5.6 I used the example of intertextual networks surrounding the term 'sustainable communities' to briefly introduce the connection between specific senses and intertextual networks. I begin illustrating how the extension of target vocabulary terms is fixed within specific senses through intertextual networks by expanding upon what I have said about the *sustainable communities* intertextual network.

The key document of this network is *Sustainable Communities: Building for the Future* (ODPM[26] 2003), whose purpose is to set out policies to deal with problems of urban decline. It highlights problems with housing as a central part of urban decline, noting how (at the time of the document's writing) in regions where housing demand had continued to increase, construction of new houses failed to keep up. Other regions faced problems of low demand and abandonment. Where house construction had occurred, land was used inefficiently, leading to urban sprawl. Some areas also had environments contaminated with litter, graffiti and vandalism, and a third of all housing fell under the 'decent homes

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[26] The ODPM was replaced by the Department for Communities and Local Government in 2006, which in turn was replaced by the Ministry of Housing, Communities and Local Government in 2018 -hence its categorisation here under MOH. In September 2021 the MOH was renamed to Department for Levelling Up, Housing and Communities.

standard' (ODPM 2003: 11). This standard is briefly explicated in *Sustainable Communities*, however more complete explication is delegated to other documentation:

> 'We have recently reviewed how we will deliver the decent homes target...We will publish the report setting out how we need to adjust policies to ensure all social tenants have decent housing by 2010.' (ODPM 2003: 14)

'Sustainable communities' is a term intended (by the ODPM) to encapsulate the bundle of actions to be undertaken to solve the above problems. The vague definition of 'sustainable communities' provided is fairly useless: 'Some of the key requirements of sustainable communities are: A flourishing local economy to provide jobs and wealth; strong leadership to respond positively to change; [...]' (ODPM 2003: 4). However, the de facto definition of 'sustainable communities' does not really take place within this definition, it takes place throughout the document via the formulation of targets and measurable standards. The aforementioned decent homes standard is an example of this – one can make explicit part of the notion of 'sustainable communities' in the following way: 'An area is a sustainable community if it has no homes which do not meet the decent homes standard.' Full explication of 'decent homes standard' is delegated to other documentation such as *A Decent Home: The definition and guidance for implementation* (DCLG 2006). So, one condition for housing to meet the decent homes standard stated in *Sustainable Communities* is 'Provide reasonably modern facilities and services' (ODPM 2003: 15) – according to *A Decent Home*, a house provides 'reasonably modern facilities and services' if over 3 of the following conditions are met (DCLG 2006: 11):

1. It has a kitchen of an age less than or equal to 20 years;

2. It has a kitchen with adequate space and layout, where a 'kitchen failing on adequate space and layout would be one that was too small to contain all the required items (sink, cupboards, cooker space, worktops etc.) appropriate to the size of the dwelling';

3. It has a bathroom of an age of less than or equal to 30 years;

4. An appropriately located bathroom and WC, where an 'inappropriately located bathroom and WC is one where the main bathroom or WC is located in a bedroom or accessed through a bedroom (unless the bedroom is not used or the dwelling is for a single person). A dwelling would also fail if the main WC is external or located on a different floor to the nearest wash hand basin, or if a WC without a wash hand basin opens on to a kitchen in an inappropriate area, for example next to the food preparation area';

5. Adequate external noise insulation, where 'inadequate insulation from external airborne noise would be where there are problems with, for example, traffic (rail, road and aeroplanes) or factory noise';

6. Adequate size and layout of common entrance areas for blocks of flats, where 'inadequate size and layout of common entrance areas for blocks of flats would be one with insufficient room to manoeuvre easily for example where there are narrow access ways with awkward corners and turnings, steep staircases, inadequate landings, absence of handrails, low headroom etc.'

So, including the contents of *A Decent Home*, one can state part of what 'sustainable communities' means in the following way:

A. The community of some area is sustainable if no homes in the area do not meet the decent homes standard.

B. A home meets the decent homes standard if it provides reasonably modern facilities and services.

C. A home provides reasonably modern facilities and services if at least 4 of conditions 1 – 6 are satisfied.

D. A home meets condition 1 if [...], condition 2 if [...], condition 3 if [...], […], and condition 6 if [...].

The key point here is that this list of conditionals through which one can define part of 'sustainable communities' is possible only given the intertextual relation between the documents *Sustainable Communities* and *A Decent Home*. It is only through *Sustainable Communities'* delegation of the task of explicating 'reasonably modern facilities and services' to *A Decent Home* that one can reconstruct part of the meaning of 'sustainable communities' as the list of conditionals A-D.

I claim that 'sustainable communities' is never fully defined in a single document (beyond useless statements like 'strong leadership to respond positively to change'). A proper definition can only be reconstructed through consideration of the total collection of documents which have been delegated the task of explicating a part of 'sustainable communities'. The definition of 'sustainable communities' is dispersed. Generalising from the conditionals A-D used to define 'sustainable communities' in terms of the decent homes standard, the full definition of 'sustainable communities' retrieved from all delegated documents can be represented as a series of nested conditionals:

- The community of some area is sustainable if conditions a_1, a_2, a_3, […] are satisfied.

    A. Condition a_1 is satisfied if conditions b_1, b_2, b_3, […] are satisfied.

        a. Condition b_1 is satisfied if conditions c_1, c_2, c_3, […] are satisfied.

            i. Condition c_1 is satisfied if [...]

1. [...]

[...]

ii. [...]

[...]

b. [...]

[...]

B. Condition a_2 is satisfied if conditions d_1, d_2, d_3, [...] are satisfied.

a. Condition d1 is satisfied if conditions e_1, e_2, e_3, [...] are satisfied.

i. Condition e_1 is satisfied if conditions f_1, f_2, f_3, [...] are satisfied

1. [...]

[...]

ii. [...]

[...]

b. [...]

[...]

C. [...]

[...]

So, any area that satisfies most/all these nested conditionals lies in the extension of 'sustainable community'.

Underlying intertext relations are interorganisational relations. Understanding how the construction of intertext relations is mediated by interorganisational relations can give some insight into how division of labour – as the principle according to which interorganisational relations are arranged – gives rise to the division of linguistic labour that at least partially underlies the division of vocabulary. To illustrate the relation between intertext and interorganisational relations I discuss the intertext network involving *Sustainable Community Strategies*. These are documents which Local Strategic Partnerships of local authority areas are required to produce. Local Strategic Partnerships are the organisations responsible for delivering various kinds of public services in a local authority area, e.g. refuse collection. They are

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composed of representatives from local authorities, companies, community organisations and charities. The purpose of *Sustainable Community Strategies* is to articulate Local Strategic Partnerships' plans for implementing the urban regeneration policies expressed in *Sustainable Communities*. The requirement for Local Strategic Partnerships to produce *Sustainable Community Strategies* was first recommended in *The Egan Review* (ODPM 2004: 8), a review commissioned by the ODPM to look into the 'professional skills', organisational relations (e.g. relations between central government departments, local authorities and organisations responsible for government procurement) and procedures (e.g. the requirement for Local Strategic Partnerships to produce *Sustainable Community Strategies*) required to deliver sustainable communities policies. There is thus a direct intertextual line, via the *Egan Review*, linking *Sustainable Communities* and *Sustainable Community Strategies* which enables the dispersed definition of 'sustainable communities'.

I use three *Sustainable Community Strategies – Sustainable Community Strategy for Worcestershire 2008-2013* (*W 2008-2013*) (Worcestershire Partnership 2008), *Hackney's Sustainable Community Strategy 2008-2018* (*H 2008-2018*) (Hackney Community Strategy Partnership 2008) and *Bath and North East Somerset Sustainable Community Strategy 2009-2026* (*BNES 2009-2026*) (Bath & North East Somerset Local Strategic Partnership 2009) – to illustrate the role of *Sustainable Community Strategies* in the dispersed definition of 'sustainable communities'. All three strategies contain a description of their areas which define each area's local problems/advantages to be solved/built upon through the local implementation of sustainable communities policies. The targets/standards constituting each strategy's local implementation are framed as responses to these local problems. So, *H 2008-2018's* description of Hackney has two themes, population growth and cohesion. The population growth section focuses on the increased demand for housing produced by population growth, the resulting large increases in house prices and the inability of locals to buy houses. The cohesion section describes the diversity of the borough, stating that half of all residents are of an ethnic minority, that there is a mixture of income levels, sexualities, ages, disabilities and religions present, and that this mixture is not segregated, i.e. it is dispersed evenly throughout the borough. This diversity is taken to be something to be protected (Hackney Community Strategy Partnership 2008: 5-23). The 18 targets which constitute part of *H 2008-2018's* implementation of sustainable communities policy (Hackney Community Strategy Partnership 2008: 16-17), while reflecting the central, departmentally voiced concerns expressed by the (formerly known as) ODPM's sustainable communities policy, are framed as also reflecting locally voiced concerns. This type of framing is also found in *BNES 2009-2026* and *W 2008-2013*. *BNES 2009-2026* frames its local implementation targets as responses to the local concerns about climate change, an ageing population and demand for new housing (Bath & North East Somerset Local Strategic Partnership 2009: 9-11). *W 2008-2013* similarly frames its local implementation targets as responses to local concerns about climate change's impacts on Worcestershire, e.g. flooding, the need to include marginalised groups, e.g. addressing discrimination

against the Traveller community, addressing needs unique to the Black and Minority Ethnic communities, and so on (Worcestershire Partnership 2008: 18-24).

Each strategy evidences this framing by detailing the consultation process through which each strategy was produced. *W 2008-2013* describes how Worcestershire Partnership held 'Citizens' Panels', in which samples of approximately 2000 Worcestershire residents were surveyed to gather locals' views on what issues should be addressed (Worcestershire Partnership 2008: 8-10). Lower levels of governance were also consulted, with information from District and Parish strategies/planning being used in *W 2008-2013*. Furthermore, councillors (from both district and county levels) were consulted through 'Member Reference Groups', with one Member Reference Group established for consultation on each theme in *W 2008-2013*. *H 2008-2018* has a 'Statement of involvement and engagement' detailing the authoring Local Strategic Partnership's (Team Hackney Board) consultation process (Hackney Community Strategy Partnership 2008: 64-68). Again, this process involved panels with locals (consisting of online surveys of over 2500 locals), consultations held by Hackney Council with residents, a 'Youth Parliament' consisting of people aged 13-19 elected by members of youth clubs, schools, faith organisations etc. and a 'Community Empowerment Network' made up of voluntary and community organisations. *BNES 2009-2026*'s description of the Bath & North East Somerset Local Strategic Partnership's consultation process is much less detailed than *W 2008-2013's* and *H 2008-2018*'s, but similar consultation processes are briefly mentioned; surveys with local residents, consultations with lower levels (town and parish) of governance and resident groups (Bath & North East Somerset Local Strategic Partnership 2009: 7). The structure of Local Strategic Partnerships consisting of representatives from local companies, voluntary organisations, local councillors etc. is also cited by the three strategies as an indicator of the truth of their framing as a reflection of local interests.

The local implementation targets of these three strategies are explicated via intertext delegation. *H 2008-2018* lists 8 documents[27] which explicate the local implementation targets. For example, one target is:

> 'Ensure the educational improvement of Hackney's children and young people is excellent and that educational performance by school leaving age is consistently above the national average.' (Hackney Community Strategy Partnership 2008: 16)

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[27] *Joint Strategic Needs Assessment for Health and Social Care, Crime and Disorder Reduction Strategy, Local Transport Plan, Children and Young People's Plan, Housing Strategy, Municipal Waste Strategy, Licensing Policy, Partners' Corporate and Operational Plans*

Explication of this target is delegated to *Hackney Children and Young People's Strategic Plan* (*HCYPSP 2008-2011*), authored by Hackney Children and Young People's Services (2008), which splits *H 2008-2018*'s targets into 8 more (Hackney Children and Young People's Services 2008: 1-2):

1. 'We want more young people in Hackney to be in education and training, and to have a better range of opportunities between the ages of 14-19'

2. 'We want to improve the educational outcomes of vulnerable groups of children'

3. 'We want to reduce the level of offending amongst young people in Hackney'

4. 'We want to ensure that children and young people are safe both in the home and around Hackney'

5. 'We want to make sure that children and young people in Hackney enjoy good mental health.'

6. 'We want to improve services for disabled children and young people'

7. 'We want to encourage healthy lifestyles for children and young people'

8. 'We want more and better activities for young people in Hackney'

HCYPSP 2008-2011 gives some detail about how each of these targets are to be met. For example, 'vulnerable groups' in 2 is specified as children whose guardians have a low income and children of ethnic groups which, overall, perform at school below Hackney's average ('Turkish, Kurdish, Turkish Cypriot and Caribbean heritage groups.' (Hackney Children and Young People's Services 2008: 14) Several actions are listed as the means to achieving 2; providing childcare to parents in training/seeking employment, providing access to a personal tutor to each child, improving school infrastructure, and so on (Hackney Children and Young People's Services 2008: 21-22). Again, full details of each of these actions are not provided here, more exhaustive detail is delegated to other texts. For example, details on improving school infrastructure are left to the documents of the Building Schools for the Future and Primary Capital programmes. Furthermore, several performance indicators, such as rate of proven re-offending by young offenders, obesity in year 6, 5 or more A*-C grades at GCSE or equivalent including English and maths, L5 in English, maths and science (KS3) for Turkish, Kurdish, Turkish Cypriot and Caribbean ethnicities, and so on, are listed as means of measuring progress on meeting the 8 targets (Hackney Children and Young People's Services 2008: 39-40). Yet again, the provision of more details on these performance indicators is delegated to other documentation, specifically Hackney's Local Area Agreement. All Local Strategic Partnerships are required to produce an Local Area Agreement, a three-year agreement between a Local Strategic Partnership, local authority and central government, which details how the targets of a Sustainable Community Strategy are to be implemented.

The same kind of target explication via intertext delegation can be seen in *BNES 2009-2026* and *W 2008-2013*. *BNES 2009-2026* lists 17 documents that explain its targets for 'Economic Development and Enterprise' (Bath & North East Somerset Local Strategic Partnership 2009: 18), 15 documents that explain its targets for 'Environmental Sustainability and Climate Change' (Bath & North East Somerset Local Strategic Partnership 2009: 22), 7 documents that explain its targets for 'Children and Young People' (Bath & North East Somerset Local Strategic Partnership 2009: 26), 5 documents that explain its targets for 'Health and Wellbeing' (Bath & North East Somerset Local Strategic Partnership 2009: 29), 12 documents that explain its targets for 'Stronger Communities' (Bath & North East Somerset Local Strategic Partnership 2009: 32) and 7 documents that explain its targets for 'Safer Communities' (Bath & North East Somerset Local Strategic Partnership 2009: 35). Similarly, *W 2008-2013* lists 5 documents that explain its targets for 'Communities that are Safe and Feel Safe'), 10 documents that explain its targets for 'A Better Environment', 7 documents that explain its targets for 'Economic Success that is Shared by All', 6 documents that explain its targets for 'Improving Health and Well Being', 2 documents that explain its targets for 'Meeting the Needs of Children and Young People' and 12 documents explaining its targets for 'Stronger Communities' (Worcestershire Partnership 2008: 56-59.

Apparent from the above is that the delegation of explication through which dispersed definitions are constructed is recursively applied – the range of conditions that result from the delegation of definition of some term/condition/standard are themselves subject to delegated definition. The manner in which this intertextual explicative operation is recursively repeated mirrors some aspect of the state's division of labour. So, the recursive pattern of intertextual explication of 'sustainable communities' present in the network composed of *Sustainable Communities*, *The Egan Review*, *W 2008-2013, H 2008-2018, BNES 2009-2026* reflects the regional hierarchy of governance linking central departments like the ODPM to local authorities like those of Worcerstershire, Hackney and Bath & North East Somerset, and the relations of outsourced procurement/local policy implementation between local authorities and private companies, voluntary/community organisations etc., embodied in Local Strategic Partnerships. The recursive intertextual explication of 'sustainable communities' was a permanent work in progress. There was no 'final' intertextual network providing a definitive explication of 'sustainable communities', thus local authorities/Local Strategic Partnerships were required to repeatedly produce *Sustainable Community Strategies*, Local Area Agreements etc. until the revocation of New Labour's sustainable communities policies by the Conservative-Liberal coalition government in 2015.

A similar process of dispersed definition is found across documents concerned with *resilience 3* – 'regional resilience'. Central to the state's approach to national resilience, i.e. approach to ensuring the UK is able to respond to emergencies effectively, are Local Resilience Forums. These are partnerships composed of representatives from local authorities, local emergency services, local health services and organisations responsible for infrastructure, i.e. power, telecommunications, transport, etc. Local

Resilience Forums are responsible for identifying and planning for emergency risks. The composition and duties of Local Resilience Forums are partially defined in the *Civil Contingencies Act 2004* and *Emergency Preparedness* (Cabinet Office 2006) and *Emergency Response and Recovery* (Cabinet Office 2013) – a series of documents providing guidance on what is expected from organisations involved in emergency planning given the *Civil Contingencies Act*. Together, these documents list the kinds of organisations from which members of Local Resilience Forums are drawn – organisations that are listed as category 1 and category 2 responders in the Act – and the duties of Local Resilience Forums. The exact standards for Local Resilience Forum duties are not fully specified in the *Act* and its corresponding guidance. These standards are more fully listed in the Cabinet Office's *National Resilience Standards for Local Resilience Forums* (Cabinet Office 2020a), which lists and explains standards for 15 Local Resilience Forum duties. Again, exact specification of the standards for the 15 duties is partially specified in *National Resilience Standards* and partially delegated to a variety of other documents. For example, one duty required of Local Resilience Forums by the *Contingencies Act* is the production of risk assessments which document the threats, emergencies etc. that might have to be dealt with. A specification of exactly what a risk assessment is and how risks should be measured/included is delegated to *Local Risk Management Guidance* and *National Security Risk Assessment* (Cabinet Office 2020a: 9). As with 'sustainable communities', a partial reconstruction of the dispersed definition of 'regional resilience' as a series of nested conditionals can be produced:

- A nation/region/local area is resilient if it has a network of Local Resilience Forums which fulfil the duties required by the *Civil Contingencies Act 2004* and corresponding guidance.
    A. An organisation is an Local Resilience Forum if it is composed of representatives from category 1 responders and category 2 responders.
        a. An organisation is a category 1 responder if it is any of the following organisations: [...]
        b. An organisation is a category 2 responder if it is any of the following organisations: [...]
    B. An Local Resilience Forum is fulfils its purpose if it satisfies its 15 duties.
        a. The first duty is satisfied if [...]
            i. [...]
        b. The second duty is satisfied if local risk assessments are regularly produced.
            i. A risk assessment has been carried out if a risk matrix has been produced (Cabinet Office 2020a: 8).
                1. A risk matrix has been produced if the impact and likelihood of identified risks have been quantified and a matrix has been constructed in which each value in the matrix is the product of

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      identified risks' quantified impact and likelihood (Cabinet
      Office 2020b: 8-9).
    2. [...]
  c. The third duty is satisfied if [...]
    i. [...]
  d. [...]

On first appearance the dispersed definition of 'regional resilience' does not involve as many kinds of interorganisational relations as the dispersed definition of 'sustainable communities'. Much of the intertextual network involved in the dispersed definition is constructed within the Cabinet Office with frequent reference to a single piece of legislation; *The Civil Contingencies Act 2004*.

However, implicit in 'resilience' is a notion of 'risk', 'threat', 'emergency' etc. The statement '*x* has resilience' only makes sense given a corresponding notion of 'risk', 'threat', 'shock', 'disturbance' etc. So, 'regional resilience' can only be explicitly defined if 'risk', 'threat', 'emergency', etc. is explicitly defined, and this is done in a manner that more obviously reflects interorganisational structure. Again, such terms are given a dispersed definition through an intertextual network that starts with the definition of 'emergency' in the *Civil Contingencies Act*, which gives a list of conditions (which can be presented as a series of nested conditionals) that must be satisfied for an event to be considered as an 'emergency' (*Civil Contingencies Act 2004*: 1):

(1) In this Part 'emergency' means –
  (a) An event or situation which threatens serious damage to human welfare in a place in the United Kingdom,
  (b) An event or situation which threatens serious damage to the environment of a place in the United Kingdom, or
  (c) War, or terrorism, which threatens serious damage to the security of the United Kingdom.
(2) For the purposes of subsection (1)(a) an event or situation threatens damage to human welfare only if it involves, causes or may cause–
  (a) Loss of human life
  (b) [...]
(3) For the purposes of subsection (1)(b) an event or situation threatens damage to the environment only if it involves, causes or may cause–
  (a) Contamination of land, water or air with biological, chemical or radio-active matter, or
  (b) [...]

What counts as a 'risk', 'threat', etc. is defined in relation to 'emergency'. A 'risk' is a risk of an emergency – as defined in the act – taking place. Thus, the requirement for Local Resilience Forums to produce risk assessments stated in *National Resilience Standards* (Cabinet Office 2020: 6) is an expansion of the statutory requirement set out in *Civil Contingencies* that category 1 responders 'from time to time assess the risk of an emergency occurring' (Civil Contingences Act 2004: 2). While the series of conditions that specify the extension of 'emergency' given by *Civil Contingencies* is reasonably clear, ultimately a decision has to be made about whether a particular situation/event/risk/etc. really does satisfy the conditions of *Civil Contingencies*. Though the act's conditions provide a series of guidelines one can use to decide whether some event is an emergency, the decisions about which events satisfy these conditions are not present in the act. This means the extension of 'emergency' is not fully fixed in the act. The task of fixing the extension of 'emergency'/'risk' through explicit listing of is delegated to the Cabinet Office through its publication of the *National Security Risk Assessment* and *National Risk Register* (Cabinet Office 2020b) (the non-classified version of *National Security Risk Assessment*) and Local Resilience Forums. The *National Risk Register* provides a classification of the kinds of risks faced by the UK, e.g. flooding, severe weather, human diseases, widespread electricity failure, industrial action etc. (Cabinet Office 2020b: 9). At the local level of particular areas/regions of the UK, Local Resilience Forums complete the fixing of the extension of 'emergency'/'risks' by listing particular events that have been identified as risks. For example, on the 6th February 2020, among the range of risks identified by the London Resilience Forum were COVID-19 and Storm Ciara (London Resilience Forum 2020: 3). On the 25th February 2021, among the range of risks identified by the London Resilience Forum were disruption in the disposal of clinical waste, industrial action within transportation and avian flu (London Resilience Forum 2021: 3-4). So, the extension of 'emergency'/'risk' is repeatedly fixed over time across the intertext network formed by the *Civil Contingencies Act 2004*, *National Security Risk Assessment/National Risk Register* and the regularly held meetings of Local Resilience Forums like London Resilience Forum. Similar to the way the structure of the intertext relations involved in the dispersed definition of 'sustainable communities' reflects the interorganisational relations between the MOH and Local Strategic Partnerships, the structure of the intertext relations involved in the dispersed definition of 'risk' and 'regional resilience' reflects the interorganisational relations between parliament (through the *Civil Contingencies Act 2004*), the Cabinet Office and Local Resilience Forums.

Enough has been done to show that, at least in the case of 'sustainable communities' and 'regional resilience', the construction of intertext networks is a central part of the linguistic labour necessary to fix the extension of both terms. The construction of intertext networks enables the dispersed definition of the terms. These dispersed definitions, and therefore the extensions of the terms, are continuously updated, with there being no final, definitive extensions fixed to the terms – thus Local Strategic Partnerships continuously produced *Sustainable Community Strategies* until the end of sustainable

communities policy programme in 2015 and Local Resilience Forums repeatedly hold meetings to decide what situations/events count as risks of emergency. Given all this, two connections between division of linguistic labour and division of labour can be drawn. First, as discussed in 6.2, at the level of the 13 strata the labour of fixing the extension of the terms is reserved for a narrow selection of strata. However, the documents of the organisations of the selection of strata which carry the burden of linguistic labour is not the result of a homogenous class of expert interlocutors, as is presented in Putnam's idealised presentation of the division of linguistic labour. The organisations within a select stratum are again subject to a division of labour, and the linguistic labour apportioned to a select stratum is again divided according to the stratum's internal division of linguistic labour – in the case of 'sustainable communities' and 'regional resilience' this internal division of labour is the regional hierarchical structure between central departments/parliament and local authorities/partnerships like Local Strategic Partnerships and Local Resilience Forums.

A hypothesis to be tested is that all intertextual networks characteristic of the specific senses of target vocabulary terms constitute linguistic labour. If this is so, another notion to be tested is that the linguistic labour involved in all terms corresponding to all specific target vocabulary senses are subject to division of linguistic labour. I have shown that these two points are true for just two specific senses of two terms – generalising beyond this would require a more powerful, quantitative method for analysing intertextual networks. For now, it is enough that for at least some senses of some terms, intertextual networks constitute linguistic labour. This gives some reason to tentatively assert that the construction of intertext networks in state documents in general constitutes linguistic labour.

6.4 The Relevance Maximising Character of Vocabulary Diffusion

To return to and summarise the overall line of argument so far, there are two main things the division of vocabulary outlined in 5.5, 5.6 and 5.7 reveals about how the division of labour represented by the 13 strata structures the state's vocabulary use – the difference in the distinctiveness and stability of legislative and departmental vocabularies, and the tendency for particular senses of target vocabulary terms to be concentrated within a narrow selection of strata. I have argued that the latter aspect of the division of vocabulary is a consequence of target vocabulary terms being subject to a division of linguistic labour. So, the diffusion of the target vocabulary into the state's text systems involves the enactment of divisions of linguistic labour. This is one way the division of labour represented by the 13 strata conditions the diffusion of the target vocabulary.

I do not suggest that division of linguistic labour is the main factor behind the division of vocabulary, or even that division of linguistic labour is the most important factor underlying the aspect of the division of vocabulary that concerns target vocabulary senses. In particular, the differences between

legislative and departmental vocabulary, for example, are differences that are a consequence of the division of labour separating departmental from legislative work but are not a consequence of division of linguistic labour. Rather, as argued in 5.5, the explanation for the differences in distinctiveness and stability between departmental and legislative vocabularies is to be found in the nature of legislative and departmental tasks and the consequent demands made upon word choice – no additional explanatory appeal to some sociolinguistic arrangement like division of linguistic labour is needed.

There are likely a number of other factors underlying the division of vocabulary, but for the present study, the two factors outlined – the demands of state tasks and division of linguistic labour – are enough to expand upon what I have said about the scorekeeping practices that constitute technologies and, therefore, discuss the Question of Necessity. I discuss both factors in relation to technologies and scorekeeping to do this.

I have argued that technologies are networks of scorekeeping practices predicated on some rationality R – technologies are scorekeeping instances in which the statements distinctive of R feature as presuppositions. Given my analysis of the state's division of vocabulary, it is clear that the state's division of labour influences the scorekeeping instances that compose technologies in such a way that the word choices made in the scorekeeping instances follow the patterns of distinctiveness and stability observed in the division of vocabulary. I have resorted to the 'linguistic demands of the tasks assigned by the state's division of labour' to explain this, but to understand the division of vocabulary from the technologies-as-scorekeeping perspective the 'linguistic demands' of state tasks needs to be explained in terms amenable to the scorekeeping framework.

I use the relevance theoretic account of relevance to do this. According to this account, a person judges whether a statement is relevant to their situation by assessing the size of the contextual effect of the statement and the effort needed to process the statement (Sperber & Wilson 1995:125). For now, it is enough to just focus on contextual effects to clarify the 'linguistic demands' of a division of labour. I return to minimisation of processing when discussing the division of linguistic labour in relation to diffusion. It is important to note at this juncture, however, that assessment of the size of contextual effects is only a necessary condition to make a judgement of relevance. Only joint consideration of contextual effects and processing effort is sufficient to make a judgement of relevance. Sperber and Wilson argue that a person makes judgements of relevance with respect to a collection of background assumptions – i.e. contextual assumptions. Let this collection of contextual assumptions be called C. When a person hears/reads a new statement, they consider the changes to C brought about by the new statement as a result of inferential necessity. For example, if the assumption 'All snakes are green' is in C, and the person reads that 'Some snakes are black', then the new statement is relevant in C as it potentially means the erasure from C of 'All snakes are green', since by deductive inferential necessity 'All snakes are green' and 'Some snakes are black' cannot both be true. On the other hand, a statement

like 'Some frogs are brown' is irrelevant to C, since it has no potential to contradict or confirm 'All snakes are green'. So, a statement has a contextual effect to some person if it requires, by inferential necessity, a change in the person's collection of contextual assumptions C. The main contextual effects considered by Sperber and Wilson are the erasure/addition of an assumption from/to C, and changes in the certainty someone has in the truth/falsehood of assumptions in C (Sperber & Wilson 1995: 110–15). This notion of relevance fits neatly into the scorekeeping framework, with the collection of background assumptions held by interlocutors and the way the contents of such a collection changes depending on what is uttered being equivalent to discursive score contents and the rules that govern how discursive scores and uttered statements affect each other. I thus take the contextual assumptions discussed in relevance theory to be score contents on par with salience rankings and presuppositions. Indeed, the mechanics of how assertions are added/subtracted to some collection of contextual assumptions are similar to the mechanics David Lewis describes of how presuppositions, salience rankings etc. are updated according to rules of accommodation.

Sperber and Wilson emphasise that there are reasons other than the contextual effects of statements that can be behind changes in a person's contextual assumptions (Sperber & Wilson 1995: 137–40), and that the contextual assumptions with respect to which someone judges the relevance of statements are themselves subject to some selective process. In other words, it is not the case that a person's contextual assumptions are fixed at the beginning of some scorekeeping instance and only change as a result of the contextual effects of statements. Rather, Sperber and Wilson argue that at any point in time during a scorekeeping instance an interlocutor has access to a range of possible collections of contextual assumptions, and that interlocutors choose a particular collection as a reference point for the interpretation/assessment of relevance of proceeding statements according to a principle of relevance maximisation (Sperber & Wilson 1995: 142). So, after a particular conversation has run its course and an interlocutor decides to start a new conversation with some statement irrelevant to previous conversations, other interlocutors will select the context in which the statement would have the greatest number of contextual effects and the least amount of processing effort.

The relevance maximising dynamic of context selection also governs how people deal with ambiguity. To understand this, first recall how in the pragmatist view of meaning the context dependence of expressions' meanings is emphasised. Adherents of the pragmatist view either argue that the encoded semantic content of an expression is not enough to provide a complete interpretation of the expression and so must be supplemented with inferences from contextual assumptions, or that there is no encoded semantic content at all and that interpretations are solely the result of inferences from contextual assumptions and knowledge of how the expression's constituents are conventionally used (Burton-Roberts 2013: 15–16). Relevance theory takes the former view. Sperber and Wilson argue that upon hearing an expression, an interlocutor has a range of options for interpretation limited by the expression's semantic content (Wilson and Sperber 2004: 616). Which option the interlocutor picks is

determined by the principle of relevance maximisation – the interlocutor picks the interpretation that offers the greatest number of contextual effects for the least effort. It's worth noting that accepting that interpretation is guided by relevance maximisation does not require accepting that expressions have encoded semantic content. The only difference if one adopted the view there is no such thing as encoded semantic content would be that the range of options from which a relevance maximising selection is made is constrained by conventions about the expression's constituents rather than some encoded logical form.

The precise mechanics of how people select collections of contextual assumptions is something for cognitive linguists to figure out – from a sociological perspective what is important is that individual context selection is constrained by social structures. Regarding division of labour and the scorekeeping instances that compose technologies, I claim that the state's division of labour is maintained by constraining the context selection processes of all those involved in state. Any state worker – a minister, a civil servant, a consultant etc. – has knowledge about their function in a state organisation and about the overall purpose of the organisation they are part of and this knowledge constitutes a collection of contextual assumptions that is selected during exchanges like meetings, the writing/reading of work e-mails, documents, forms and so on. Let the collection of contextual assumptions that corresponds to a worker's knowledge of their function within an organisation be known as 'organisational contextual assumptions'.

A key difference between organisational contextual assumptions and standard contextual assumptions is that, once selected, organisational contextual assumptions are more difficult to replace with standard contextual assumptions than standard contextual assumptions. For example, one situation in which workers would select organisational contextual assumptions as a reference point for judging relevance would be during an official, work-related meeting. If, after a lull in conversation in the meeting, person *A* started talking about their dog, other meeting attendees would not select a new collection of contextual assumptions that maximises the relevance of *A*'s statements about their dog, as they would do after a lull in a conversation at a pub, or during lunch break. The organisational contextual assumptions selected by attendees in response to them being in an explicitly work related meeting would remain, and *A*'s statements about their dog would be judged by others to be irrelevant. Once organisational contextual assumptions have been selected, they cannot be replaced by standard contextual assumptions until the event which initiated their selection has come to an end. Only other organisational contextual assumptions can replace organisational contextual assumptions before the initiating event has come to an end, whether that be through context selection or statements' contextual effects. Dog talk is only relevant after the meeting has finished.

The maintenance of division of labour across/within organisations depends on workers being able to tell when things are relevant to their assigned organisational function. A civil servant in the Department

of Health needs to be able to recognise that tasks concerning housing are irrelevant to them. This is done by workers collectively demarcating times and spaces where standard, relevance maximising context selection processes are limited by the selection of organisational contextual assumptions. From this perspective, division of labour is a constraining social structure in that it is the total collection of organisational contextual assumptions held by all workers and the total range of conditions for the selection of organisational contextual assumptions which together constrain individual context selection.

So, the 'linguistic demands' distinctive of legislative and departmental tasks I appealed to in explaining the difference in distinctiveness and stability between legislative and departmental vocabularies can be understood as the relevance 'demanded' by the organisational contextual assumptions distinctive of legislative and departmental organisations. Each of the 13 strata represents a unique collection of organisational contextual assumptions, and each stratum's vocabulary will be the result of the word choices made in the construction of statements relevant to each stratum[28]. Given this, I take differences in the distinctiveness and stability of legislative and departmental strata to reflect the differences between the organisational contextual assumptions distinctive of legislative and departmental tasks. None of this adds much to the interpretation of the observable differences in distinctiveness and stability of departmental and legislative vocabularies. Ultimately, these differences still boil down to the greater uniqueness of legislative tasks and the greater temporariness of departmental tasks – unique tasks demand unique word choices, and if a task is only temporary then its corresponding unique word choices will only be made for the duration of the task. But now the notion of the 'linguistic demands' of tasks can be more thoroughly specified in terms consistent with the scorekeeping framework, meaning observable differences in vocabularies can be given an explanation from a scorekeeping perspective.

Using relevance to expand the notion of division of labour in this way also allows clarification of the relation between division of labour, sense generation and vocabulary diffusion. I have talked about sense generation to highlight how the word choices underlying vocabulary diffusion are simultaneously choices about what senses to express with chosen words. Analysis of the frequency distribution of target vocabulary senses shows that each sense tends to be highly concentrated within a narrow selection of strata. This pattern is also true of target vocabulary terms – each of the terms 'resilience', 'resilient', 'sustainable', 'sustainability' and 'wellbeing' tend to be especially highly concentrated within a narrow selection of strata. So, something about the word choices underlying target vocabulary diffusion into state text systems leads to their concentration within a narrow selection of strata, and something about the sense generation implicit in word choices leads to target vocabulary senses also being highly concentrated within a narrow selection of strata. The notion that linguistic behaviour is driven by

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[28] One would not expect to find word choices corresponding to irrelevant statements in categories' published documents.

relevance maximisation can be used to give an account of why this is so. According to such an account, a choice is made to use a target vocabulary term in the scorekeeping instances of a stratum only if the term contributes to the overall relevance of the expression it is used in. The contextual assumptions used to assess the relevance of the expression containing the term are the organisational contextual assumptions corresponding to the stratum. The sense generation implicit in the choice to use a target vocabulary term is also guided by relevance maximisation – the sense expressed by the chosen target vocabulary term is the sense that contributes the most to the expression's relevance. Vocabulary diffusion is constituted by relevance maximising word and sense choices. This account gives intuitive predictions about the strata in which target vocabulary terms would appear that match the observed division of vocabulary. If diffusion is led by relevance maximisation, one would expect occurrences of 'wellbeing' to be concentrated in the DHSC given the DHSC's focus on healthcare, *resilience 3* – concerning regional resilience – to be concentrated in the Cabinet Office given its focus on security and *resilience 5* – concerning the personal resilience of children – to be concentrated in DE given its focus on education.

The above allows further refinement to the answer to the question; *how does the 13 strata division of labour of state text systems condition the vocabulary diffusion involved in the adoption of crisis neoliberalism?* As discussed above, the division of labour represented by the 13 strata consists in the total range of organisational contextual assumptions derivable from each state worker's knowledge of their function within their organisation. What distinguishes some stratum *A* from some stratum *B* are the differences between the range of organisational contextual assumptions held by workers in the organisations of *A* and the range of organisational contextual assumptions held by workers in the organisations of *B*. When a particular rationality is adopted by the state, the vocabulary distinctive of the rationality is also adopted and diffuses throughout state organisations. This diffusion is constrained by the relevance maximising character of linguistic behaviour – each term of the rationality's vocabulary only diffuses in the organisations of the stratum in which it contributes most to statements' relevance, and the senses expressed by the rationality's vocabulary after diffusion are the senses that contribute the most to the relevance of the statements containing terms from the rationality's vocabulary. The organisational contextual assumptions of the state's division of labour are the reference point used by state workers to gauge what statements are relevant and whether the choice to use some term of the rationality's vocabulary in a particular sense contributes to statements' relevance. Thus, it is through providing organisational contextual assumptions that the state's division of labour conditions the diffusion of some rationality's vocabulary. This implies that if the arguments distinctive of a rationality were taken by the state from some non-state domain (e.g. academia), there will be a difference in the senses expressed by the rationality's vocabulary in state organisations and the senses expressed by the rationality's vocabulary in the initial, non-state domain. The relevance maximising character of diffusion changes the senses expressed by the vocabulary subject to diffusion.

I have relied on the notion of terms 'contributing' to statements' relevance to talk about the role subsentential items (words, terms, phrases etc.) play in relevance maximisation. From the perspective of an interlocutor interpreting an uttered sentence, this contribution can be articulated as follows – the interlocutor selects the interpretation of some subsentential constituent of a statement that maximises the statement's relevance. For example, consider an interlocutor who hears 'I'm going to the bank today' and holds the contextual assumption *my friend needs cash*. In this situation, the interlocutor would take 'bank' to refer to the financial institution rather than a river bank, since the *financial institution* sense – $bank_1$ – has greater contextual effects than the *river bank* sense – $bank_2$. $Bank_1$ enables the implicit conclusion that the interlocutor's friend is going to the $bank_1$ to address their need for cash, while $bank_2$ does not enable any implicit conclusions with respect to the assumption *my friend needs cash.* Here, the contribution of 'bank' to the relevance of 'I'm going to the bank today' is the implicit conclusion enabled by $bank_1$. From the perspective of someone choosing to say/write some sentence – an utterer – there is no need for the utterer to disambiguate between potential senses of the sentence's words. The sense of a word is already determined by the utterer in a way that either (a) makes the sentence relevant to the contextual assumptions the utterer assumes to be held by other interlocutors or (b) initiates context selection among other interlocutors with the intention that others select the contextual assumptions that maximise the relevance of the statement containing the word sense intended by the utterer. The relevance maximising diffusion of a rationality's vocabulary therefore consists in a complex interplay between the intended senses of word choices, disambiguation of potential word senses and context selection. The exact mechanics of this interplay can likely be specified in much greater detail – for now it is enough that this sketch of what is involved in a word's/sense's contribution to a statement's relevance gives some idea of the processes that constitute relevance maximising diffusion.

I claimed at the beginning of this chapter that division of linguistic labour is something that results from sense generation and division of labour. Bearing in mind that the maximisation of relevance is also about the minimisation of processing effort allows explanation of this. Putnam already states that the division of linguistic labour is a social structure that emerges out of a need for 'efficiency' (Putnam 1975:144), noting that it is 'neither necessary or efficient' that everyone has the ability to fix the extension of natural kind terms. In terms of 'processing effort', this suggests the division of linguistic labour emerges as a result of interlocutors seeking to reduce the amount of processing effort they each have to expend during scorekeeping instances. Increasing 'efficiency' is the minimisation of processing effort. Processing effort here refers to the effort expended in the cognitive activities performed in the course of relevance maximisation, e.g. retrieving memories or processing inferences. So, if deriving a contextual effect from a statement *A* requires adding 2 assumptions to one's collection of contextual assumptions while deriving a contextual effect from statement *B* requires adding 1 assumption, then *B* requires less processing effort than *A* (and thus *B* is more relevant than *A*). Or, if deriving contextual

effects from *A* and *B* require adding the same number of assumptions, but the added assumption for *A* requires recalling something from a year ago while the added assumption for *B* requires recalling something from a day ago, then *B* requires less processing effort than *A*. With this in mind, let us return to vocabulary diffusion. Relevance maximisation may require that a new sense be generated for a term that has diffused within some target domain because already established senses cannot be used to construct statements relevant to the organisational contextual assumptions distinctive of the target domain. One cannot expect new senses to emerge fully formed, with all the logical connections between statements containing the new sense and other statements fully worked out and the extension of the new sense fully fixed. Linguistic labour will have to be expended before the meaning/logical interrelations/extension/etc. of the new sense can be clarified and enacting a division of linguistic labour is a way of performing linguistic labour that minimises individual processing effort. If there were no division of linguistic labour, the burden of introducing term use norms for the new sense would fall upon potentially anyone who decided to use the new term. Each use of the new sense would potentially require the user to explain what they mean by the new sense and how it is relevant. The inferential steps, context selection, etc. involved in this would require the user to exert processing effort. Within a division of linguistic labour, however, only a narrow selection of users of the new sense, rather than potentially every user of the new sense, would have to go to the trouble of explaining the sense and exert the additional processing effort needed for this. So, in situations where relevance maximisation with respect to existing organisational contextual assumptions – provided by a division of labour – demands the generation of new senses, the cognitive drive to minimise processing effort motivates the formation of divisions of linguistic labour in response. Division of linguistic labour is a consequence of the relevance maximising character of vocabulary diffusion.

6.5 The Pragmatics of Governmentality

Several questions remain about how the sociolinguistic structures and dynamics discussed in this chapter relate to the Foucauldian approach to the Question of Necessity. What does the relevance maximising character of diffusion and the division of linguistic labour tell us about rationalities, technologies and governmental power? How does the examination of such sociolinguistic structures/dynamics reframe the accounts of the necessary relation between linguistic practice and power found in Foucauldian arguments? The answers to these questions have much to do with Miller and Rose's reading of Foucault's work on governmentality (1990, 2008) and their comments on the role of language in the formulation and enactment of rationalities and technologies. I see my analysis of crisis neoliberal vocabulary as essentially working within an expanded version of Miller and Rose's comments on rationalities, technologies and language. I argue that what is missing from Miller and

Rose's comments is a description of the interlocutor mechanics that underlie the discursive activity through which rationalities and technologies are produced. So, while Miller and Rose show how particular rationalities and technologies can be distinguished by their characteristic 'political vocabularies' and textual procedures (e.g. accounting, censuses etc.) (Miller & Rose 1990: 12), they do not examine how rationalities and technologies emerge from the specifically linguistic actions of the interlocutors who make use of political vocabularies and textual procedures. In other words, the 'linguistic agency' or 'interlocutor agency' through which political vocabularies and textual procedures are produced is left unanalysed. If the discursive character of power is to be understood as completely as possible, the linguistic agency of the subjects caught up in discourse needs to be understood. My pragmatist reading of Foucault is an attempt to flesh out how rationalities and technologies are mediated through linguistic agency, and this chapter's discussions on relevance maximising diffusion and divisions of linguistic labour are attempts to describe the sociolinguistic structures and processes that arise from interlocutor agency and lay the foundation for the operationalisation of rationalities. I start my explanation of this with a quick recapitulation of Miller and Rose's reading of Foucault.

According to Miller and Rose's reading, linguistic practices are central to the formulation of rationalities and their 'operationalisation' through the formation of technologies (Miller & Rose 1990: 4-7). Liberal rationalities consist of arguments about what areas of social life should be subject to government intervention and what areas should be autonomous, and how best to govern autonomous areas at a distance i.e. govern autonomous areas without undermining their autonomy (Miller & Rose 1990: 9). Since the formation of rationalities essentially involves the formation of certain kinds of arguments, the formation of rationalities is an inescapably discursive activity. So, Miller and Rose note that formulating rationalities is a matter of generating new kinds of political vocabularies which can be used to form statements that can represent things like autonomous areas of social life, directly governable areas of social life, notions of self-governance, and so on (Miller & Rose 1990: 5-6). The operationalisation of rationalities is also a discursive affair. Operationalising a rationality means setting up procedures through which the terms and statements of the rationality can be usefully mapped to the relevant aspects of reality (Miller & Rose 1990: 7). For example, operationalising the rationale that 'economic policy should aim to increase economic growth' means setting up procedures that fix the referents of terms like 'GDP' and 'GDP growth' so that the terms can be acted upon. One such procedure is national accounting (Miller and Rose 1990: 12-13), through which gross domestic product and changes in gross domestic product can be measured. Miller and Rose emphasize how such procedures involves the creation of arrays of texts – 'reports, drawings, pictures, numbers, charts, graphs, statistics' (Miller & Rose 1990: 7) – making operationalisation a textual, linguistic process. From this perspective, understanding the linguistic aspect of governmental power means understanding the discursive processes underlying the formulation of rationalities and the operationalisation of rationalities. Joseph and McGregor's analysis of 'resilience', 'wellbeing' and 'sustainability' largely follows Miller and

Rose's understanding of the linguistic aspect of governmental power. They argue that 'resilience', 'wellbeing' and 'sustainability' represent a collection of rationalities that attempt to provide a new approach to the essential liberal problem of governance in context of constant economic, political and environmental crises – where to draw the boundary between areas of life that should be directly governed and autonomous areas of life which ought to remain free from direct government, and how to indirectly govern autonomous areas at a distance (Joseph & McGregor 2020: 114-115). Much of their analysis of 'resilience', 'wellbeing' and 'sustainability' is about understanding the push and pull between the formulation of the crisis neoliberal rationalities and their operationalisation (e.g. different ways of measuring wellbeing, defining sustainability through lists of environmental and economic goals).

In Chapter 2 I discussed some of the blind spots in existing approaches to discourse analysis that result from the reliance on close reading methods of text analysis. I articulated these blind spots in terms of the question of how discourses spread across and within different areas of social relations, and Miller and Rose's comments on the discursive aspect of governmental power feature the same blind spots as Fairclough's and Joseph's work. Their reliance on analysing small samples of particular operationalisations of liberal rationalities (e.g. French post-war national accounting, the use of discounted cash flow analysis in British corporations and nationalised industries) means understanding the behaviour of rationalities at a large scale in detail is simply beyond the scope of analysis. So, I have already given some account of the gaps found in perspectives about language and power relations (like Miller and Rose's) the approach I have developed is designed to address. Now that my empirical analysis of the state's vocabulary and my pragmatist reading of Foucauldian work on governmentality have been fully articulated, the issues underlying these gaps can be expressed more generally beyond the issue of the spread of discourses.

I have presented the spread of discourses as a problem of analysis on a large scale (hence my emphasis on scaling up text analysis). But it is also a problem of analysis on a small scale. Understanding the spread of rationalities/discourses at the scale of text systems requires understanding text systems at the much smaller scale of the interlocutor relations within them, since it is small scale individual or organisational choices which mediate diffusion. Increasing the scale of analysis requires simultaneously decreasing the scale of analysis. The incorporation of pragmatist philosophy of language and linguistics into the Foucauldian analysis of governmentality was done to improve analysis of discourse at the microphysical scale of interlocutor relations. This allowed me to use computational text analysis to produce explicit descriptions of how the features of discourse at a large scale are dependent upon the features of discourse at a small scale (e.g. the overall diffusion of crisis neoliberal rationality is dependent upon the relevance maximising character of the scorekeeping instances in which crisis neoliberal vocabulary is used). In Foucault's writings and Miller and Rose's work the small scale, technological activities which operationalise rationalities are examined in detail, but the interlocutor

mechanics embedded in these activities, and how these mechanics lead to the adoption and operationalisation of rationalities at a large scale (the global scale of the hegemonic neoliberal order in the case of neoliberal rationalities) is not examined. The problem of the spread of discourses is part of a broader problem of discursive scale.

The issue of linguistic agency is at the centre of the issue of discursive scale. How one understands the logic of individuals' linguistic actions will affect how one understands how technological/microphysical relations mediate large scale behaviours of discourse. A central assumption of the pragmatist perspectives I have used is that interlocutor agency has a pragmatic logic which is specifiable independently of any particular social context. This does not mean the sociolinguistic structures/dynamics which emerge from interlocutor agency are not contingent upon other social arrangements – clearly, the particular divisions of linguistic labour and vocabulary diffusions I have discussed are only possible within the organisational context of the British state's division of labour between 2000 and 2020 and the broader political economic context of neoliberalism. However, the essential character of the pragmatic actions which constitute linguistic agency – context selection, relevance maximisation, determination of relevance through contextual effects, making rule-bound/inferential updates to discursive scores, etc., – remains the same whatever social context they take place within. It does not matter if one is at work, at a restaurant with friends, in the year 2022 or the year 1066, the same types of pragmatic actions are used to utter and interpret statements. Understanding the discursive aspect of governmental power therefore requires understanding the logic of the pragmatic actions through which subjects formulate and operationalise of rationalities. Discourse analysts have understandably been centrally concerned with understanding those aspects of discourse that are conditional upon particular social relations rather than aspects that are true of linguistic agency generally. However, as capitalist/governmental discourse is something that simultaneously constrains and is produced by linguistic subjects, those aspects of discourse unique to particular kinds of capitalist/governmental relations can only be fully understood by taking into account the pragmatic logic of subjects' linguistic agency. So, understanding how an organisation operationalises a rationality requires understanding the pragmatic processes through which the organisation's workers make sense of and act upon the rationality.

As emphasized in Chapters 2 and 4, gaining such an understanding is partly a matter of getting large amounts of data and having the appropriate tools of text analysis. For example, an exhaustive understanding how a particular word associated within a rationality is used in the interlocutor relations embedded in state organisations requires analysis of a dataset containing as many relevant uses of the word as possible. But it is also a matter of having the theoretical tools to use data analysis to talk about the pragmatic logic of linguistic agency embedded in the way state organisations use some discourse/rationality. Reliance on close reading is not the only reason why current discourse analysis approaches are unable to analyse the spread of discourses at the scale of text systems. Lack of theoretical

consideration about the linguistic agency underlying text systems is also a reason. I have tried to integrate a pragmatist account of interlocutor agency into Miller and Rose's comments upon the discursive character of rationalities and technologies using the discursive scorekeeping framework. Here, the 'operationalisation' of rationalities through technologies means the enactment of scorekeeping instances in which the statements distinctive of some rationality feature as presuppositions. Combined with a variationist approach to large-scale text analysis, this has allowed me to go beyond simply recognising, as Miller and Rose do, that the formulation and operationalisation of rationalities is a discursive affair involving the adoption of political vocabularies and specialised, textual practices. This has enabled me to fill in the gaps concerning linguistic agency and the link between this agency and rationalities/technologies found in Foucauldian analysis of the discursive character of governmentality. This has further enabled me to expand on the mereological approach typical of the Foucauldian approach to the Question of Necessity. The discursive activities carried out within the technological relations that operationalise rationalities and therefore constitute governmental power relations work according to a pragmatic logic. This logic means that the vocabulary diffusion underlying the adoption of particular rationalities follows is relevance maximising, where the organisational contexts of technological relations are the reference points used to gauge relevance. This means that when a rationality is adopted by some domain, the uses and meanings of the political vocabularies of rationalities get adapted to the organisational contexts of the domain through the sense generation implicit in individuals'/organisations' word choices. The enactment of dispersed definitions and divisions of linguistic labour is an important part of this adaptation. Such enactments can be understood as the necessary sociolinguistic conditions for the operationalisation of rationalities – so the relevance – maximising sense generation/word choices and the enactment of divisions of linguistic labour etc. distinctive of the adoption of crisis neoliberal vocabulary are necessary conditions for the operationalisation of crisis neoliberalism.

Conclusion: Motivations, Limitations and Future Directions

The purpose of this thesis has been to explore the potential of using large language models as a means of addressing the Question of Necessity. I have explored this potential by using the large language model BERT as part of a variationist approach to text analysis taken from sociolinguistics and natural language processing (NLP). I used this approach to give an account of the sociolinguistic mechanics underlying the spread of crisis neoliberalism in the British state. In doing so, I addressed the question of how rationalities spread within groups of organisations, a question not generally considered in depth in discourse analysis despite recognition that rationalities indeed do spread. This approach enabled me to make inferences about the spread of rationalities from observations about the strata of documents in which the words/senses of a rationality are highly concentrated. This in turn enabled me to consider how the sociolinguistic structures which mediate diffusion constitute governmental technologies, thus addressing the Question of Necessity. The sense induction procedure which utilised BERT was a crucial part of this – discussion of sociolinguistic structures/processes like division of linguistic labour and relevance maximising diffusion would not have been possible without performing word sense induction. My use of word sense induction is therefore an illustrative example of the usefulness of large language models for discourse analysis.

Through constructing an approach to the Question of Necessity around BERT and testing it on analysis of crisis neoliberal vocabulary, I have made several points pertinent to the Question of Necessity. First, I argued against Barthesian approaches, rejecting the notion that mere uncritical interpretation of ideologically loaded texts is enough to perpetuate power relations. The necessary relationship between linguistic practice and power relations is not to be understood in terms of perpetuation via interpretation of covert, second-order semantic content. I instead opted for a mereological understanding of the relationship of necessity between linguistic practice and social relations, arguing that such an understanding avoids much of the complicated philosophical baggage that comes with understanding this relationship in terms of semiosis or as a causal relationship. In a mereological understanding, linguistic practices are a constitutive part of social relations. Following Foucault's work on governmentality and Miller and Rose's reading of Foucault I adopted a mereological understanding of the relationship between linguistic practice and governmental power, arguing that the discursive aspect of governmental power ought to be understood in terms of all the linguistic practices embedded within the technological relations through which governmental power is exercised. As liberal governance is characterised by governance at a distance via the textual procedures contained within long chains of technological relations, technological relations are mereologically constitutive of governmental power relations. The governmental power relation that might hold between, say, a state and some organisation is nothing but the networks of technological relations that link the state and the organisation via a series

of intermediary organisations. Thus, the linguistic practices embedded within these technological relations are similarly mereologically constitutive of governmental power relations.

I also argued that the Foucauldian approach to the Question of Necessity is consistent with a pragmatist understanding of meaning. So, I incorporated the notions of rationalities and technologies into Lewis' discursive scorekeeping approach. This enabled me to address a couple of gaps in the Foucauldian approach. The first gap concerns the place of linguistic agency within technological relations. Though there is much emphasis on showing the logic of the rationalities operationalised through technologies, the importance of experts (accountants, statisticians, psychiatrists, civil servants etc.) in technological relations and the textual procedures through which governmental power is exercised, the specifically linguistic aspect of the agency of the experts, managers, entry-level staff etc. embedded within technologies is not examined. Given the frequent Foucauldian emphasis on the discursive/linguistic character of power, this is a significant gap. My use of the scorekeeping framework allowed me to give a pragmatist description of the linguistic agency underlying technologies. An important part of *how* technological linguistic practices constitute governmental power relations concerns the pragmatic logic of the linguistic agency underlying those practices. This also allowed me to address another gap in Foucauldian work, which concerns the question of how the discursive activities of small-scale, microphysical technological relations mediate the large-scale behaviours of discourse, e.g. the global operationalisation of neoliberal rationalities. Through empirical analysis of the British state's vocabulary, I argued that sociolinguistic processes of vocabulary diffusion and the enactment of divisions of linguistic labour underlie the state's adoption of 'resilience', 'wellbeing' and 'sustainability' rationalities. The political and economic interests behind the global spread of neoliberal discourse are mediated through the pragmatic logic of such sociolinguistic processes.

In the introduction I stressed the importance of the piggyback work of investigating what sociological uses platform-academia algorithms can be put to. This thesis is essentially the output of my effort to perform this piggyback work. I therefore finish with some comments about what is involved in the piggyback work of exploring the potential of large language models as a tool for discourse analysis. I do this through a discussion of some of the motivations behind my overall approach (7.1). Finally, in 7.2 I consider some of the limitations of the approach I have developed and some future research directions that might overcome these limitations.

7.1 Motivations

In my approach to incorporating BERT into discourse analysis, I have made the decision to ground discussion of discourse analysis approaches in perspectives from philosophy of language and linguistics, largely from the pragmatist tradition. This is perhaps the most distinctive feature of my

approach, as the pragmatist perspectives I have constantly appealed to are generally not considered in discourse analysis. Because of this, what extra utility I get from such perspectives may not be clear. Why not simply rely upon what theoretical tools are already made available by work on governmentality and Critical Discourse Analysis? Why go through the effort of grounding discussion of Critical Discourse Analysis and governmentality in pragmatist perspectives? Why are such perspectives useful to discourse analysis? In this section I detail my motivations for relying on pragmatist perspectives. Some of these motivations have already been discussed – here I recapitulate them from the perspective of the necessities of piggyback work. This will make it easier to unpack what is involved in the piggyback work of investigating what sociological uses platform-academia algorithms can be put to. The motivations considered concern the theoretical requirements of incorporating BERT within a discourse analysis approach. Implicit within these theoretical requirements is a shift from using discourse analysis as part of a project of political critique (as is typical) towards using discourse analysis as part of a purely descriptive project. These two points are the central focuses of the following discussion.

The first motivation stems from the fact that using large language models in discourse analysis is not simply a matter of inserting some procedure like word sense induction into a ready made discourse analysis framework. I have taken discourse analysis to be the range of approaches to text analysis that are motivated by the Question of Necessity, but even so 'discourse analysis' refers to a range of inconsistent approaches. This means that before large language models can be incorporated into discourse analysis, a selection needs to be made from a broad variety of pre-existing approaches. This is not straightforward. There is no consensus about what approach is the most suitable for what circumstances, and the differences between them have their roots in assumptions about broader theoretical issues about linguistic meaning and the connection between language and social structures. Different discourse analysis approaches are distinguished by their respective sociolinguistic assumptions. Choosing some approach to the Question of Necessity therefore carries an obligation to engage with these assumptions. This is especially true for this thesis, since text analysis methods are the focus of this thesis rather than a means to investigate some other object, meaning evaluating the theoretical soundness of text analysis methods is an important goal. So, analysing the sociolinguistic assumptions of established approaches to the Question of Necessity as exhaustively as possible has been a central concern – this is a central motivation behind using pragmatist perspectives. Without using them, how different sociolinguistic assumptions lead to differences between discourse analysis approaches is left implicit. So, while it is true that in both critical discourse analysis and Foucauldian discourse analysis there is a lot of heavy theorising about the relation between social structures and discourse, expressed in arguments about semiosis, semiotic orders, governmentality, enunciative modalities etc., it is not entirely clear from these arguments alone where the theoretical points of difference and similarity between Critical Discourse Analysis and Foucauldian discourse analysis are.

Clarifying where these two approaches differ was the motivation behind delving into semantics and pragmatics in Chapters 1 and 2.

Corresponding to the need to specify the sociolinguistic assumptions that divide discourse analysis approaches is the need to specify how the sociolinguistic assumptions of some chosen approach affects what uses BERT can serve. Making this connection between the sociolinguistic assumptions of the chosen approach and the decision to use BERT as part of a method for tracking the movement of word senses across state organisations was another motivation behind my use of pragmatist perspectives. At the end of Chapter 2 I gave theoretical parsimony as the main reason for reconstruing text systems in terms of scorekeeping. The need to clarify the connection between pragmatist sociolinguistic assumptions and the utility of BERT was another reason.

To understand this, recall how in Chapter 2 I argued there is a need to go beyond the close reading methods typically used in discourse analysis as such methods limit the extent to which one can understand how things like texts and signs are embedded within social structures – in Critical Discourse Analysis terms the constructive moment in semiosis. For this reason, I used 'text systems' as a convenient way of capturing the scale of analysis needed for an in-depth examination of the genre-chains, semiotic orders, etc. through which the constructive moment happens. This set up text systems as the object of analysis, and it follows straightforwardly from this that the purpose of using BERT is to gain some insight into text systems not possible with close reading. However, the formulation of text systems in terms of the constructive moment in semiosis obscures the connection between using BERT to investigate text systems and the pragmatic approach to meaning underlying the critique of Barthesian discourse analysis in Chapters 1 and 2. Aside from theoretical parsimony, reformulating text systems in terms of scorekeeping makes this connection clearer. The pragmatist understanding of meaning emphasises how the interpretation and production of statements depends upon the interlocutor relations which contain them and corresponding contextual assumptions, presuppositions, salience rankings and so on. Taking such an understanding as the basis of an approach to discourse analysis sets these interlocutor dynamics as the object of analysis. From this perspective, BERT becomes a tool for understanding how discourse is structured by interlocutor dynamics, which follows naturally from pragmatist sociolinguistic assumptions.

The connection between discourse analysis approaches' sociolinguistic assumptions and how the utility of BERT can be understood can be made clearer by considering an approach different to mine – the use of corpus linguistic methods within Critical Discourse Analysis. Here, the utility of corpus linguistic methods is determined by more or less Barthesian sociolinguistic assumptions. Generally, the aim of corpus assisted Critical Discourse Analysis is to show that, on average, certain ideological contents and narrative devices are especially characteristic of particular newspapers, social media groups, etc. The work of Paul Baker, who has done much work on incorporating corpus linguistics into Critical

Discourse Analysis (Baker 2008), is a good example of this approach. Along with other authors, he uses corpus assisted discourse analysis to show how newspapers tend to negatively frame refugees, immigrants, asylum seekers and migrants (Baker et al. 2008), relate chemsex to criminality (Heritage and Baker 2022) and to show how extremist Islamist publications use various narrative devices such as negative othering to get their point across (Baker and Vessey 2022). Such work tends to work from Barthesian, or at least weakly Barthesian, assumptions. So, in (Baker 2008) there is a whole chapter devoted to explaining how to use corpus linguistics methods to identify and trace grammatical patterns. The motivation behind this is rooted in Fairclough's notion that grammar encodes ideological contents. Baker sees corpus linguistic methods as a way of examining the extent to which grammatically encoded ideological contents are present within groups of texts on a large scale (Baker 2008:151–55). In Baker's other works there is little explicit commitment to some version of second-order ideological semantic content. However, his purpose of using corpus linguistic methods to examine how widespread particular kinds of ideological content are across strata of text still tacitly emphasises the role interpretation plays in maintaining power relations over general interlocutor dynamics. This emphasis results from the basic assumption that texts' contents in themselves, regardless of how they are used within interlocutor relations, contain the potential to perpetuate power relations[29]. Baker's goal of examining the spread of particular ideological contents is premised on this assumption. So, even work in which second-order ideological content is not explicitly appealed to can be thought of as weakly Barthesian. If BERT were to be incorporated into Baker's approach to corpus assisted Critical Discourse Analysis, it would not be used as a tool for investigating how discourse is mediated by interlocutor dynamics. It would be used in the same way Baker uses corpus linguistic methods – to examine the extent to which particular ideological contents and narrative devices are expressed within some stratum of texts. Induced senses would be taken as indicators of the presence of certain ideological contents/narrative devices.

The third motivation to consider concerns the Foucauldian notion of a 'microphysics of power' (Foucault and Lagrange 2006: 16) and the need to scale up text analysis to the level of text systems argued for in Chapter 2. In a microphysics of power, organisational power is understood to be a consequence of, rather than a pre-existing constraint upon, the interpersonal relations and strategies which constitute organisations[30]. A central purpose of work on governmentality is to produce a

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[29] Without the baggage of second-order semantic content this is a quite reasonable assumption. If some narrative framing is present in the majority of newspapers, one would expect newspaper readers to agree with the framing to a greater extent compared to if the framing is not present in the majority of newspapers, regardless of the interlocutor dynamics unique to each newspaper reader. However, from a pragmatist perspective this is only half the story. A more complete account of how the prejudices behind ubiquitous newspaper narratives contribute to systemic injustices would include a description of how such narratives get embedded into the interlocutor dynamics of, for example, workplaces, government organisations, informal social networks, and so on.

[30] For example, Foucault argues that the power exerted upon psychiatric patients should not be understood as a feature of psychiatric organisations like asylums, it should be understood as a feature of the complex of power dynamics embedded in the interpersonal relations between psychiatric doctors, supervisors, servants and patients that constitute asylums (Foucault 2006:4–6).

microphysics of the power of liberal government, hence the concern with understanding the small scale, technological organisational-interpersonal relations and procedures through which liberal rationalities about the market and the state are implemented. This is linked to the concern with scaling up text analysis as using larger datasets, adopting sociolinguistic methods and algorithmic procedures (as advocated in chapter 3) is not enough to be able to talk about the behaviour of discourses at the scale of text systems in detail. Increasing the level of linguistic detail at which small scale technological structures and practices can be talked about was also necessary. As I noted at the beginning of Chapter 6, one can use the existing theoretical tools of governmentality to consider things like how the different senses of words like 'resilience' unearthed through BERT relate to the production of liberal subjectivities, or how induced senses indicate the presence of some ideology, but this is not the same as understanding how discourses are structured by text systems, or how discourses spread across text systems. Understanding these things requires recourse to sociolinguistic/pragmatist notions like diffusion, relevance and scorekeeping. In other words, understanding these things from a governmentality perspective needed a linguistic expansion of the microphysical perspective, which I provided through pragmatist perspectives.

Implicit in all three motivations is a shift away from taking discourse analysis as a tool of political critique towards taking discourse analysis as simply a means of understanding the connection between linguistic practices and power relations in a purely descriptive manner. I have not been concerned with using pragmatist perspectives to produce new kinds of critiques of neoliberal discourses. The focus has been on clarifying the theoretical aspects of the methodological apparatus constructed around BERT as exhaustively as possible and demonstrating the new kinds of sociolinguistic description relevant to the Question of Necessity made possible by this apparatus.

This shift is especially clear with the third motivation of linguistically expanding the microphysical perspective. As noted by Miller and Rose, the initial adoption and development of Foucauldian perspectives in 1970s UK was motivated by a dissatisfaction with the structuralist notions of ideological and state power typical of neo-Marxist thought at the time (Miller and Rose 2008: 3–4). For example, they note how the structuralist conception of power left the multifarious functions of diverse institutions and organisations unanalysed, reducing them to the singular function of reproducing capitalist relations of power. They also note the tendency for the 'state' to be left unanalysed, as well as the relations between economic, political and ideological relations. This dissatisfaction resembles Foucault's dissatisfaction with theories of power that leave the rules, conventions, groups etc. that constitute institutions and organisations unanalysed – a dissatisfaction that resulted in Foucault's articulation of a microphysics of power (Foucault 2006: 15). So, the development of a more fine-grained theory of institutional power is a key motivation of the development and adoption of the microphysical perspective. The 1970s context of structural Marxism is important here, for it shows that the drive to develop a more fine-grained theory of institutional power was embedded in a broader project of political

critique. The point of a more fine-grained analysis of power is to enable resistance to newer developments in capitalism such as financialization (Miller and Rose 2008: 2). Current work on governmentality largely fits within this project, thus the purpose of work that applies the governmentality lens to 'resilience', 'wellbeing' and 'sustainability' is generally to show how these notions are an extension of a neoliberal rationality and are therefore discursive tools for the maintenance of capitalist domination.

An extensive linguistic expansion of the microphysical perspective is simply not necessary to produce a political critique of concepts like 'resilience', 'sustainability' and 'wellbeing'. To show that such concepts are discursive tools of domination it is enough to show that the arguments surrounding them reflect neoliberal rationalities, or that the technologies that correspond to them produce certain kinds of compliant subjectivities. This means there was no reason for governmentality researchers to develop the theoretical tools needed to fully exploit the scale of analysis and level of detail made possible by BERT. Political critique as typically practised by discourse analysts is not enough to motivate the theoretical work needed to construct a method around BERT. Also needed is a shift of focus from prioritising political critique to prioritising descriptive detail. So, this thesis' primary motivation has been the question: *What forms of description relevant to the Question of Necessity are enabled by BERT?*

This is not to say the question of what forms of critique are enabled by BERT is not a good motivating question. Rather, the point here is that when it comes to exploring the capabilities of a new tool or method, consideration of what descriptions are made possible by the new tool/method must come before consideration of what forms of critique are made possible. Though the adoption and development of Foucauldian ideas in the UK enabled new forms of political critique, these forms of critique are only possible given the novel microphysical descriptions of psychiatric power, absolutist government, liberal government etc. developed by Foucault. The inadequacy of structural Marxism as a way of critiquing more recent developments in capitalism noted by Miller and Rose is rooted in its inadequacy as a way of describing power. So, Miller and Rose's adoption of Foucauldian political critique presupposes a belief that Foucauldian notions provide better descriptions of power. Critiques must always have descriptions as part of their premises, thus where there is uncertainty about what descriptions are even possible, descriptive motivations have priority over critical motivations. For this reason, this thesis has been an entirely descriptive project despite the typical understanding of discourse analysis as primarily a tool of political critique. I leave the question of what forms of criticism are possible given the sociolinguistic descriptions enabled by BERT to future work.

Given all this, the piggyback work of investigating how large language models can be incorporated into discourse analysis involves dealing with two sets of issues. The first set of issues concerns being able to use large language models. This involves things like learning a programming language, learning how

to collect and organise data, understanding the distributionalist linguistic principles that underlie neural language models, learning how to fine-tune large language models and retrieve learned embeddings from them, and so on. Dealing with these technical issues is a laborious affair but is straightforward in the sense that it involves nothing more than absorbing established knowledge. There is no uncertainty about what kinds of theories and technical competencies are needed to be able to use large language models. Piggyback work becomes messy when it comes to constructing a discourse analysis approach around large language models. This is because discourse analysis does not come ready made with the theoretical tools needed to interpret the output of large language models in a relevant way. There is no established body of knowledge that provides answers to questions like; What inferences can be made from induced senses that are relevant to the Question of Necessity? How does adopting a particular set of sociolinguistic assumptions limit what can be inferred from induced senses? Neither is there any consensus on when to use one discourse analysis approach over another, or what model of discursive power is the most plausible. Both these points mean constructing an approach to discourse analysis around large language models involves (a) sorting through the debates internal to discourse analysis and (b) taking theoretical insights from other disciplines to equip discourse analysis with the tools to interpret the output of large language models. The three motivations behind my use of pragmatist perspectives and the shift to a descriptive mode of analysis implicit in them are responses to these two requirements.

7.2 Limitations and Future Directions

I finish with some comments on the limitations of the approach I have taken. Through these comments I also briefly consider the ways future research might go about overcoming these limitations. I first consider limitations with how I have examined the variation in the specificity, volatility and frequency of the target vocabulary and more generally the British state's vocabulary. These limitations have meant my description of the adoption of some rationality in terms of the diffusion of the linguistic items characteristic of the rationality has in places been overly simplistic.

The first limitation to consider concerns how I have used 'division of labour' in my analysis of state vocabulary. I have examined variation across the aspect of the state's division of labour represented by the 13 strata. As noted in Chapter 5, this is a very small aspect of the total division of labour. Because of this, my description of how the adoption of rationalities is directed by the organisational contextual assumptions that characterise a division of labour has not been as detailed as it could have been. A more thorough examination would consist of an analysis of variation across the division across regional hierarchies between central departments and local authorities, between state bodies, semi-autonomous agencies and consulted private firms, and so on. Furthermore, these 13 strata only offer a rough

approximation of inter-organisational division of labour. A more complete examination would also consider intra-organisational division of labour, such as the division between ministers and civil servants, between senior and junior members of staff etc.

The underlying problem here is that the notion of 'division of labour' is an abstraction from inter-organisational, intra-organisational and ultimately interpersonal relations. The stratum 'Cabinet Office' is ultimately an abstraction from a collection of organisations in which the Cabinet Office is just one member. Also, part of this collection are the market research firms consulted to conduct research, local resilience forums, and so on. Even if one analysed variation across a highly detailed division of labour, if this division of labour is not simply a list of the entities that constitute state's total collection of inter-organisational, intra-organisational and interpersonal relations, any theory of the diffusion of rationalities will be oversimplified. Questions about whether the adoption of rationalities always starts with central departments and then spreads to lower-level organisations, about the senses generated as a result of the adoption of rationalities by lower-level organisations, about how the specificity and volatility of a rationality's vocabulary in lower-level organisations compares to higher up organisations, and so on, will be unanswerable. Future research should work on ways to analyse inter-organisational, intra-organisational and interpersonal variation rather than variation across a division of labour. This would lead to a more fine-grained understanding of how organisational contextual assumptions direct the adoption of rationalities.

Another limitation is that I have only considered variation within the British state, leading to a view of rationality diffusion in which a rationality's characteristic linguistic elements diffuse in one direction from some non-state domain into state organisations. This is of course vastly oversimplified. The diffusion of, for example, 'resilience' is not a unidirectional diffusion from academic departments into state organisations. Academic writing on resilience constantly changes, with new arguments and therefore new senses of 'resilience' being continuously generated. This academic sense generation does not happen independently of the sense generation that happens within the state – academics pay attention to how 'resilience' is used in the state and come up with their own arguments about and senses of 'resilience' in response. So, diffusion of 'resilience' from academia into the state in turn triggers diffusion of 'resilience' from the state into academia. A more complete understanding of the diffusion processes that underlie the adoption of rationalities needs to start from an analysis of variation across multiple domains, not just variation within the state.

The final limitation to be considered is that I have not examined variation across intertextual networks. I have largely been restricted to arguing that there are indeed divisions of linguistic labour underlying particular senses of the target vocabulary. The purpose here was to show that the adoption of crisis neoliberal rationalities involves the enactment of sociolinguistic structures like divisions of linguistic labour, and that therefore crisis neoliberal technologies are in part constituted by such sociolinguistic

structures. I have not been able to consider the structure of divisions of linguistic labour in more detail. For terms which are subject to a division of linguistic labour, is there always a central 'node' in which the bulk of linguistic labour is performed, like the way the Civil Contingencies Act 2004 is a central node where the bulk of the linguistic labour needed to define 'regional resilience' is performed? Is linguistic labour always dispersed across the hierarchical-regional relations between central departments and local authorities, as in the way the labour involved in defining 'sustainable communities' is dispersed between the MOH and Local Strategic Partnerships? Is linguistic labour also dispersed between state organisations and consulted private corporations?

These limitations are the consequence of limitations I faced when constructing the dataset of state documents. For example, the simplistic nature of the 13 strata used is a result of the difficulty of extracting the precise name of the organisation from which some document came from. Documents do not have a standardised format, making it very difficult to automatically extract organisation names without a predefined list of organisations. Such a list is also not easy to produce, since there is no centralised list available online of all the organisations involved in the production of policy, meaning the only way of producing such a list is to carefully read through large quantities of documents. Furthermore, only the documents of central departments, legislation and parliamentary minutes/committees are made available as a centralised, online archive. Documents of local organisations such as local authorities, Local Strategic Partnerships or Local Resilience Forums are either unavailable or scattered across multiple websites that do not have a standardised design, making automatically collecting them a labour-intensive affair.

So, one way to go about thinking about how these limitations might be overcome would be to imagine what dataset someone interested in the adoption of rationalities would construct if methodological limitations like the above were not an issue. Though such an ideal dataset may in practice be impossible to construct, having such a dataset in mind would at least allow researchers to use available resources to approximate it as far as possible.

This dataset needs to be able to capture (a) inter-organisational, (b) intra-organisational, (c) interpersonal and (d) intertext relations. For (a), each document needs to be labelled with the precise organisation which published it and the organisations in which it is read. For (b), each document needs to be labelled with the positions of the staff who wrote the document and the staff positions who read it. For (c), each document needs to be labelled with the names of the people who wrote it and the names of those who read it. For (d), each document needs to be labelled with the names of the other documents it mentions. An important point here is that for (a), (b) and (c), each document in the ideal dataset is labelled with both producer and audience. Thus, (a) involves labelling each document with both the organisations that produce the document and those in which the document is read. In contrast, in the dataset I have used, each document is only labelled according to producer strata – a document is labelled

as of the MOH if it was produced by some organisation of the MOH. A dataset with both producer and audience labels that fulfils (a) - (d) would not only allow a much more detailed version of the analysis I have conducted to be produced, in which the specificity, volatility etc. of words is compared across multiple producer strata. It would also allow methods and algorithmic procedures that rely on the construction of node-edge graphs to be used, such as social network analysis and graph clustering algorithms, to be combined with word sense induction procedures and token embeddings. In the case of (a), (b) and (c), each node would represent an organisation/staff position/individual, and the edges between each node would represent a producer-audience relation. For example, if for organisations *A* and *B* there is a collection of documents produced by *A* and read by *B*, an edge whose weight corresponds to the number of such documents is drawn between nodes *A* and *B*. In the case of (d), each node would represent a document and each edge would represent a 'mentioning' relation – if a document *A* mentions another document *B* an edge is drawn between nodes *A* and *B*.

Email datasets are promising as datasets closer to the ideal dataset. As emails are by default labelled with producer (sender) and audience (receiver) and they can capture intra-organisational and interpersonal relations. They are also a common object of analysis for various Computational Social Science researchers, meaning there is a wealth of algorithmic procedures designed for the analysis of email datasets available. Email datasets are not especially widely available online – construction of new email datasets will likely involve negotiation with organisations, and it is quite likely publication of email datasets will not be permissible. As such, constructing an email dataset which can represent inter-organisational relations (i.e. a dataset with emails from multiple organisations which are in frequent contact with each other) would be very difficult. Nevertheless, there are some email datasets available online on which researchers can test combining large language model based procedures with graph analysis methods. A notable example is the Enron email dataset (Klimt and Yang 2004), which contains 619446 emails sent between 158 employees of the former fraudulent energy corporation. This dataset offers an opportunity to examine corporate rationalities and technologies from a sociolinguistic perspective.

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