

The political economy of knowledge production: The Knowledge Exchange Framework, Performativity and Social Justice

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Abstract

Knowledge production, its use, and appropriation is a social and political activity as much as it is a technical process that seeks to codify and transfer knowledge to industry. In 2020, the UK Government introduced a Knowledge Exchange Framework (KEF) to evaluate the efficiency and effectiveness of the knowledge exchange process, that is, the production, use, and in some cases, appropriation of knowledge produced in universities by industry for commercial purposes. As far as can be determined, there is no documented account of how the KEF is going to potentially impact the UK HE sector, influence university researchers' behaviour, and what are the implications for social justice therein. Given that the aim of KEF policy is to enable universities to better understand and improve their performance with regard to the efficiency and effectiveness in the use of public funding, the KEF policy is potentially a very powerful driver of the potential changes taking place in UK HE research ecosystem.

This research explores the impact potential of the introduction of KEF on the process of knowledge production and exchange in the UK, that is, how knowledge is produced and disseminated for use / appropriation by industry, through a constructionist-interpretive approach. Providing insights from a political economy perspective, the research has exposed the further economization of the knowledge production processes. In particular, it helps understand to what extent the KEF is seeking to strengthen the state bureaucratic control over academic activity, and to what extent it positions academia instrumentally, subordinate both to the state and the market. This research will enable policy makers and institutions to understand the nature of the KEF, its possible impact and influence, and help support an assessment of their role in terms of where intervention may be required to mitigate the most egregious effects of the KEF policy.

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Declaration

This thesis is my own work and has not been submitted in substantially the same form for the award of a higher degree elsewhere.

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1) Introduction

The UK Higher Education (UK HE) sector is increasingly being organised on market or quasi-market lines since the introduction of student fees in 1998 (Brown & Carasso, 2013; Hemsley-Brown, 2011; McGettigan, 2013; Molesworth et al., 2010). The shift to market-based provision for undergraduate and postgraduate teaching was further driven by the UK Government that sought to move away from public funding of teaching in higher education (Department for Business Innovation and Skills, 2011). In order to remain competitive in the ‘market’, UK universities (and faculty) are increasingly engaging in market-like behaviours, that is, competing for finance and capital (Middleton, 2000; Slaughter, 2004; Slaughter & Leslie, 1997). Competition in universities is not on the market-price of a product (for example, tuition fees, which are capped for home undergraduate students), but on their ability to recruit more students, both international and domestic, as international students pay higher tuition fees than home students, and since the student number cap for home students was removed in 2015.

The marketisation of UK HE sector has not been limited to just student debt though. There is also increasing competition to attract more research funding, which in turn significantly influences the institutional rankings (based on a certain weighting of research criteria set by the league tables), which in turn affects student recruitment. The competition for research funding in the past has usually focussed on publicly funded research grants through research agencies coordinated by the agency UK Research and Innovation (UKRI), and on external funding and endowments, but increasingly universities are looking to increase their funding from industry, through university-business partnerships. Clearly, one of the most important supply factors for the latter source of funding is knowledge, which as an asset can be used to generate future revenue (rent) streams. The UK Government has increasingly sought to commercialise research outputs (knowledge) produced in universities (mainly techno-scientific

knowledge) through ‘knowledge transfer’ (KT). The underlying premise in the KT arrangements is that knowledge, successfully ‘transferred / exchanged’ and / or appropriated through intellectual property rights (IPR) would provide opportunities for the university and businesses for economic gains.

a) Context for the research

A call by the European Union (EU) for a vigorous policy response from member states, to integrate research and innovation in industrial policy for stimulating the production of new knowledge, its use, and commercial exploitation, brought to the fore the importance of KT as a key driver for economic growth (Commission of the European Communities, 2005). The UK Government, which considers the UK to be a global player in research on various measures, such as the number of publications, citations, and the number of universities in top rankings in global league tables compiled by various organisations, responded by introducing an ‘Impact’ statement for research in 2009 (UKRI, 2022), which was essentially a requirement to demonstrate clear goals of research impact on commercial and / or policy applications for funding grants. The introduction of Impact led to a shift in the management of research discourse, focussing funding bodies, institutions, and researchers to consider Impact as part of research agendas. In parallel, there was an increasing awareness of the importance of university-government-industry relationships for KT (Etzkowitz, 2003; Etzkowitz & Leydesdorff, 1997), leading to a mushrooming of ‘innovation parks’ to promote and stimulate KT (Carayannis et al., 2016; Chesbrough, 2003), and an increasing focus on university funding of start-ups and spin-offs (Zomer et al., 2010), especially in hi-tech and biotech sectors (Mazzucato, 2015; Mirowski & Horn, 2005; Pusser, 2012). The transfer of knowledge, expertise and skills between universities and business in the UK, characterised by a broad range of activities, is collectively referred to as ‘innovation’ and ‘engagement’ in literature and in

common parlance. KT has been mainly achieved through either setting up of clusters of science or technology transfer parks affiliated with universities based on geographical proximity and/or ownership of relevant industry, connected by the need for development of common skills or new technologies (Porter, 1998); or through engagement strategies adopted by universities to provide effective knowledge transfer to industry based on industry needs, driven by the specific impact of research produced in relevant areas valued by industry. This has led to a shift where universities are adopting entrepreneurial behaviours (Marginson, 2016; Shattock, 2005), introducing managerial strategies and interventions to ensure the effective transformation of knowledge into products and services that support industry (Naidoo, 2016; Radder, 2010; Slaughter, 2004).

Following these developments, in 2017 the UK Government published its industrial strategy White Paper (Department for Business Energy and Industrial Strategy, 2017) which aimed to accelerate and measure knowledge creation and transfer. The industrial strategy envisaged a key role for UK universities in increasing the rate of research (knowledge production) for commercial purposes, which would spur economic growth and help address economic challenges such as low productivity and skills gap across many regions in the country. Before 2017, the erstwhile Higher Education Funding Council for England (HEFCE) had been tasked by the government to provide more information about how effectively universities in the UK serve the purpose of KT for the benefit of economy and society. This remit was taken over and formalised by UKRI's Research England, who were commissioned by the Industrial Strategy White Paper to develop a new Knowledge Exchange Framework¹ (the KEF). The development of the KEF signalled a shift from mere information gathering by the Government via funding

¹ See <https://re.ukri.org/knowledge-exchange/knowledge-exchange-framework/>

bodies on research activities to specific metrics designed to measure and compare research activity across UK HE institutions. The main aim of the KEF is to –

“Increase efficiency and effectiveness in the use of public funding for knowledge exchange (KE) and to further a culture of continuous improvement in universities. It is intended to allow universities to better understand and improve their own performance, as well as provide businesses and other users with more information to help them access the world-class knowledge and expertise embedded in English HEPS².”

The KEF is thus going much beyond the assessment of impact of a university’s research that is linked to public funding of universities. The fact that the KEF has explicit metrics to measure the rate of knowledge production and its appropriation, that in future may be linked directly to an institution’s eligibility for funding³, may potentially have far-reaching consequences, not least for the direction of knowledge production, that is, the disciplines and specific areas of research which would attract more funding. The role of universities in industrial policy, in producing research and innovation which can be used by industry to stimulate growth in the economy, has created the context in which state intervention for evaluation of universities in terms of their contribution to business has become imperative.

b) Key terms

The term ‘researcher’ is used in this thesis to denote all HE staff working at universities who do research as part of their job. The term ‘researcher’ therefore includes lecturers, senior lecturers, readers, professors, and various other categories of research-only staff.

² Higher Education Providers

³ <https://www.timeshighereducation.com/news/knowledge-exchange-framework-starts-year-funding-link>

The term ‘knowledge’, as used in the context of this thesis, represents the outcome of research processes. Knowledge is taken to mean both explicit and tacit knowledge (see literature review section), and it includes, unless dictated by a specific context in the text, all kinds of knowledge – basic, applied, and incremental knowledge, scientific knowledge, discovery, invention, innovation, techno-scientific, and technological-change as a form of knowledge.

The thesis considers the term ‘Knowledge Economy’ in the sense in which Bell (1973) described it, as an economy which derives value from knowledge / information products, and in which economic growth is contingent on the quantity and quality of knowledge / information derived from research and development conducted in universities. For a historical and conceptual genealogy of the term knowledge economy, and for a distinct social theory of how it is entwined socially and culturally, see Kenway et al. (2006). The term ‘Knowledge Exchange’ (KE), which has become popular amongst policy makers replacing its precursor Knowledge Transfer (KT), is widely understood in policy and university circles as supporting the Government’s industrial strategy through the sharing of knowledge and expertise between universities and industry for the benefit of the economy and the society. This sharing or ‘Exchange’ of knowledge is a particular focus of this thesis, and therefore the term ‘Knowledge Exchange’ (KE) is used to denote a process embedded within the knowledge economy that seeks to transfer knowledge produced in universities to support industry and stimulate growth.

‘Engagement’, although a relatively new term in the UK HE sector, has found rapid acceptance and is now being used extensively by universities to describe their efforts to share the benefits of research outputs more widely with industry and communities. The academic literature on engagement as a particular UK HE phenomenon is sparse (Johnson, 2022), and as far as can be determined, there is no substantive literature on engagement as related to the KEF. Johnson (ibid) depicts engagement as a wide range of activities in research, teaching, and

administration, describing it as a knowledge exchange activity “forged through relationships” with non-academic actors such as “employers, businesses and organizations from all sectors, voluntary sector agencies and community groups, government agencies, NHS, arm’s length bodies and local / national government” (ibid, pp. 198-199). Universities, in the expansion of their engagement strategies, are thus seen as a lynchpin for the growth and development of business through the transfer of new knowledge and innovation to industry, which is deemed vital for stimulating wider economic growth and development. In this sense, engagement is a distinct concept from research Impact, with which it is sometimes confounded. This thesis is primarily concerned with the economic contribution which engagement generates or has the potential to generate, which has clear implications for commercialisation of research.

c) Key theoretical considerations

The thesis has explored the political economy of knowledge production through a multi-pronged research approach. The central issue that this thesis seeks to explore is concerned with the potential impact of the KEF policy on the research (knowledge production) ecosystem. Will the KEF potentially reorganise the process of knowledge production and its appropriation for commercial use, and how if so? What influence does it exert on the rate and direction of research? What is the nature of the connections between policy, research, and social justice? What roles do the actors and institutions play in the process, and does the introduction of the KEF impact on the behaviours and motivations of individual faculty? In general, is the introduction of the KEF another step towards increasing marketisation of HE?

In seeking answers to the above questions, the first step for this research was to critically interrogate the KEF policy, including understanding the rationale for its introduction. This involved an examination of key published documents during the development process of the KEF. The WPR framework for public policy analysis developed by Carol Bacchi (2009) was

applied to the KEF policy, in order to gain an understanding of the problem represented to be in the KEF policy. In particular, the WPR framework enabled an exposition of the presuppositions and assumptions that led to the introduction of the KEF, what has been left unproblematic in the particular problem representation, and what effects are produced by the problem.

Following the document analysis using the WPR framework, the next step in the research was to consider the process of knowledge production, and what potential impact the policy would have not only on the rate and direction of research, but also on the motivations and behaviours of researchers. The KEF metrics very much focus on measuring the performance of universities on the volume of their knowledge exchange activities with industry, third sector organisations, and government and public sector organisations, with a particular emphasis on the economic and social benefits that research outcomes generate. The KEF metrics are based on the belief that the main mechanism by which economic benefit is generated is via universities sharing research with industry, in order to appropriate research outputs in the form of intellectual property for commercial use. This supposition forms the bedrock of the Government's industrial strategy. Given this context, the research considered the notion of 'Economization' (Çalışkan & Callon, 2009, 2010) as a starting point. Callon and Çalışkan describe economization as the assembly of actions, devices, and analytical / practical qualifications that lead to the establishment of economic markets.

'The construction of action (-zation) into the word (economization) implies that the economy is an achievement rather than a starting point or a pre-existing reality that can simply be revealed and acted upon' (Çalışkan & Callon, 2009 p. 370).

In other words, the development of markets cannot be analysed and interpreted as such without studying its origins in the activities that lead to its establishment in the first place. Callon

suggests that “economics does not describe an existing external ‘economy’, but brings that economy into being: economics performs the economy, creating the phenomena it describes” (MacKenzie & Millo, 2003 p. 108). The economic sociology studying the development of economic activities, their organisation, and the dynamics of markets has developed into the ‘performativity’ programme (Callon, 1998). Economization suggests that establishment of an economic market involves institutional arrangements and material assemblages. The institutional arrangements such as conventions, rituals, cultural values, and routines provide individual actors with ‘prosthetic’ tools that enable the individuals to cognitively behave in an economic (rational) way. The material assemblages, such as calculative techniques, standards, instruments, and devices generally play a crucial role in the economization process. The construction of markets is thus socio-technical, and the constitution of material devices enables agents to perform economic valuations, that is, to be calculative. In order to make sense of the key aspects of the political economy of knowledge production, and in order to ensure an appropriate framing of questions that guides the data collection and analytical methods, the research took an approach underpinned by the theories of performativity and market devices (Callon, 1998; Callon et al., 2007).

The research also seeks to make connections between the introduction of the KEF as a policy device and social justice. Through secondary research, this thesis theoretically explores, *a priori*, the implications for social justice arising from the potential bearing KEF might have on regulating access to knowledge for those who need it most. In order to do this, it was necessary to work within a framework that provides an appropriate perspective through which to examine this phenomenon. The notion of Assetization provided this lens, that is, the notion of knowledge as an asset – which can be controlled, traded, and capitalised as a revenue stream (rent), thus underpinning the exploration of the impact potential of the KEF on social justice as a form of techno-scientific capitalism (Birch, 2020; Birch & Muniesa, 2020).

The approach outlined above, as underpinned by the key theoretical concepts that have guided this research, have enabled the achievement of the research aims and objectives, which are outlined in the next section.

d) Research gaps

The introduction of the KEF is a relatively new phenomenon which has not been researched in any great detail thus far. The possible impacts of the introduction of the KEF, especially its performative potential in relation to the process of knowledge production and knowledge appropriation is poorly understood. Indeed, there is very little research on the KEF policy itself, and there is a lack of studies that critically interrogate the aims and objectives of the policy, including understanding its potential impacts on institutions and individual researchers. The question of how the KEF could potentially interact with, or influence, the process of knowledge production, and how might this impact on social justice, remains unaddressed in literature. Drawing on existing literature on performativity and market devices, this research explores the performative potential of the KEF. It seeks to answer questions such as what influence might the KEF policy exert on the rate and direction of research, and how would the performative potential of the KEF possibly impact on actors and institutions. A key gap that this research seeks to address relates to whether the introduction of the KEF could potentially measure and reward appropriation of techno-scientific knowledge for commercial purposes, and whether this could potentially undermine social justice by controlling access and sharing of knowledge as a public good. In addition, this research examines key published documents relating to the development process of the KEF in order to gain an understanding of the problem which the policy is trying to address. Furthermore, this research seeks to explore how the introduction of KEF could condition academia. Through semi-structured interviews, albeit with a small sample of 14 researchers in one institution, this research provides valuable insights into the behaviour

and motivations of individual researchers following the introduction of the KEF policy, which has not been researched hitherto in literature.

e) Research objectives

This thesis is concerned with the consequences of knowledge appropriation on our societies in general. The main aim of the research is to investigate the relationships between knowledge production, that is research taking place in UK universities, policy, and social justice. In particular, the central issue this thesis is concerned with is the performativity of the KEF on the process of knowledge production and its appropriation, including the influence the KEF might exert on the behaviour and motivations of individual faculty, that is, academics and researchers. How will the performativity of the KEF alter the knowledge production ecosystem? It is important to understand this, because the future rate and direction of research activity could potentially be affected in ways that might be detrimental for the availability and accessibility of knowledge as a common good.

Specifically, in the context as outlined in the section above, this research seeks to explore how the introduction of KEF would condition academia to increase commercialisation. In particular, it seeks to understand the performativity of the KEF, a policy that seeks to measure and compare research activity across UK universities and their efficiency and effectiveness in supporting KT processes. The research explores the performative potential of the KEF metrics, that potentially incentivise the acceleration of research for commercialisation, on universities, individual faculty, and the knowledge production process.

This research also seeks to make connections with IPR and social justice. A key consideration in this regard is whether the introduction of the KEF may tend to measure and reward appropriation of techno-scientific knowledge for commercial purposes, that may ultimately undermine the sharing and development of this knowledge. Recent literature has taken into

account the impact of IPR regimes under conditions of economic inequality and development, including the impact of various forms of IP protection, such as copyright, patents, and trademarks, that do not exhibit a sufficient understanding of local identities, and historical and cultural issues in the areas in which the IP regimes operate (Sunder, 2012), the impact on human rights (Dwijen, 2011), or 'negative spaces', areas in which creation and innovation can flourish without the need for formal legal protection (Rosenblatt, 2013). **Specific research questions**

This research aims to empirically explore the potential impact of the KEF policy, as outlined in the three research questions below, which, in conjunction with the theoretical analysis of literature, aims to paint a broad picture of the changes that the sector faces in the near future.

1. What are the potential effects of KEF design on HE institutions in terms of knowledge production and exchange?
2. What is the performative potential of KEF on the knowledge production ecosystem, and on the knowledge producing labour, that is, on academics and researchers behaviour?
3. What are the implications for social justice of the changes that might arise therein?

The research questions above thus form the three strands that comprise the research. First, the planned and unplanned effects of the KEF policy on UK HE institutions are explored through an empirical policy document analysis of the KEF and the process of its implementation, using Bacchi's (2009) WPR approach. This includes an analysis of the potential impact of the designed metrics of the KEF, including an analysis of the design framework of the metrics known as the KEF 'dashboard'. Second, empirical research was conducted to analyse the possible impact of KEF on knowledge producing labour, that is, researchers' behaviour. Specifically, the research seeks to explore the potential performativity of the KEF. This includes an analysis of the impact potential of the KEF policy on 1) the political economy of

knowledge production, and 2) researchers' behaviour, particularly if they have to actively seek external funding to meet performance targets. Finally, building on the empirical research as outlined above, the thesis seeks to understand the implications for social justice through a theoretical exploration of literature.

f) Contribution

The principle value of this research, and the contribution it makes, is in its ability to challenge the hegemonic KE discourse in policy and HE circles, and reorient thinking about the potential impact of the KEF policy. This will enable interventions to be made in order to mitigate the most egregious effects of the KEF in terms of consequences for social justice.

The first key contribution of this thesis to the understanding of the political economy of knowledge production is an understanding of how the KEF policy, as a crucial determinant of how the knowledge economy is likely to be shaped in future, could potentially subordinate the production and use of knowledge to the economic relevance it offers. This thesis enables a much better understanding of how the implementation of the KEF policy is the decisive step in the concretization of a market for knowledge, establishing boundaries of what can be produced for assetization, creating a network of agents and relationships in the public and private sectors, mobilising institutions, industry and researchers in the process to establish norms for the efficient functioning of the market, and finally facilitating the flow of knowledge products and their subsequent assetization (Birch & Muniesa, 2020). The performativity of the KEF policy, acting as a market device (Aspers & Beckert, 2011; Callon et al., 2007) is a novel concept, but equally, it is also a useful concept for the analysis of market-making in the UK HE sector (Komljenovic, 2020). This thesis analyses, and provides a rich description, of how the performativity of KEF acting as a market device works in practice. The main contribution of this thesis is therefore to the scholarship of economization and performativity, market devices

and assetization, but it also makes connections with the body of literature on the marketisation of education, academic capitalism, and financialisation in the UK HE settings.

The second key contribution of this thesis is in the area of UK HE policy. The thesis provides a critical examination of the KEF policy, using Carol Bacchi's 'What's the problem represented to be?' (WPR) approach. The WPR process is a robust methodology for critical analysis of policy documents, which by its nature also aligns seamlessly with the objectives of this research to study the performativity of the KEF. The WPR approach facilitates a critical scrutiny of the policy through a refocus of the policy analysis – from the problem it is intending to solve to how the policy in its implementation might be a constitutive act of the problem itself. As far as can be determined, this is the first attempt to analyse the KEF, a crucial HE policy, in order to understand how it represents the problem it is seeking to solve, and subjects to a close scrutiny its intended and unintended impact.

In addition to contributing to the two areas above, this thesis builds on previous research on the intersections of IPR with social justice (Gosseries et al., 2008), with particular reference to patents, and makes connections with the potential impact of the KEF policy on social justice. Given that the KEF is a relatively new policy intervention, very little work, even *ex ante*, explores the implications for social justice arising from its implementation. The introduction of the KEF is perhaps the most important manifestation in recent times of an ambition of the government to potentially accelerate the process of commercialisation of knowledge through Intellectual Property Rights (IPR). This research is thus not only highly topical in addressing this gap in literature, but also particularly significant as the future enterprise and state support for the UK HE sector would rely increasingly on the appropriation of knowledge for commercial purposes.

This thesis thus provides the basis on which colleagues, policy makers, institutions, and even industry to some extent, can understand both the nature of the KEF, including the reasons for its development prompted by the rapid advent of engagement and innovation agenda of the UK Government. The thesis enables a fuller appreciation of the potential consequences of the introduction of the KEF on techno-scientific knowledge production, on non- Science, Technology, Engineering, and Mathematics (STEM) areas of research, and on individual researchers. Equally, this thesis is critically relevant for the academia in furthering its understanding of potential performativity that KEF might encourage, that is, how it might impact on the rate and direction of research which it seeks to measure. Finally, the research would make an original contribution to knowledge in its consideration of the social justice implications of the introduction of the KEF, with its performative potential to influence the rate and direction of knowledge production, and in its push to universities and academia towards increasing commercialisation of research.

g) Ensuing sections

The thesis proceeds next with the literature review section. It explores the meaning and concept of 'knowledge', in terms of what constitutes knowledge in the context of this research, and very briefly considers various theories in the context of its production and appropriation. Building on Lyotard's conceptualisation of the status of knowledge in postmodern societies, the literature review then considers the valorisation of the role of technological and scientific knowledge in the growth of economies. It further explores the characteristics of knowledge exchange and innovation, outlining the lens with which the thesis defines knowledge and knowledge exchange of technological and scientific knowledge between academia and industry. Next, the literature review considers extant scholarship on performativity and market

devices. It conceptualises the process of knowledge assetization, and finally defines the scope of intellectual property rights for the purpose of this thesis.

The literature review is followed by a section that outlines the research philosophy, design, methodology, and methods followed in this research. The ontological and epistemological beliefs underpinning the research are summarised, and the methodological suppositions and design on which the research is built are explicated. This section provides a rationale for the choice of research methods, informed by the constructionist-interpretive ontological and epistemological position of this research and guided by the research questions. It describes the methods and how these have been used in the three strands of the research, reflecting the overall research design. This section also provides an overview of the theoretical considerations that underpin the qualitative document analysis of the KEF policy using Carol Bacchi's 'What's the problem represented to be' (WPR) approach.

The thesis next proceeds to data analysis. Briefly, this section comprises the policy document analysis of the KEF using the WPR approach, and data analysis from the semi-structured interviews carried out with research staff.

The data analysis section is followed by a discussion of the further economization of knowledge production, the assetization process and what it looks like under the current KEF policy regime, and its connections with social justice. The latter consists of the potential impact of the KEF policy on the rate and direction of research; access to and exclusion from knowledge; and the ecology, natural environment, and biogenetic resources. The thesis considers the influence that the KEF might exert on academic freedom and autonomy of researchers as matters of social justice. The discursive effects of the KEF, and the subjectification and lived effects it produces in researchers, are analysed using the WPR

approach. The discussion section concludes by offering a conceptual framework of the performativity of the KEF and its other effects, including social justice implications.

The thesis concludes with some final thoughts on the evolution of the knowledge economy in general, on the performativity of the KEF and assetization of knowledge, the implications therein for social justice, before finally closing with reflections on the limitations of this research, and on possibilities for future research opportunities in this field.

2) Literature review

a) The nature of knowledge

“Knowledge is the unique claim of higher education. It is at the core of every public and private good that is created in the sector.” (Marginson, 2012 p. 9)

This section begins by examining the concept of ‘knowledge’, in terms of what constitutes knowledge in the context of this research, and very briefly considers associated concepts in the context of its production and appropriation. The term ‘knowledge’ is not understood in this research as ‘knowledge / information’ as used in economics and computer science / computing contexts and academic literature, for example, see (Cowan et al., 2000; Tyfield, 2012). Specifically, the term knowledge is taken to mean outputs of research, that deals mainly with techno-scientific knowledge / technological innovation and ‘basic’ science, given that the KEF’s focus is on the measurement of the knowledge commercialisation process, which substantively involves tecno-scientific research. This is further elaborated below.

There are two dyadic aspects of knowledge, ‘knowing what’ and ‘knowing how’, comprising both practical and theoretical knowledge, that always co-exist (Polanyi, 1967). Introducing the concept of ‘tacit’ knowledge, Polanyi argued that tacit knowledge is ‘knowing’, that is, ascribing meaning to what we know (“we can know more than we can tell”, *ibid*, p. 4). In other words, tacit knowledge is about having a sense of what is going on in a process around us, which cannot be easily described, measured, or codified. Tacit knowledge has a social and relational dimension, as obviously there can be no meaning without other humans with whom the meaning can be shared to be collectively understood. Tacit knowledge as ‘knowing’ is thus sociological and dynamic, that changes with context, environment, or a different perspective. Polanyi further illustrates how the process of “formalising all knowledge to the exclusion of

tacit knowing is self-defeating” (ibid, p. 20). This dichotomy, between the practical ‘knowing what’ and the theoretical ‘knowing how’ is relevant to this research, because conceptually, tacit knowledge must be made explicit, that is, codified in a systematic and formal way for storing and sharing, in order to allow any knowledge ‘exchange’ or ‘transfer’ to take place (Birch, 2020).

Early and mid-twentieth century economics considered knowledge as a public good. Scholars have made a case for public funding of research because knowledge by its very nature is non-rival, non-excludible and thus non-appropriable (Arrow, 1962). Since Arrow’s influential paper, the contested nature of knowledge has become clearer in terms of tacit knowledge as outlined above, and explicit knowledge that can be encoded and transferred / appropriated. More recently, Cowan et al. (2000) have proposed a topography of knowledge activities, distinguishing between embodied and disembodied knowledge in a similar vein to Polanyi. Cowan et al. provide a framework (see figure 1) of how the concepts of tacit knowledge and its codification are used in economic theory, to aid an understanding of knowledge production and distribution activities. The framework maps the knowledge transaction terrain into three zones: articulated (codified), unarticulated and inarticulable (ibid, p. 235), that can be used heuristically to distinguish between different knowledge ‘groups’, with the formal codified knowledge near the top (which KT aims to exploit) and uncoded knowledge near the bottom, with the ellipse-shaped and the bottom-left regions encapsulating a mixture of codified and uncoded knowledge activities, such as ‘normal science’ and technical research etc.

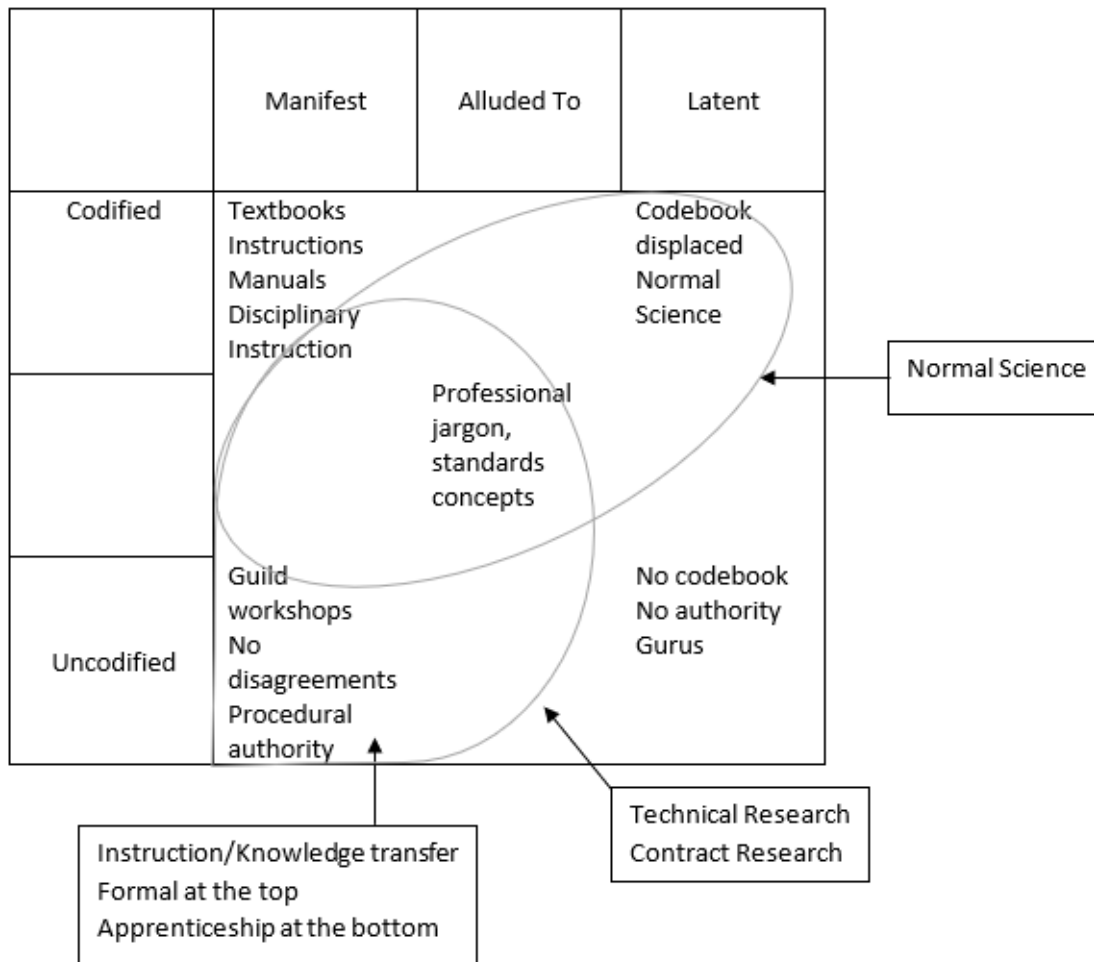


Figure 1: Cowan et al. (2000) Topography of knowledge.

Similarly, Dasgupta and David (1994) make a distinction between science (knowledge defined according to social norms) and technology (knowledge that is appropriable and excludable), although according to Tyfield both can be treated as a “functionalist pair, in which both interact in myriad complicated (and unspecified) ways” (Tyfield, 2012 p. 17). Given the nature of codified and manifest knowledge, interest in its production and appropriation has been mainly in scientific and engineering spheres.

Following on from this, a distinction can be drawn between ‘pure’ knowledge or ‘basic research’, whereby knowledge is pursued for knowledge’s sake and not for commercial or other pecuniary interests; and knowledge that is codified, manifest, and thus can be transferred /

appropriated. It is the latter type of knowledge that is subject to market-exchange models, the commercialisation of which the UK Government has increasingly sought to promote through KT (Innovate UK, 2023).

b) A postmodern view of knowledge

The post-industrial society (Bell, 1973) is technocratic, shifting the discourse of industrialisation to one of scientific and technological development. It encourages the development of new technologies as it transitions from the diminishing role of ‘goods’ producing industry to a valorisation of service industry. In his 1979 philosophical formulation of the state of knowledge in industrial societies, Lyotard famously prophesied that “the status of knowledge is altered as societies enter what is known as the postindustrial age and cultures enter what is known as the postmodern age” (Lyotard, 1984 p. 3). Lyotard constructed this hypothesis on his opposition to the widely held belief at the time in the ability of science to formulate universal laws, defining postmodernism as a scepticism of generalising and universalising theories of science. His critical view of scientific knowledge as a discourse that legitimates itself through producing a meta-discourse for its own legitimation marks the radical break with the Enlightenment informed humanist and emancipatory values that define(d) the traditional role of the university. Lyotard argued that the question of legitimation of knowledge in “the computer age” (that is, technoscience) is “more than ever a question of government” (ibid, p. 9) in terms of how contemporary science and research is produced and controlled. The de-legitimisation of the traditional role of the university licences a redefinition of ‘traditional science’ as ‘science-in-use’ (technoscience), permitting the subordination of science and the social systems of the university to the principle of performance measurement. Fundamentally, Lyotard’s presaging the end of the university as we know it on the argument that the university

system can no longer rely on the metaphysical philosophy in the postmodern to legitimise its work.

The notion of controlling and measuring the production of knowledge likens it to some kind of a production process. In a typical manufacturing operation, inputs (raw materials) would be transformed, using transforming resources, into outputs, but the perspective of knowledge as an 'output' is highly misleading, even alarming, given its distinctive nature. The process of knowledge production is not analogous to a manufacturing process, as knowledge is not a standard 'good' or 'resource' in the traditional economic sense to be traded on the market according to the laws of supply and demand. Even if it is to be considered as a commodity, it is a quasi-commodity (Jessop, 2007), with the impossibility of measuring its quantity, and the difficulty of placing a value on it. If knowledge is to be considered as an 'output', then it must be recognised as an 'input' as well from an economics perspective, because some 'amount' of knowledge is needed to create more knowledge, that is, the incremental nature of knowledge creation. Lyotard argued that the 'mercantilization' of knowledge determines what knowledge is saleable and may be worthwhile producing (Lyotard, 1984, p. 51). Lyotard further notes how the 'technological transformations' can be expected to impact on the two principal functions of knowledge, namely 'research and the transmission of acquired learning.

This thesis builds on Lyotard's conceptualisation of the status of knowledge and universities in postmodern societies, that is, how the introduction of the KEF is signalling a shift to maximisation of the system's performance (Cowen, 1996), and how this shift then valorises the role of knowledge production, especially techno-scientific knowledge, as an engine for economic growth. Lyotard's postmodern critique, while delegitimising the traditional role of the university, indicates the institution of a new dynamic between the university as a knowledge producer and the economic consumers of knowledge as:

“The relationship of the suppliers and users of knowledge to the knowledge they supply and use is now tending, and will increasingly tend, to assume the form already taken by the relationship of commodity producers and consumers to the commodities they produce and consume – that is, the form of value. Knowledge is and will be produced in order to be sold, it is and will be consumed in order to be valorized in a new production: in both cases, the goal is exchange” (ibid, p. 4).

The KEF’s stated objectives are to maximise the universities efficiency and performance to produce research for economic growth. Thus, the primary goal of the university becomes achieving the best performance of the social system (Peters, 1992), prioritising the efficiency and effectiveness of knowledge production which must serve economic need.

Having considered the postmodern status of knowledge and research based on Lyotard’s work, the thesis now considers what has led to the valorisation of the wide-ranging role of highly technological and scientific knowledge in the growth of economies. The OECD has led the initiatives to shift to the new information-innovation-technoscientific led economy, reconfiguring the role of higher education in post-industrial societies (Peters, 1992). The OECD sees knowledge production / research, as a major purpose in higher education in the context of global competitiveness; emphasising business-university links in order to apply research, not just in the aforementioned fields, but also in defence and public services. The efforts of the OECD in this direction have been referred to as “establishing a hegemonic claim for economisation of education” Kalló (Kalló, 2020, p. 8). Tracing the role of OECD in establishing this hegemony, Kalló outlines how over the years OECD has expanded its focus from economics to public policies in every conceivable area with high political leverage as a creator of global “rules of the game” (ibid, p. 9). Guided by the objectives of building efficient market economies, regulatory reform and promoting privatisation and competition, OECD

reports on higher education since 1979 have pushed for an alignment between students' skills and needs of the labour market; and in order to effect this the OECD has been pushing for structural reforms in universities (Taylor, 1987). A key feature of the proposed structural reforms, which are now normative in the higher education sector in the UK, is the idea of 'accountability' of universities, which involves, in particular, an evaluation of university's 'outputs', that is, teaching, research and engagement. Universities performance as an organised system in a postmodern state is measured by the criteria of efficiency and efficacy that create and shape the production of knowledge.

Efficiency and productivity in the context of knowledge production can refer to several different elements of the process of knowledge production. New knowledge is a combination of existing and available knowledge, and therefore it is logical that there are two aspects of knowledge which are in theory open for measurement – basic existing knowledge, and any new increments or innovations that build on the fundamental existing knowledge (usually in practical application in the context of sciences). Practically, this idea is a bit more nuanced. Any ground-breaking research for example, which adds to the existing body of knowledge, needs to be considered differently. Given that basic knowledge is available freely, and mostly in the public domain, what is of relevance to the commercialisation of knowledge is the concept that it is incremental and / or innovative additions to basic knowledge which can be appropriated.

Lyotard's postmodern view of the production of mercantile knowledge, in an ecosystem that is driven by efficiency and performance measurements, and how it can potentially impact on research and the exchange of learning, is a useful backdrop for the key conceptual arguments that this thesis makes in terms of the performative potential of the KEF acting as a market device. Equally importantly, the postmodern perspective corresponds to the philosophical basis

of this research, that is, the ontological and epistemological foundations of the thesis that emphasise the social construction of ‘reality’ as we experience it. The postmodern approach stresses subjectivism, and the construction of knowledge through lived experience that focuses on the role of social relationships, interactions and discourse. This perspective enables a richer appreciation of the phenomenon that the thesis is seeking to study, that is, to explore the political economy of knowledge production in the UK by researching the performative potential of the KEF policy, and the implications for social justice therein.

c) Characteristics of Knowledge Exchange and Innovation

The knowledge economy (Bell, 1973) has given a larger role to universities in valuing their role in innovation and production of knowledge, as evidenced by the conceptualisation of academic knowledge production as either ‘Mode 1’ traditional basic research (Coghlan, 2014), or contextualised and interdisciplinary ‘Mode 2’ applied research to solve real world problems (Gibbons, 1994). Subsequently, Carayannis et al. described ‘Mode 3’ knowledge production (Carayannis et al., 2016), that emphasise knowledge production cultures and “creative knowledge environments” in which knowledge creation is encouraged at all levels (individual, structural, institutional, and macro-society levels). These views have further evolved as the ‘The Triple Helix’ model of innovation (Etzkowitz & Leydesdorff, 1997), promoting the ever-closer relationships between universities, state, and industry, suggesting that this will eventually result in the creation of ‘hybrid’ organisations. Indeed, Etzkowitz deems the ‘knowledge-capital’ marriage as inevitable (Etzkowitz, 2013b), predicting the emergence of the contemporary academic enterprise in the entrepreneurial university that relies on a symbiotic relationship between academic and industry (Etzkowitz, 2013b, 2016). From this perspective, the boundaries between academia, the state, and the markets are increasingly getting blurred (Slaughter, 2004). The triple-helix idea was further extended by Carayannis et

al. (2016) as a quadruple-helix model that included relationships with the society as the fourth constituent.

The perspective of interdisciplinary and applied knowledge produced by universities, that can be used by industry to solve real world problems and for economic growth, especially in the techno-scientific field, has been described as ‘innovation economics’ by Schumpeter. Godin (2006) traces the history of post-war ‘linear’ model of innovation, that outlines the relationship between the public university’s production of knowledge in conducting basic research that is also applied and disseminated in the industrial context, leading to further development and socio-economic progress. Technological innovation in this perspective is considered as a factor for growth in the knowledge economy. Generally, the production of knowledge in universities which is then applied in the industry / commercial context in order to achieve *incremental* improvements in either the product itself, or in the production or distribution processes in order to make these more efficient, is referred to as *innovation* in policy and industry spheres. In a classical market-based economic framework, innovation in products or processes are typically aimed at expanding the market through addition of new users or a decrease in costs through improved efficiencies in production / distribution systems. But the discovery of something entirely new, or a breakthrough innovation which creates a new market space, has the potential to radically alter the established market systems of production and distribution. However, given that there are no guarantees that any technological product or process innovation would be monetarily rewarding, the key challenge for organisations in a market-based system is first to create value, and the second is to extract this value. Mazzucato (2018) outlines how ‘value’ is being extracted in the ‘innovation economy’ through financial instruments (venture capitalism, IPOs etc.), patents, network effect and first mover advantage, and through creating and extracting digital value (for example, monopoly power of digital corporations or re-intermediation through ‘platform’ capitalism, Amazon or Uber being examples). The

marketplace perspective being employed in this context is that of knowledge as a ‘commodity’ with some ‘exchange’ value that allows it to be traded for value extraction, for example, through pharmaceutical ‘value’ pricing mechanisms (Mazzucato, 2018). However, ‘techno-scientific’ knowledge as an ‘asset’ can also be capitalised for economic rent seeking (Birch & Muniesa, 2020), as discussed later in this section.

As it can be conceived from the above sections, knowledge economies target activities which are knowledge intensive, in which the goods being traded, or assets being created, relate to production, processing, circulation and transfer of knowledge in some way. The central question therefore is how knowledge can be harnessed in a way that allows for value to be created and / or extracted. In summary, this thesis employs a perspective of knowledge, in the context of the discussion above, which –

1. is distinct from information or information goods;
2. possesses a nature that makes it possible for it to be codified to a certain extent and manifestly produced;
3. is produced/generated in universities, but dissimilar to basic scientific research in the sense that its domain is techno-scientific research and technological innovation;
4. includes such characteristics that enable its appropriation, for example, through IPRs, which allows for an economic value to be placed on it;
5. requires a well-defined and precise relationship between universities, as producers of knowledge, and industry, that appropriates the knowledge for commercial purposes either on its own or through a commercial arrangement/partnership with the knowledge producing university; and thus,
6. allows protection of the value of knowledge through IPRs, which are conceptualised as rent-seeking assets that allow the creation and extraction of value.

If the underlying premise is that industry creates value in a knowledge economy from knowledge derived from research conducted in universities, then the processes which make the transfer of knowledge happen in practice are as equally important as relationships between concerned parties. In this respect, the term Knowledge Exchange (KE) requires further elaboration. Knowledge exchange has its origins in the notion of a knowledge economy which caught the economists attention when the OECD report “Knowledge-Based Economy” was published (OECD, 1996). Since the publication of the OECD report, discourses of, and of aspects pertaining to the constitution of the knowledge economy, have had a major influence on industrial policy making in Europe and other developed nations such as the USA, Canada, and Australia. Knowledge exchange policies have become the dominant levers used by governments to drive economic growth and prosperity. As thinking in this area evolved over the last few years, several terms have come into play to signify the importance of knowledge economy in a post-industrial society, as a dominant economic and unambiguously capitalist phenomenon, such as knowledge-based economy, knowledge-driven economy, information-based economy, information society, knowledge society and so on, to describe the nature of various processes that are leading the transformation of traditional economic processes. Often used interchangeably, the terms can be confusing and vague at best, and frequently underdefined and inadequately theorised (Peters, 2002). This thesis uses KE as an analytical term that denotes a broader, ideological capitalist-economic framework within which the following processes are being re-established or reified in order to intensify knowledge activities that contribute to an increased pace of economic growth:

1. The increasing production of knowledge in universities (that is, prioritisation of research over teaching) (Lybeck, 2018);
2. The codification of knowledge from tacit to explicit (through information and computing technologies) (Birch, 2020);

3. Increasing pressures on researchers to engage with industry and communities (May, 2007);
4. The drive to commercialise research outputs (the expansion of techno-scientific innovation and assetization of knowledge through IPRs) (Birch & Muniesa, 2020);
5. The creation of business-government-university links and networks that facilitate the transformation and utilisation of research outputs for economic gain (Etzkowitz, 2013a); and finally, but not least,
6. The introduction of frameworks to measure and assess the effectiveness of these processes (that is, the KEF).

The current dominant discourse that state policy should promote commercialisation of knowledge has been challenged in different ways by scholars. Some have challenged the creation of capitalist markets in education and a market-based view of knowledge creation (Marginson, 2013; Mason, 2016), claiming that universities are being pushed into the global knowledge economy by a number of factors such as massification of education, globalisation and capitalisation of knowledge, and the emergence of innovation ecosystems (Pusser, 2012). Others have analysed the forces that are restructuring HE and pushing it towards entrepreneurial and market-like behaviours (Slaughter & Leslie, 1997) for critical resources in the face of policy shifts that reduce the flow of resources for HE. Using the notions of professionalisation and ‘human capital’ Slaughter (2004) further argues that faculty are turning to market-like behaviours in competition for external funding and to maximise their prestige. A few scholars have proposed alternative approaches such as ‘open innovation’ systems which promote internal and external collaboration for sharing of knowledge around specific ideas (Chesbrough, 2003); and responsible research and innovation (RRI) systems that seeks to align broader social values to research and innovation (Owen et al., 2013). Many contributors in Dzisah’s (2011) edited book have however argued that some of the tensions,

arising from the notion of university-industry relations, are too simplistic and there are negative and positive consequences that must be continually dissected and debated to safeguard the university ideals. Crucially, some scholars have questioned the very basis of applying classical economics to knowledge production (Mäki, 2005; Mirowski, 2009; Mirowski & Sent, 2002; Tyfield, 2012).

Conceptualising the market as a place for both exploitation (incremental innovation) and exploration (new discoveries), Callon (2010) suggests that there is a balance between exploration (the creation of new markets), and exploitation, which dominates the new market once it is stabilised (structured around efficient allocation of resources). Mazzucato (2018) makes a further distinction between value creation (the ‘makers’) and value extraction (the ‘takers’), suggesting that the production of new goods or services is true value creation, while value extraction involves just moving resources and / or outputs for disproportionate gains without creating anything tangible. In a way, both Callon and Mazzucato’s views on markets converge to a certain extent, albeit from a different philosophical perspective, as value creation and value extraction being essential features of the market. This being the case, it can be reasonably anticipated that the specific modalities of the market processes that assign a value on knowledge / innovation which can be used by industry may *potentially steer the economy* in a direction that values a particular type of knowledge production more than others. It is clear that there is a political desire on part of the UK Government to use policy intervention (the KEF) as a mechanism to measure knowledge exchange. The key question for this thesis then is to consider is whether a market for knowledge is becoming more concrete, and if so, what does it look like, how does it work, and what might be the implications for social justice given the push to commercialise research outputs via assetization of knowledge through IPRs? The following sections review the literature on performativity and market devices in order to

understand the relationships between the different concepts, and how these shape phenomena in the context of an economic market.

d) Performativity

“We become what we behold. We shape our tools, and thereafter our tools shape us.” (Culkin, 1967)

That society and culture, and individual behaviour and standpoints within it, is shaped by what we see around us and how we make sense of it is not something new. Ideas of performativity, understood as the process by which certain enunciations or gestures lead to the construction of a reality, or have some consequences for the reality we experience, originated in Austin’s (1978) conceptualisation of speech acts, that speech has the capacity to ‘act’ or consummate an action. Austin claimed that speech is not merely ‘constative’ in just stating facts, but leads to certain realities being enacted or performed. Austin distinguished between illocutionary and perlocutionary speech acts – suggesting that while the former produces certain realities which we experience as ‘conventional consequences’, for example, certain obligations which are socially binding on us (pronouncing ‘I Do’ in a marriage ceremony or a judge pronouncing a sentencing), the latter effects of performativity follow only in certain felicitous conditions. A perlocutionary utterance in itself does not bring about the change in reality, but can bring about the change if all the conditions are present producing the effect of the utterance.

The notion of performativity as words ‘doing’ something to the reality around us has since been extended to several other contexts and discourses (Derrida, 1988; Law & Urry, 2004). Performativity has inspired several interpretations, allowing it to be reconceptualised in numerous distinct ways, such that it is now become an interdisciplinary term. For example, Butler’s inquiry (1993, 1999) into construction of identities has reversed the conventional idea of gender not as an underlying essence but a product of ‘performatively constituted’ actions,

gestures, and behaviours, constructed socially, which leads to gendered behaviours and gender identity. Scholars have further extended the idea of gender performativity in organisations, for example, demonstrating the constitution of leadership roles and identities through queer theory (Harding et al., 2011); and examining the relationship between gender performativity and organisational space (Tyler & Cohen, 2010). In contrast, Lyotard's (1984) conception of performativity as the legitimisation of postmodern knowledge and power relations, has manifest itself in a move towards increasing managerialism and emphasis on efficiency, outlined by a number of scholars not only in areas of policy such as the TEF (Tomlinson et al., 2020), the REF and the REF Impact (Martin, 2011), but also in a number of other areas, for example, erosion of collegiality leading to fragile academic identities (Knights & Clarke, 2014); the acceptance of managerialism by academics as part of daily life while trying to hold their own values and pursue their research agendas (Nickson, 2014); academics buying into the managerial discourse because it promises upwards mobility (Alvesson & Spicer, 2016); and why academics have no option but to comply to remain in employment (Leathwood & Read, 2013).

Similarly, scholars in organisation and management studies have deployed the concept of performativity to illustrate how widely used economic language and assumptions of social norms and behaviour create the behaviour they predict so that management theories become self-fulfilling (Ferraro et al., 2005); to explain rational decision-making in organisations as performed by theory, actors, and tools who together produce rationality as a social reality (Cabantous & Gond, 2011); and through an analysis of value practices in organisations as a performance of values practices and circulating values discourse (Gehman et al., 2013). Other scholars in management studies have developed links between professionalisation and performativity (Hodgson, 2005); theories of organisational design (D'Adderio & Pollock, 2014); the performativity of routines in organisations as "iterative cycles of framing,

overflowing and reframing of knowledge inputs and actions” (D’Adderio, 2008); the design of artefacts that impact on routine itself (Glaser, 2017); and demonstrating how the use of user-generated content on social media to evaluate products and services in everyday practice reconfigures the practices of organisations being evaluated (Orlikowski & Scott, 2014). In all this, changes to work done by academics have almost entirely gone unnoticed at the level of the experience of the individual (Gill, 2014), an issue that this thesis discusses in later sections.

The adoption of the performativity concept that has perhaps received the most attention in recent years, other than Butler’s seminal and incisive contribution on how sex and gender are performed, has been in economics. Scholars with research roots in economic sociology and Science, Technology and Society (STS) studies have considered economic performativity at length in the sense of how the work of economists is not merely descriptive, but serves to shape the objects and markets under the study. Michel Callon’s foundational perspective of performativity in this field suggests that constative description of economic processes, defined effectively as natural laws, bring economic theory into being through their performative character (Callon, 1998; MacKenzie, 2004; MacKenzie & Millo, 2003; MacKenzie et al., 2007). Indeed, as Çalışkan and Callon argue (2009, 2010), the theoretical discourse that determines what is economic cannot be disassociated from the effects it produces. They refer to this formative relationship between the economic theory and what is considered to be economic, that is, all those activities and behaviours that lead to the formal qualification of what is economic, as economization. The performativity of economics thus shapes economies, through multiple theoretical and analytical models that contribute to the constitution of the object that it studies (Callon, 2010).

In an edited volume *The laws of the markets*, Callon sets out the rationale of how performativity works in practice (Callon, 1998). Callon outlines in the introductory chapter how economics

does not merely objectively describe the activities in the economy, rather, it shapes the operation of markets, claiming that the constitution of economic markets is an ongoing process, intertwined with social and political processes. Callon employs Granovetter's (1985) notion of social networks, of agents embedded in a web of relations and connections, in order to establish the existence of social relations as a starting point of the analysis of how agents are enabled to calculate their decisions in a world of uncertainty; but suggests that the analyses need to go beyond the extent of social relations to how calculating agents emerge in an economic market. Rejecting the analysis of markets in terms of social networks (Law & Hassard, 1999) and the Actor-Network Theory (Latour, 2005); Callon (1998) reasons that both agent and network are two sides of the same coin, that is, a network can be described through its constitutive agents or agents can be characterised through their relationships in the network. Given that an economic market comprises of a combination of humans and non-human activities and devices, an efficient economic market requires not only coordination between agents and networks, but also requires a clear separation between human agents and non-human activities.

Callon (ibid) looks at reverse causality to explain *how* economic theories produce and reproduce markets, by an analysis of not just social connections between agents and how agents behave, but by looking at *how* the construction of calculative actors takes place in a market. For economic calculations to be performed, agents and good involved in the calculations must be *disentangled* and *framed* (ibid). The disentanglement is the disassociation of agents from each other, setting a clear and precise boundary between relations which agents take into account in order to be calculative, while framing defines the individual actors, allowing for a clear identification goods defined as not only separate from other goods, but also from the actors involved in their conception, production, circulation, or use. The framing process clearly defines and frames the structure in which a transaction / contract would be performed, but in effect the framing of the contract depends on a number of other external tangible and intangible

elements, such as the existence of legal structures to define the content and scope of property rights, a shared understanding of the contract between contracting parties, various other materials and devices, the participation of people with pre-defined roles etc. Callon demonstrates that a concrete market is a result of the constant operation of disentanglement and framing of calculative agents with a minimum level of information which allows calculativeness, and without which market co-ordination is bound to fail.

Callon's ideas are augmented in the volume by other scholars, who build on the notions of disentanglement and framing through several practical examples, such as Abolafia's (1998) account of the social and cultural embeddedness of actors in a network of norms, rules, and cognitive scripts where transactions are not a simple dyadic exchange but reflect the social, cultural, and economic forces that shape the outcome. Similarly, Miller (1998) examines the influence of the work of economists on thinking and practice in cost and management accounting; Franck Cochoy (1998) illustrates how marketing experts have fundamentally 're-invented' markets actors and processes and have succeeded in 'disciplining (mastering/codifying)' the market economy; and in the space of online advertising, Glaser et al. (2016) demonstrate how organisations 'stretch, bend and position' in structural and generative ways to reshape the understanding of the online advertising market to 'match' a financial exchange model. Scholars have also explored the role of economists is explored in shaping the paths of specific industries such as cement (Dumez & Jeunemaître, 1998) and US electricity industry (Granovetter & McGuire, 1998), to cite a few.

There are several other notable examples, where scholars have applied, or extended the study of performativity broadly in areas of economics, illustrating a strong relationship between specific theory and its specific actions in shaping markets. One of the earliest studies is MacKenzie & Millo's (2003) demonstration of how academic theory has influenced the

practice of financial markets, to the point where theory has created its own reality; and Marie-France Garcia-Parpet's (2020) analysis of how the computerised strawberry market at Fontaines-en-Sologne was constructed, in which economic theory, material devices, and even the physical architecture of the market was consciously designed to correspond to ideal economic market. Other expositions of the performativity concept include Mackenzie (2006) who presents a persuasive example of performativity of the Black-Scholes-Merton formula for options prices.

Outside of the field of economics, Mackenzie et al. (2007) bring together varieties of performativity in various other contexts and aspects of the economy, which is a good exemplar of how performativity is construed by scholars in multiple ways. In particular, scholars elaborate on the empirical / experimental (see Guala, 2020; Muniesa & Callon, 2020) and ontological (see Mirowski (2020); Didier (2020)) plausibility of the performative concept; while Mitchell's work (2020) suggests that informal socioeconomic life described by neoliberal economics as lying outside the economy is not in fact outside, but understood as a border which is neither exterior nor interior to the market, as it is economics which produces and validates rules and procedures that demarcate certain forms of life as informal or nonmarket.

While many scholars have recognised performativity as a complex notion, occurring in multiple ways and in a variety of contexts, others have vehemently opposed it (Felin & Foss, 2009; Hodgson, 2009; Miller, 2002; Mirowski, 2020). Indeed, there is also disagreement over what performativity exactly means and how is it connected to politics (Cochoy et al., 2014). Callon defends the notion of performativity, however, by suggesting that 'misfires are the rules of the game' (Callon, 2010). The constitution of economic markets is an on-going process, subject to endless redefinitions and reconfigurations (Callon, 1998). Drawing on Austin once again, Callon argues that a successful illocutionary performativity requires the presence of

socio-technical arrangements (something which we return to later in this section), which are fragile and rare by their very nature, and ergo, the general rule is a ‘misfire’; while perlocutionary performativity is a case of the degree of fit between the discourse and the felicitous arrangements, that is, to what extent an on-going situation is altered by perlocution. This suggests that a misfire may potentially be constitutive of all performative processes, in that consequences of the concept of performativity based on its presuppositions fail to materialise, leading to uncertainty and even counter-performativity, as is evident in the case of financial markets where operators expect volatility and unpredictability.

Having established the nature of performativity, the key question for this thesis is how a market in knowledge actually be constituted and performed? Callon proposes the following as a starting point for a general definition of markets –

1. *“A market implies a peculiar anthropology, one which assumes a calculative agent or more precisely what we might call calculative agencies;*
2. *the market implies an organization, so that one has to talk of an organized market (and of the possible multiplicity of forms of organization) in order to take into account the variety of calculative agencies and of their distribution;*
3. *the market is a process in which calculative agencies oppose one another, without resorting to physical violence, to reach an acceptable compromise in the form of a contract and / or a price” (1998 p. 3).*

According to the above definition, the market is just a co-ordinating mechanism in which agents enter (disentangled and framed) and leave the exchange like strangers (to enter the market once again to be disentangled and framed). This process does not end with any one transaction; indeed, it is continuous, with market outcomes as a result of the agents economic calculations. How do the agents make these economic calculations efficiently? Callon and

Muniesa (Callon & Muniesa, 2005) propose a framework to deal with this issue, identifying three stages of deliberation in agent's decision making as:

1) making an abstract representation of goods available for the transaction in order to make the goods 'calculable';

2) agents calculation of their interest and their understanding of how the calculable goods are actually calculated; and,

3) extraction of results leading to a decision in the transaction, within the frame of the rules and material devices that organise the transaction, that is, a calculated exchange and a market output.

Callon and Muniesa (ibid) suggest that these elements taken together define concrete markets as organised devices that calculate the values of goods. Thus, in order to make their decisions, economic agents need to be rational and 'calculative', but then Callon asks the question – "how can agents calculate when no stable information or shared prediction of the future exists?" (Callon, 1998, p. 6). Callon argues that calculating is a complex *collective* practice and putting too much weight on the individual, that is, the assumption that economic agents are calculative beings, suggests an individual mental competence of an agent which cannot be inferred from a normative collective performance. Callon (1998) suggests that calculative agency would not be possible without a set of calculating tools. Indeed, Callon argues, the most interesting element is found in what is to be measured and the tools used to measure it. The tool, formulated as an instrument to define how calculations are done, increase the ability of buyers and sellers to frame their preferences. The economic agent is "formatted, framed and equipped with prosthesis which help him in his calculations, and which are, for the most part, produced by economics" (ibid, p. 51). Agents therefore need 'prosthesis' in order to be able to construct their calculations, such as economic and financial theories, formulae, formal models, enabling

and expediting technology such as computing devices, and indeed, human beings and their ideas as part of the prosthesis. The next section of the thesis discusses market devices, which is important for an understanding of the process of economization and performativity.

e) **Market devices**

Callon et al. (2007) refer to the notion of a market device as the “material and discursive assemblages that intervene in the construction of markets”. They ask, “After all, can a market exist without a set of market devices?” (ibid, p. 2). They consider market devices as objects with agency, that is, devices can articulate actions and do things, helping in the construction of markets either in an instrumentalist way, by facilitating action, or in a more forceful deterministic way, for example, as a performance metric imposed on organisations. The concept of a market device originates from Michel Foucault’s notion of the *dispositif* (French, translated as device, machinery, or apparatus, but also used to refer to social structures which maintain power). French philosophers Felix Guattari and Gilles Deleuze conceived the notion as being proximate to our sense of *assemblage* or *arrangements*. Callon et al. (ibid) further expand on the notion, suggesting how Deleuze did not consider the subject as external to the device, but rather adjudged that the subjectivity is enacted in the device itself. Thus, market devices are considered as possessing some kind of agency that articulates action, that is, “they act or they make others act” (ibid, p. 2), implying a bifurcation of agency, that between a person as an ‘agent’ and the ‘device’ as in a machine. Indeed, the bifurcation suggests that the person and the device both have agency, in the two-way relationship between each other, which then produces the expected action or outcome in the interaction between the two.

Drawing on Callon’s philosophical conceptualisation of *agencement* (Callon et al., 2007; Cochoy et al., 2016) as the relationship between the person, the device, and the material and discursive assemblages that frame the system as a whole, Muniesa et al. suggest that instead of

considering the agency as distributed in the interaction, the interaction itself can be considered as a result of these compound *agencements* (Muniesa et al. 2007, *What does it mean to say that economics is performative*, in MacKenzie et al., 2007). Giving the analogy of a material device, and a set of operating instructions, each useless without the other, Callon conveys the idea of *agencement* as something close to an arrangement, assemblage, or a ‘combination of heterogenous elements that have been carefully adjusted to one another’. *Agencements* thus have the capacity to act in different ways, depending on how the arrangement is configured. The *agencement* of any particular system can therefore be better understood if it is regarded as a system as a whole, rather than attributing parts of the system with individual meaning.

The notion of a market device helps with sociological analysis if we are to consider devices as objects having agency. Markets, as a form of economic *agencement*, can be analysed with the notion of market devices which helps with abstracting, that is, to consider economic actions in formal, calculative space (Callon & Muniesa, 2005). Callon and Muniesa (*ibid*) give examples of abstractive calculative devices such as pricing techniques, accounting methods, monitoring instruments, trading protocol and benchmarking procedures that can facilitate the construction of economic *agencements*. Thus, market devices facilitate calculative capacities for agents (*prosthesis*) in making goods calculable (for example, with regard to the agents own interest, determining the quality of goods, and assigning a present or future value to the goods) in order to conclude the transaction. The outcome of the transaction, as facilitated by the market device, is therefore a result of the social, technical, and cultural arrangements. As Callon et al. argue, the “ways in which market devices are tinkered with, adjusted, and calibrated affect the ways in which persons and things are translated into calculative and calculable beings.” (*ibid*, p.5). Callon et al. (2007) illustrate the *performativity* of market devices using several examples, where these devices make the markets functional, enabling economic exchange, but in the process also shape the market and reorganise the social relations in a way that reflects the power

relations. The process is dynamic, constantly changing and reconfiguring material, economic and social relationships that embody the market.

There are innumerable industries where the introduction of a market object or model has served to reconfigure the market, bringing it more closer to the economic model which describes the relevant market in the first place. LIBOR and Carbon credits are perhaps canonical examples of their performative force in terms of the degree to which they transform the market they seek to describe. The market-making work of devices in the higher education industry (Komljenovic, 2020), Cochoy's (2008) description of the trivial supermarket shopping cart, and Preda's (2006) example of the stock-market ticker as market devices that organise interactions and shape new modes of economic exchange to transform markets are equally well-known in science and technology studies. Other distinctive examples include Foley and Hebert (2013), who demonstrate how transnational certification and ecolabelling in Alaskan salmon fisheries have marketised environmental governance, suggesting that certification and labelling processes do not just work through markets but constitute new markets of governance; and Robertson's (2012) analysis of ecosystem services, which can be defined as fungible commodities only through a process of assessment, measurement and negotiation between capitalists, scientists and regulators, but it is precisely the social constitution of assessment and measurement, that is, the common language for the analysis of the work that imparts value to material nature. Komljenovic (2019) gives further examples of market information tools acting as market devices in the UK HE sector, such as Unistats (framing students as consumers in the UK), Coursera (classifying and categorising universities, employers and learners to facilitate e-learning through MOOCs), LinkedIn (framing skills, credentials and achievement as valued by social networks), and ICEF (framing the cultural and economic benefits of international student recruitment for universities and the future value of a university degree for students). In addition to the above examples, a number of scholars have conceptualised a wide array of

objects as market devices. These examples are tabulated below (Table 1), demonstrating the strength of the concept that it has been adapted in so many ways in different fields.

The phenomenal capacity for the application of the concept of market devices in diverse fields and to a wide variety of objects, however, creates a difficulty in defining it precisely. The difficulty mainly arises from a distinct body of overlapping literature in the field of political sociology, where the term device is used, *inter alia*, to mean a tool, equipment, instrument, object, or a document, to which agency is ascribed to produce specific effects or behaviours. For instance, see literature in relation to actions performed by public policy instruments (Lascoumes & Le Gales, 2007), texts and documents in organisations (Cooren, 2004), marketing devices (Cochoy, 2008), and tools for organisational management to facilitate rational calculating and decision making (Callon, 2002).

In order to circumscribe the research within its intended scope, the notion of market device used in the thesis is that of a *coordination device*, applied to creating a market in education, as defined by, and confined within, the concept of *agencement*. The particularity of market devices for the purpose of this theses is based on a shared understanding of the concept as defined by Liz McFall (2014), who has elaborated on the difficulty of defining market devices as distinct from the political sociology literature. This shared understanding is to say that a market device means that in an *agencement*, a market device *does things* by *interacting* and *exchanging* properties with humans to produce specific effects. In other words, devices *vis-à-vis* objects should be taken together with dispositions *vis-à-vis* humans, as compound *agencements* of economic action (McFall, 2014).

Market device	Illustrative study/paper	Main thesis	Perspective
Financial securities analysts report	(Beunza & Garud, 2007)	Financial analysts report structured by internally consistent 'calculative frames'	Understanding of analysts as market intermediaries, and of the social determinants of value in the capital markets.
Purchasing centre as a calculative space	(Kjellberg, 2007)	Architectural space as a market device that demonstrates the close relationships between economic calculations, economic transactions, and economic agencies.	Multiplicity of devices for economic organising, demonstration of process through which solutions, and the calculative algorithms that go with them, are being shaped simultaneously.
Merchandising as a market device	(Barrey, 2007)	Facilitating specific market settings to control supply and demand of products.	Market professionals use the competitive context and organisational changes to advance in their own action logic.
Supermarkets as calculative space	(Cochoy, 2007)	Spatial/material properties of supermarket operations intervene at the point of purchase to facilitate economic exchange.	Consumer economic cognition is situated and equipped through commercial objects, frames, and tools, that is, spatial/material properties may be more important than calculative cognition.
Focus group as a market device	(Lezaun, 2007)	Focus group as a standardised instrument to probe and foretell economic behaviour by anticipating the encounter of consumers and products in the marketplace.	Focus group opinions are experimentally generated in a highly mediated fashion, that is, manufactured as such, but treated as a valid natural phenomenon to certify individual viewpoints for integration into marketing strategies.

Consumer tests as market devices	(Mallard, 2007)	Consumer evaluations contribute to shaping the demand through recommendations and advice, and also directly influence the supply side, for example, through increasing visibility of dishonest manufacturers, alerts concerning dangerous products, which generate decisions that carry economic consequences.	Demonstrate the processes through which a very particular representation of consumption choices is produced.
Transferable market quotas for fisheries as market device	(Holm & Nielsen, 2007)	Analysis of historical events that have led to fish quotas, which have become property.	Illustrates a multiplicity of agencies and of (market) devices involved in the creation of quotas, and the difficulty of strict division between agency and device; between ‘cook and recipe’.
Qualification of financial derivative products	(Millo, 2007)	Analysis of how financial derivative products are qualified, that is, the process through which the derivatives gain their particular qualities – through an interactive and dynamic (network-like) process that involves various actors (commodity exchanges, commodity traders and financial regulators), but also the products themselves.	Actors and the structure in which they operate cannot be separated, qualities of a product are not simply assigned to it, but instead are the outcomes of multiple interactions, including the products themselves.
Classification of pharmaceuticals as a market device	(Sjögren & Helgesson, 2007)	Classification of pharmaceutical products to qualify for reimbursement. Analysis of the process involving the devices (standards, labels, certifications), and actors (regulators, critiques, analysts).	Performativity of the processes for establishing metrics for description and assessment of products in particular categories.
Price as a market device	(Caliskan, 2007)	Stock or commodity prices are culturally and socially embedded, constructed or informed by particular	Prices can best be seen as prosthetic devices deployed to further various trading objectives. Various prices are produced to prevent or foster exchange, not by coming

		geographies, exchange relationships and deployed market technologies.	together of supply and demand, but produced and challenged by a multiplicity of actors.
Capital Guarantee Products – derivatives as market devices	(Lepinay, 2007)	Describes how financial engineers designed a complex financial product which failed as the calculative practices did not realise the specific adjustments needed to surrounding economy.	Derivative products call for a different set of accounting rules to assess their impact given how the products are designed asymmetrically, that is, they are not abstract from the market but work under specific conditions in the market.
Consumer credit score as a market device	(Poon, 2007)	Describes how consumer credit score cards are produced through tools embedded in sophisticated software packages designed by engineers and back-stage statisticians, risk managers etc.	The architecture of the algorithm/model can significantly change how the technology constitutes markets through risk calculation.

Table 1: Examples of Market Devices as conceptualised in literature

f) Conceptualising knowledge assetization

The economic terms used in practice, and extant literature, vary greatly depending on the context and the object of the analysis being undertaken. For example, the interview participants in this research have mainly used the terms ‘commercialisation’ and ‘monetisation’ in their responses, perhaps to encompass in general what they see as an issue with a market-based approach being applied to the outcomes of their work. It is therefore important that there is clarity about the terminological and theoretical use of various terms to inform fieldwork and further analysis.

In general, the extant literature deals with ‘marketisation’ in the UK HE sector in a traditional Marxist sense, employing various economic concepts such as capitalisation, financialisation, commercialisation, and commodification, applying these concepts to the work done in the universities, notably in the context of globalisation and neo-liberalisation in the UK HE sector. For example, the term ‘Academic Capitalism’ is used by scholars flexibly (Hackett, 2014; Münch & Münch, 2013; Slaughter, 2004; Slaughter & Leslie, 1997) to describe various changes that are taking place in HE. Similarly, Ball (1994; 2016) discusses the neoliberal reorganisation of universities with the introduction of market forces, managerialism, and the creation of competitive markets within and between institutions, as well as between individual researchers (for a Cultural Political Economy critique of competitiveness in universities see Jessop, 2012). Scholars have extended these ideas further, suggesting that universities are now at the centre of global political economy (Marginson, 2012), while others have deployed the Marxist factors of production to the production processes of knowledge (Pusser, 2012). The contradiction between knowledge being available in abundance and at a marginal cost in the digital age with a capitalist economic model that relies on private property has been highlighted by Mason (2016), suggesting that the pressures of capitalism (to amass) will push market-

mechanisms into all facets of human life, and these pressures will be particularly acute in the knowledge economy. In contrast, other scholars have argued that higher education reforms by governments around the world for over two decades have not succeeded in establishing a bona fide economic market in education (Marginson, 2013), even though marketisation tendencies such as corporatisation, competitive funding, student fees, and performance reporting may have brought the HE systems closer to an economic market system, Marginson maintains that a capitalist market is unachievable in education beyond these quasi-market states, for intrinsic reasons such as knowledge as a public good, status competition, and other limitations such as insufficient political will and pressures from interest groups.

Another term which has found increasing usage in Marxist / economic markets literature is financialisation, even though it remains contested (Christophers, 2015). For the purpose of this research, financialisation is a distinct concept, understood as the process by which universities seek to create or maximise profit (surplus), through engaging in entrepreneurial market-like and competition driven behaviours. Christophers argues that the conceptualisation of financialisation will emerge dialectically, over time, with inevitable and deep contradictions, similarly to capitalism (Harvey, 2014). Jessop (2017) however, provides an unequivocal framework by which financialisation could potentially happen in the higher education sector, suggesting six distinct stages on the path to a developed capitalist market economy in higher education and research, calling it 'from commercialisation to financialisation'. The six steps in Jessop's conceptualisation are (not necessarily occurring in a linear order) 1) the development of an exchange economy; 2) a commercial economy (which involves commodification and monetisation for exchange of goods or services); 3) a rational market economy (profit seeking in competitive markets); 4) a capitalist economy (where the commodity form is generalised to inputs in the production process, that is, land, labour power, money and knowledge); 5) a competitive financialized economy (where production, distribution and exchange are

subordinated to capitalist credit); and, 6) a full-fledged finance dominated capitalist economy (which reinforced the dominance of finance capital as property). Jessop conceptualisation concludes that a full traversal of all stages has not yet occurred in higher education and research and is unlikely to occur. Nevertheless, commercialisation of knowledge changes the traditional role of university as a producer of knowledge as a public good. This shift signals a profound change in the nature of knowledge produced, and in the role of the faculty and researcher (Lincoln, 1998).

Having situated and narrowed down the conceptual usage of some economic terminology for the purpose of this thesis, there are two fundamental understandings of knowledge from a capitalist market-based perspective that emerge. The first understanding is that knowledge, as some form of a product, can be commodified, that is, traded in the marketplace for an exchange value. The second understanding is that knowledge in a capitalist economy can also be an asset, which can be ‘leveraged’ to generate income streams. This is not to say that an asset cannot be traded – but unlike a commodity, an asset cannot be consumed. An asset could potentially be exhausted in the process of its use (for example, a patent or a copyright that expires legally after a certain period of time), or maybe face obsolescence after a period of time when it is replaced by newer technology / processes. In other words, all commodities are assets until they are traded / consumed, but all assets are not commodities. An asset is a particular type of economic resource which is owned, and which facilitates the generation of income (rent). It is an item of value, for its owner, that generates future income for the owner.

The first understanding, of knowledge as some form of a product, that can be traded or exchanged is essentially a traditional Marxist understanding of economics that conceptualises commodities as having three essential characteristics. It must be produced for exchange in a market, the exchanges are monetised, and the motivation behind the monetary transactions is a

profit. Gibbs (2010) suggests that UK HE institutions have tended to disregard knowledge as a 'common good' and have embraced the 'fetishism' of a Marxist commodity. In the case of knowledge, this means that the structural changes that allow exchange and monetisation of commodities by assigning an economic value to it, through standardisation, comparability and cost-effectiveness of processes and products, have taken place and have expanded the market to attract international customers and private investment in order to compete on a global scale. Relatedly, the production of knowledge in academia has also been conceptualised as a cultural commodity, as producing, attributing, and accumulating specific forms of 'worth', which is not accounted for in monetary terms (Fochler, 2016). Fochler uses the term epistemic capitalism to denote the accumulation of different forms of worth considered relevant by researchers in their practice, such as publications, funding, and institutional recognition, at both the individual and collective levels of research. In this context, knowledge produced in universities can be viewed as an asset, in terms of the 'record' of knowledge converted into publications which plays an important role in hiring or tenure decisions relating to individual researchers (Nentwich, 2001). Equally pertinent is the way in which the publication record forms the basis for furthering the careers of researchers themselves, as they 'use' the record as an asset in order to compete for external funding and to maximise prestige (Slaughter & Leslie, 1997).

However, the marketisation / commercialisation of higher education landscape is far more complex (Komljenovic & Robertson, 2016) than can be described in one dimensional Marxist terms that relate to labour theory of value. For example, commodification of knowledge suggests that it is a product which can be identified solely in terms of the exchange value it commands in a market, or in other words in terms of Marxist commodification of labour which produces this value. It is practically very difficult to talk of knowledge in 'units' having a particular value or being produced at a particular cost, even if the cost of labour and inputs can be calculated. Knowledge produced in universities, however, can be appropriated in the form

of IPRs, which allows the owner of the IPR to extract rent from the market. It is this second understanding of knowledge, that knowledge produced in universities can be appropriated to generate IPRs as an asset form that defines the particular nature of the market-based processes in the case of knowledge more appropriately. Indeed, Birch and Tyfield (2013) have highlighted the problematic adoption of Marxist language in theoretical discussions of the relationship between political economy and biotechnology, an argument which is equally valid in the processes of knowledge assetization. For example, Birch and Tyfield (ibid) argue that Marx's theoretical formulation of the labour theory of value (LTV) which underpins key terms like value, capital, and surplus value is necessary in any adoption of Marxist concepts, but in contrast to commodity-based processes (for example, production, labour, etc.) that characterize the Marxist language, conceptually, rent in the context of an asset-based economic process is a payment to the agent (rentier) purely for ownership of a knowledge asset (which might be in the form of a patent, copyright, or trademark). This particular form of economic transaction is referred to as 'rentiership'. Birch and Tyfield (ibid) demonstrate the emergence of an asset-based economy in the area of bioeconomy, where the interdependence of technoscience and capitalism (referred to as 'techno-scientific capitalism by Lyotard (1984)) has led to an explosive growth in appropriation of knowledge through IPRs and to an expansion and capture of technoscience rents. Birch (2020) refers to the transformation of knowledge into an asset through different modes of ownership and control (for example, intellectual property), in order to extract value (that is, rent) as *Assetization*. The implication of this is that rents, in technoscientific capitalism, are *constructed* as part of the process of assetization, as rent is not inherent in the given asset (that is knowledge). As a concept, assetization "defines the conversion of a thing into identifiable and alienable property, which has value both as a resource (that is,, input into production) and as tradable property" (ibid, p. 16), The capture of rent from an asset created in this way involves the active management of the asset, in terms of

managing its value and valuation over a period of time; and requires enforcement of property rights by the owners and governments for the intellectual property regime mechanisms to function smoothly, especially in relation to knowledge assets (that is, IPRs). Assetization (Birch, 2020; Birch & Muniesa, 2020) is a term that can be used consistently, cogently, and coherently in the context of political-and-moral economy of knowledge production, where knowledge is used to produce value as an asset (through its appropriation in IPRs). Its premise is that it is not the commodity but the asset form that defines contemporary capitalism; and that given the right circumstances, anything can be turned into an asset. Assetization, through its ownership and monopoly control of assets generates rentiership – a way of capitalising through the anticipation of future income streams.

Further to the literature review and the discussion above, we can now develop a conceptual approach to explore the political economy of knowledge production through fieldwork and further analysis. Markets are social constructions, which requires institutions for coordination of activities, with agents seeking to reach rational and optimised solutions, supported by market devices as a socio-cognitive and material prosthesis that enables and facilitates calculative (economic) capacities. Market devices enable the creation of markets by enabling agents to compare possibilities and calculate the ‘value’ in transactions for market-based decision-making. In fact, market devices are not only creating markets, but also help in the expansion of the marketplace. The transactions in the marketplace are not a simple economic exchange based on the transactional values calculated by agents, but reflect the pressures that are performing the market, that is, the political, social, cultural, and economic forces that underpin, and indeed encourage, constant disentanglement and framing in the process of making a market economic. By shifting the focus from commodities, exchange, and Marxist theories to consider asset forms, we are able to conceptualise how knowledge is made valuable in anticipation of future rents through its appropriation into IPRs as a capitalization device (Doganova &

Muniesa, 2015), whilst remaining focussed on the assetization process that brings to the fore new proprietary modes (Birch & Muniesa, 2020), the sociotechnical and cultural aspects necessary for understanding the markets and the relations that the asset form produces (Callon & Muniesa, 2005; Muniesa et al., 2017) and enabling an analysis of the performativity that shapes outcomes (Callon, 1998, 2010).

Before proceeding further, given the conceptualisation of assetization of knowledge as the monopoly control of the IPR assets that can generate future income as rent, we need to define IPRs and delineate the scope of the analysis. This is important for the thesis so that connections are drawn only to concepts which are relevant and meaningful in order to explore whether the introduction of KEF has any implications for social justice.

g) Intellectual Property Rights – defining the scope

IPRs are a many-headed beast, with a far broader scope of discussion on the various aspects of IPRs, and their intersections with social justice, than what this thesis has sought to explore. In general, IPRs are understood to cover four types of rights: patents, copyright, trademarks, and trade secrets. This thesis focusses only on patents, as this type of IPR is the most relevant for our analysis. A patent gives the ownership of a product, technology or a process to the company or the individual that has invented it, along with legally defined protections for the use of the product or process by others. There is a wealth of literature that considers the impact of patents on social justice. A simple search on Google Scholar of the term ‘impact of patents on social justice’ brings up more than 700,000 results, in diverse areas such as law, healthcare, biotechnology, pharmaceuticals, agriculture, IT, computing and physical sciences.

Given the constraints on space, the thesis has to be selective and emphasise the features that pertain particularly to the research on hand. In order to do this, the areas that have been identified for analysis are those which are mainly concerned with the potential impact of

introduction of KEF on social justice. The selection was further narrowed by considering questions such as who would be harmed by the introduction of the KEF; the impact of exclusion from knowledge, if it is appropriated in the form of patents, of those who need it most, questions about academic freedom, and whether a patent regime could potentially impact on ecology and the natural environment. In this regard, the scope of the analysis is demarcated as below.

There are several theories of justice that intersect with the IP rights, raising various conceptual and epistemological questions about analysis of patents from a social justice lens. It is out of scope for this thesis to explore the conceptual intersections of social justice with IP rights, although interested readers may refer to Gosseries et al. (2008) for a detailed exposition of how various theories of justice deal with IP rights, such as –

- a) Lockean / Hegelian / Libertarian ideas of ‘natural’ rights of property ownership, which are central to patents.
- b) Rawlsian notions of the ‘original position’ to derive principles of justice that centre justice on the wellbeing of any individual in a given society, which relies on social-cooperation and therefore diminishes the principle of social justice in a Westphalian system of nation states, where cross-border willingness to recognise the rights and liberties of other societies may be subordinate to national self-interest. Also see Murphy’s (2012) proposition that IPRs are incompatible with Rawls’s principles of justice.
- c) Utilitarian / instrumentalist approaches (Attas, 2000; Maskus, 2007) that are primarily concerned with increasing total amount of welfare in a society instead of reducing inequality, where patents primarily act as incentives.
- d) Egalitarian positions that are concerned with distributive justice, where the central concern is with the distribution of resources which reduces inequality and protects basic freedoms (access to life-saving medicines, for example).

Patents can be analysed through various variables that constitute its scope. A common attribute used for patents is that the patented product or technology should be ‘novel’, how the patent would protect the product’s or technology’s use commercially, and the duration for the grant of the patent, that is, for how long a patent would last. Patents are a significant feature of all aspects of modern economy, and the study of patent regimes, and associated jurisprudence, could be rightfully considered as a discipline in itself (Bently et al., 2022). For example, significant part of scholarship on how patents are defined and used in practice deals with disputes, that is, legal viewpoints of specialist practitioners and courts. This thesis is not concerned with patent laws, or the effectiveness of their implementation.

Scholars, policymakers, governments, industry, and concerned individuals offer a range of justifications for the patent regimes to exist (Merges, 2011), and for these to be made stronger and more effective. The utilitarian economic argument is the most common (Attas, 2000; Maskus, 2007), followed by philosophical justifications (Becker, 1980; Drahos, 1996). The utilitarian / economic justifications are generally based on promoting market-efficiency (and increasing societal benefit, through encouraging creative and inventive activity) by incentivising the IPR owner with economic incentives, which is a key feature of the capitalist system, as what is not owned cannot be traded. The philosophical justifications generally argue for property rights arising from first occupancy, labour, liberty, and virtue. It is out of scope for this thesis to prove or disprove the utilitarian, economic or other philosophical justifications for patents (Murphy, 2012), although we are concerned with the moral rationale for a patent regime if it has the potential to impact on social justice. In this respect, it is worth noting that there is limited evidence for the utilitarian argument that suggests that IPRs stimulate investment and innovation (Landes & Posner, 2003; Nelson, 1962b); that there are ‘negative spaces’ in IP regimes in which creation and innovation can thrive in the absence of IPR’s formal protection mechanisms (Rosenblatt, 2013); that certain rights within IPRs (such as farmers’

rights and geographical indicators) can enable restoration of access and benefit sharing for social justice (Dwijen, 2011); and that even the philosophical justifications do not preclude distributive justice. Indeed, Becker (1980) makes the case for a more egalitarian approach to take precedence over private ownership.

Whatever might be the arguments for patents, their crucial effect is to bestow monopoly power on the owners (Christophers, 2020). It is practically impossible to assign an exact value to the ownership of patents for an individual, corporation, or national economy, however, approximations can be made, especially for the purposes of determining rent over the duration of the patent in order to consider their (negative) distributive economic impact. Christophers (2020) provides a list of IP-intensive sectors in the UK and the approximate value patents generate in these sectors, as a way to quantify the rent from patents. Of particular interest in this analysis, from the point of view of this thesis, is the role universities play in the production of patents. For example, Oxford University is considered to be in the top-10 IP producers in the UK, with currently more than 4,300 patents worth over £150 million (ibid). While universities like Oxford with their extensively developed knowledge exchange operations, and the start-up companies sponsored by Oxford which are behind the patents, are a clear indication of the important role that the UK HE system plays in the wider efforts to commercialise knowledge, a fuller analysis of this would not be relevant for the scope of this thesis. The thesis takes for granted the unique position that universities have in the knowledge production process, and the centrality of this to the wider economic growth for a nation.

As suggested above, a significant extent of scholarship is concerned with considering intellectual property from the legal and economic standpoint, which is out with the scope of this thesis. However, recent scholarship has also highlighted the effects of IPR on social and cultural life (Sunder, 2012). The connections between cultural production, society, and human

freedoms, while providing a deeper understanding of the effects of IPR on ability of citizens to 'live a good life', are out of scope of this research to explore.

The role of patents in the development of techno-scientific knowledge cannot be overstated, as discussions (and disputes) between nations, corporations and researchers are intensifying around the world over IP rights, ranging from attempts to patent the human genes to the patenting of Covid vaccines, agricultural products, software, semi-conductor chips etc. (David, 2000). While how IPRs deal with the trends in science and technology on a global scale could offer rich insights into IPR regimes and practices in developing and newly industrializing countries, it would not be apt in the context of this research.

Having defined the scope for analysis with regards to patents, the thesis now turns our attention to the KEF policy, specifically, the theoretical considerations underpinning the 'What's the policy represented to be' (WPR) (Bacchi, 2009) process which is used for policy document analyses.

3) Research philosophy, design, methodology, and methods

There is an insufficient understanding of how the introduction of the KEF might affect the knowledge production and knowledge exchange processes in the UK, that is, how knowledge is produced and disseminated for use / appropriation by industry; and in particular, how instruments like the KEF become performative. This suggests that an exploratory and interpretive approach to the research is appropriate. Given that the results of the third iteration of KEF have been announced last year in 2023, very little work, even *ex ante*, explores the potential bearing KEF might have not only on the production, dissemination and access to knowledge produced in the universities, but also on its performative influence on the knowledge production ecosystem. This research therefore has the potential to greatly benefit government policy makers, universities and colleges, academic staff working in the UK HE sector. The change in the policy environment, and the demands being placed on universities with regard to knowledge exchange, which has led to a focus on engagement by HE institutions in addition to research and teaching, has provided the motivation and justification for this research (Bryman, 2012; Creswell, 2013). In addition, the need to qualitatively explore the likely changes in researchers' behaviour following the introduction of a new policy has informed the methods used for this study (Creswell & Poth, 2018; Schwartz-Shea & Yanow, 2012). The following section outlines the ontological and epistemological beliefs underpinning this research, and the makes explicit the methodological suppositions and design on which it is built.

a) Research philosophy and design

The ontological and epistemological 'footing' of this research (Grix, 2004) is qualitative, and more specifically, constructionist-interpretive. A constructionist-interpretive approach holds that social phenomenon are constructed and maintained via a given set of social conditions at

a given point in time, and how a social phenomenon is brought into play in reality can be explained through an interpretive lens. A ‘constructionist’ approach is distinct from a ‘constructivist’ approach (Bleiker et al., 2019). A constructivist approach, as commonly understood in educational philosophy, is cognitive, where meaning is constructed in the mind of the subject or the learner (Rob & Rob, 2018). The idea of the mind being active in the construction of meaning or knowledge is not new, and a constructivist philosophy holds that this meaning is unique to the person whose mind is actively and continually constructing meaning in light of their own individual experience. A constructionist approach, on the other hand, takes the view that social processes construct the ‘reality’ we experience. A constructionist approach rejects some kind of a ‘real’ world which is unmediated, and which can be directly observed and examined through empirical methods. A constructionist approach maintains that discourse, relationships and interactions in social processes constitute what we see represented in the world (Bleiker et al., 2019). The perspective of this thesis is that social factors to a large extent determine, and are constitutive of, legitimate knowledge; and the researcher makes sense of this through their interpretation of particular social actions in particular contexts of the enquiry.

Given the exploratory nature of this research, an interpretive approach was considered as the most appropriate foundation for the research. Interpretive research, that focusses on “specific, situated meanings and meaning-making practices of actors in a given context” is a well-established method of enquiry (Schwartz-Shea & Yanow, 2012). Interpretive methods draw on constructionism (Guba & Lincoln, 1989) – a philosophical paradigm which is relativist, as opposed to a realist worldview, with a subjectivist epistemological perspective which interprets reality based on social and inter-subjective interactions – a worldview that truth and meaning are subjective (Creswell & Poth, 2018). Interpretive research has been conceptualised as postmodern, “guided by the researcher’s set of beliefs and feelings about the world and how it

should be understood and studied” (Denzin & Lincoln, 2005, p. 22). Interpretivists believe that knowledge is specific to particular contexts, and that there can be multiple meanings and ways of knowing. Interpretive research sees humans as agents, and focusses on understanding the meaning of human experiences (Schwartz-Shea & Yanow, 2012).

This research thus provides meaningful insights into the experiences of university researchers in terms of how they perceive policy, and indeed, how they plan to respond to it, signifying a change in behaviour and practice. The conceptual framework underpinning this research, of the discursive and performative nature of changes the UK HE sector is going through currently, necessitates flexibility in the research design so that the ‘what’ and ‘how’ questions (Silverman, 2013) can be explored fully, although it is recognised that the research findings are specific to a particular context, and therefore the emphasis is on understanding the changes happening instead of causal explanations. This is an important point, as this explicates the ontological and epistemological positions of the researcher, which, as suggested by Marsh and Furlong, are “like a skin, not a sweater: they cannot be put on and taken off whenever the researcher sees fit” (2018, p. 17). At the core of this position is the notion that social phenomena are socially and discursively constructed, and it is our interpretation of the reality, as we see and understand it, which is The Truth – which may or may not be generalisable, but it helps us understand the worldview of others who are involved in the construction of this reality. In this respect, the interpretation of reality is always going to be partial and subjective, which is a limitation in one sense, but on the other hand an interpretive position aligns with the postmodern position – defined as having as “incredulity towards metanarratives” – that objective knowledge or science “produces a discourse of legitimation with respect to its own status” and therefore plays within the “rules of its own game” (Lyotard, 1984).

An interpretive research design does not define key hypothesis prior to research for falsifiability. Instead of being driven by any theoretical concerns, the aim is to develop knowledge about the potential impacts on practice of introduction of a new policy. An interpretive design means that initial understandings of a phenomenon can be rethought and tested during the research.

Epistemologically, while this research is investigating a phenomenon in a specific real-life context, it is distinct from a case study design because this research is not looking for causal explanations to explain a phenomenon (Goertz, 2017), that is, the introduction of the KEF policy. The KEF is a national policy that affects all universities in the UK. Unlike a case study design, this research is not seeking to explain the 'how' and the 'why' of the potential effects of the KEF policy as applied in the particular context of this research (Priya, 2021); but seeking to explore the political economy of knowledge production in the UK higher education sector in general, and more specifically, researching the performative potential of the KEF policy, including the implications of the policy for social justice. It does this through research questions which can be extended in subsequent research in very similar contexts in other universities. In contrast to a case study, the focus of the methodology is not on contextual study, but instead focus on the phenomenon through an empirical enquiry involving policy analysis and the lived experience of researchers through semi-structured interviews. Therefore, instead of defining a problem from the beginning, this research seeks a deeper exploratory study of the political economy of knowledge production, which emphasises the voice and authenticity of the research participants. In this sense, instead of a deductive approach involving proving or disproving a hypothesis, a constructionist-interpretivist approach, as discussed above, allows for an exploration of the subjective reality being experienced by the research participants, who construct their own subjective meaning as they engage with the world and the phenomenon being researched.

The research is designed along three interrelated strands, defined by the three main research questions, as below.

First, the potential for KEF to accelerate the academic capitalisation process is explored through a document content analysis, through the WPR approach, of the effects of designed metrics⁴ of KEF on HE institutions in terms of pursuing their agendas for innovation and engagement. This empirical policy analysis of KEF, and the process of its implementation, provides insights from a political economy perspective of the knowledge production process. In particular, it helps understand to what extent the KEF is seeking to strengthen the state bureaucratic control over academic activity through KEF and ultimately through funding control, and to what extent it positions academia instrumentally, subordinate both to the state and the market, see (Clark, 1983; Middleton, 2000).

Second, interviews with knowledge producing labour, that is, that is, university researchers, explore the performativity⁵ the KEF may potentially lead to in terms of researcher's behaviour, particularly if they have to actively seek external funding to meet performance targets, and how these effects, in turn, influence the KEF's performativity in shaping the knowledge marketplace. While recognising that the strictures of performativity unveiled in this research are *ex ante*, the research at this stage of implementation of KEF offers an understanding of researchers' perceptions of KEF, and their anticipated strategies and behaviours that result from this perception.

⁴ See KEF metrics here <https://re.ukri.org/documents/2019/kef-metrics-data-sources-table/>

⁵ Performativity – as induced by ‘a mode of regulation that employs judgements, comparisons and displays as a means of incentive, control, attrition and change’ Ball, S. J. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy*, 18(2), 215-228.

<https://doi.org/10.1080/0268093022000043065>

Finally, building on the empirical research and exploration as outlined above, the implications for social justice therein are explored in the thesis. The state's increasing regulation of knowledge production and appropriation activities through KEF for market purposes has profound implications for justice globally. For example, on access to knowledge, and exclusion of some groups from it. Would increasing innovation and engagement come at the expense of basic research, or to the neglect of other disciplines that perhaps do not contribute to commercialisation motives but benefit society nevertheless?

b) Methodology

*“To find the right method, one must reconstruct the **right discipline.**”* (original emphasis) (Feyerabend, 1993, p. 205)

In the treatise *Against Method*, Feyerabend challenged the methodological focus on formal hypothesis, theoretical falsification, and deductive logic, suggesting that methodology must provide researchers with ‘breathing space’ in order to consider ideas outside the customary standards and frameworks within which scientists operate, stating –

“Neither blatant internal inconsistencies, nor obvious lack of empirical content, nor massive conflict with experimental results should prevent us from retaining and elaborating a point of view that pleases us for some reason or the other. It is the evolution of a theory over long periods of time and not its shape at a particular moment that counts in our methodological appraisals”. (ibid, p. 183)

Feyerabend contends that the “naïve and simple-minded” rules which methodologists use to guide research cannot account for the complexity of human change, the unpredictability of consequences of decisions we make, and the fact that the world is still largely an unknown entity, such is the “maze of interactions” (ibid, p. 18). Feyerabend’s point here is not to suggest

that ‘anything goes’ as far as methodology is concerned; or that operating outside customary methodological frameworks can allow unsubstantiated arguments to be put forward. Rather, the quote illustrates the point that it is the nature of research that should determine a methodology that reflects realities in the best possible way. This approach to aligning methodology with research aims and objectives also fits well with Grix’s directional relationship between ontology, epistemology, methodology and methods (Grix, 2004).

Instead of claims about causal explanations, replicability and generalisability, the central questions for constructionist-interpretive research are those of methodological rigour, that is, validity and reliability (Schwartz-Shea & Yanow, 2012). From an interpretivist perspective, the reliability of research lies in a rigorous documentation of the methods, which is meaningful for others, and ensuring uniformity and consistency of research outcomes with the data. The validity of the research is in the validity of the experiences it narrates. Indeed, Bevir and Rhodes (2006) argue that since all theories or narratives are based (at least) on partly constructed facts, methods cannot be deemed rigorous just on the basis of replicability. In contrast, they express the idea of methodological rigour as that where methods are appropriate / suitable for objects to which they are applied.

The methodological approach in this thesis is further informed by a few key characteristics of qualitative research (Bryman, 1988, pp. 61-68) which fit with the constructionist-interpretive philosophical allegiances of this research, very briefly summarised below –

1. ‘Seeing through the eyes of...’: Having an orientation that views events, actions, and norms from the perspective of research participants, and being empathetic towards their experiences.
2. ‘Description’: Providing detailed descriptions of the social settings being studied.

3. 'Contextualism': A commitment to understand events and behaviours in their context.
4. 'Process': An emphasis on the processes of everyday life to understand how the research participants.
5. 'Flexibility and lack of structure': A relatively open and unstructured research design as compared to quantitative research, so that the imposition of what needs to be studied and how can be avoided.
6. 'Theory and concepts': A cautious approach to imposing prior fixed theoretical frameworks and concepts that might constrain the research.

The qualitative methodology, as informed by the criteria above and which fits well with the constructionist-interpretive paradigm, believes that an understanding of truth can only be obtained through an understanding of socially constructed phenomenon in specific settings and context, and through the interaction between the researcher and the respondents, unconstrained by prior fixed referents. The same methodological presupposition applies to the document analysis using the WPR approach, that is, the researcher is not outside the world they are studying, and therefore their prior knowledge, and their interaction with the document being examined will have a bearing upon the research outcomes. The important point in constructionist-interpretive research is to be transparent about one's positionality in the research, and create trust within the research activity and the outcomes. Lincoln and Guba (1985) identify four general approaches that build trust, very briefly – Credibility (do the research findings correspond to reality?); Transferability (can the research provide learning for other contexts?), Dependability (is the research and researcher reflexive?) and Confirmability (is it as close as possible to objective reality?). The research methods described below provide a "thick description" (Geertz, C. (1973). *Thick description: Toward an interpretive theory of culture*. in C. Geertz (Ed.), *The interpretation of cultures: Selected essays*. Basic Books. As

quoted in Stahl & King, 2020) of the activities undertaken in this research, that hopefully meet the expectations for trustworthiness as suggested by Lincoln and Guba (Lincoln & Guba, 1985).

i) Theoretical considerations for the WPR approach

The qualitative document analysis of KEF uses Carol Bacchi's 'What's the problem represented to be' (WPR) approach (Bacchi, 2009), to help analyse the policy in order to understand what is the particular problem it is seeking to address (see 'The WPR approach' section in the Methodology chapter). The WPR analysis informs the fieldwork, involving interviews with academics and researchers in order to explore the performative impact analysis of the KEF. This section outlines the theoretical considerations which led to the use of the WPR process for the policy document analysis of the KEF.

A search of extant literature to ascertain dominant approaches in the study of higher education policy change reveals a literature review by Saarinen and Ursin (2012) that suggests three categories, namely Structural, Actor, and Agency approaches taken by scholars in the recent past. Saarinen and Ursin (ibid) suggest that a Structural approach situates and explains policy change in existing taken for granted structures, arguing that this approach is descriptive and heuristic. The Actor approach focusses on individual or institutional actors as drivers of change, with a worldview which is either individualistic (of individual actor/s), or holistic (influenced by institutional structures), respectively. The authors (ibid) further suggest that often the Actor and Structural approaches are combined in the policy context. Clearly, assumptions about who all hold the knowledge, power and positionality plays an important role in the analysis. In contrast to the Structural and Actor approach, Saarinen and Ursin (ibid) describe the Agency approach as policy being influenced either at global, national, or local organisational levels (for example, the World Bank, Department of Education, HE institutions) or by the activities of

these agencies themselves. Thus, they conclude that higher education policy is not only influenced, but also produced by global actors (and organisations such as the EU and OECD) and structures (for example, the Bologna process).

In addition to these three dominant approaches in higher education policy studies, Saarinen and Ursin also identify two emerging and relevant approaches (ibid). These approaches are the Actor-Network Theory (ANT) and the Discursive approach. The ANT considers change purely as a process of interaction between social structures and the actors within them, suggesting that there is a 'network' of constantly shifting and transient relationships which mediates change. Post-structuralist and constructionist, the ANT includes non-human actors, which are linked to each other in the network. The non-human actors include things such as material structures, systems, objects, natural phenomena, devices, texts, and economic goods. The ANT proposes that since all changes are mediated through the network, no actor or organisation is completely autonomous. The second approach, the Discursive view of policy change, is of more interest and relevance to this research. Saarinen and Ursin (ibid) comprehend the discursive approach as dialogic, drawing our attention to the *process* of how policies are constructed. The discursive approach rejects an *a priori* acceptance of actors and structures, but instead of *describing* the system (of actors and structures) as it exists, actually scrutinises how the *system* has been discursively construed through a discursive process whether structural, actor-based or agency-based. In other words, a Discursive approach does not describe a reality but creates and supports a particular view of that reality (ibid). Indeed, Saarinen (2008) describes processes in higher education policy research as Discursive processes, arguing that theoretically higher education policies are constructed discursively. We can argue, therefore, philosophically and methodologically, that there is no dichotomy between policy text and policy actions, and thus, when we analyse policy documents, it involves not only questioning what *construes policy*, but also *what and who all are being affected by it*.

In general, discourse analysis in educational research and policy making draws on a Foucauldian view of discourse as a system of organising truth and knowledge (ibid), and undertakes some form of Foucauldian analysis of knowledge and power in policy. Policy analysis therefore cannot be confined just to the study of ‘different administrative agencies, their interests, funding, organisation and the like’ (Miller & Rose, 2013, p. 77) but it should be situated within a wider discursive field. A discursive approach rejects the ‘taken-for-granted’ realities in policy making. It overcomes the limitations of structural and actor approaches to policy analysis, which make the same assumptions about the ‘problems’ a policy is seeking to solve, and therefore can be a novel way in approaching policy analysis (Saarinen and Ursin, 2012). A discursive approach is concerned with the underlying assumptions that shape how a ‘problem’ is conceptualised and how ‘solutions’ for the problem are selected. Ozga (2021) argues that these assumptions need to be subjected to critical scrutiny, including who does the defining of the problem and the selection of the solution. Given that policy making is a political project, it is imperative that the motivations that drive a policy and any hidden assumptions and agendas are made explicit.

A key methodological question which then arises is what tools and techniques can be used to understand how a policy is constructed and implemented, which offers a transparent, reliable, and systematic method of analysis and at the same time makes explicit the hidden assumptions and ‘taken-for-granted’ realities in a policy? Which method of analysis is most suited to scrutinise the possible impact of policy on the actors involved? In order to recognise the subjectivation and lived effects of policy on researchers working at UK universities, which is particularly relevant for this research, the WPR approach was identified as an appropriate method of analysis given the constructionist and post-structuralist nature of this research.

c) Research Methods

The choice of research methods adopted in the research is informed by the constructionist-interpretive ontological and epistemological position outlined in the research philosophy section, and guided by the research questions. The research design is qualitative multiple-methods, and broadly, followed the three strands as set out in the overall research questions. The methods used in the research are outlined below.

First, documentary analyses of the KEF policy was conducted, using the WPR approach (Bacchi, 2009). The questions that form the basis of the WPR approach allowed for a meaningful analysis of the government documents and White papers, publications, policy papers, and data from grey literature, that formed the background context for the introduction of the policy. The WPR policy analysis included an assessment of the designed metrics (the KEF dashboard) in order to understand the problem representation; the assumptions and silences that lie beneath the said problem representation; and the effects of the particular representation of the problem on subjectivities. Of particular interest in the analysis was to explore whether the KEF metrics seek to influence the rate and direction of UK research and innovation, and if so, how. The WPR approach thus enabled the development of a richer picture of the Discursive, Subjectification, and Lived effects of the policy (see section 5.e).

This was then followed by a thematic analysis of data from semi-structured interviews in order to explore the performativity of the KEF, and how, acting as a market device, it could potentially lead to a concretization of the knowledge market. The semi-structured interviews provided an insight into the impact potential of the KEF on the rate and direction of knowledge, and how it's performativity might lead to further economization and assetization of knowledge. The interview process helped gain an understanding of the potential changes in researcher behaviour that might be effected by the policy.

Finally, secondary research of extant literature on IPR, and the relationship of IPRs with social justice, was utilised to theoretically explore and analyse the possible consequences of introduction of the KEF on social justice. The methods thus reflect the overall research design.

i. The WPR method for empirical policy documents analysis

Document analysis is a systematic procedure for reviewing and / or evaluating documents – often combined with interviews to minimise bias and enhance credibility (Bowen, 2009). Constructionist-Interpretive research requires that document analysis should focus on interpreting data to elicit meaning and gain understanding, but as an analytic approach, it is different to discourse analysis. The aim was not to focus on the constructive role of language in the construction of meaning, which is the specific to discourse analysis and requires a micro-analysis of language used (Braun & Clarke, 2014), but to understand what is the problem which KEF is trying to address, and what might be its potential impact on academics’ and researchers’ behaviour. The KEF, as a regulatory mechanism, needs to be analysed in a way which not only links individual actors and organisations to political objectives of the policy, but also seeks to understand how policy objects are constituted – in other words, make the politics in policy visible by studying ‘problematizations’ in a policy (Bacchi, 2012). Therefore, the WPR approach (Bacchi & Goodwin, 2018; Bacchi, 2009) was adopted as a critical analysis approach to scrutinise policy documentation (also see in the Methodology section: The WPR approach: theoretical considerations). The WPR approach was considered the most appropriate as it potentially could help discover insights relevant to the research problem, and help produce a rich description of the impact potential of the KEF policy.

Bacchi’s (2009) approach to public policy analysis starts from the premise that a policy is a plan that suggests a course of action to solve a particular problem. However, policies generally do not elucidate what is the problem that a policy is trying to address. The problem which needs

fixing is left implicit. Bacchi argues that it is important to make the implicit problems explicit for a closer scrutiny. Bacchi suggests that a particular understanding of a problem in a policy often assumes the existence of a problem and how it should be solved. The WPR approach questions these presumptions, as these particular representations of a problem play a central role in how we are governed through policies. In other words, Bacchi suggests that policies are problematising activities, and refers to this implicit representation of the problem as a ‘problem representation’ which needs to be analysed rather than the policy itself. Describing the analysis as ‘problematization’, Bacchi suggests that as a method of critical inquiry problematization directs our attention to the ways that make politics visible (ibid). The WPR approach therefore recognises problematizations as ‘powerful and yet contingent ways of producing the “real”’ (p. 7), and is thus underpinned by three propositions (ibid, p. xxi):

1. We are governed by problematizations, and not policies, as policies may not be explicit about the problem/s;
2. We need to study these problematizations instead of problems, as each policy represents a problem which it is seeking to solve in a particular way; and,
3. We need to “problematise (interrogate) the problematizations” through a scrutiny of the premises and effects of the problem representations contained within a policy.

Bacchi (ibid) is clear that the WPR approach is not about interpreting policy representations with an intent to manipulate issues or frame them differently, but to probe the underlying and unexamined assumptions within a problem representation. It does this by applying a set of six questions. These questions can also help make specific recommendations for change. The six questions are:

1. What’s the ‘problem’ ... represented to be in a specific policy or policies?
2. What presuppositions and assumptions underlie this representation of the ‘problem’?
3. How has this representation of the ‘problem’ come about?

4. What is left unproblematic in this problem representation? Where are the silences? Can the ‘problem’ be thought about differently?
5. What effects are produced by this representation of the ‘problem’?
6. How/where is this representation of the ‘problem’ produced, disseminated, and defended? How could it be questioned, disrupted, and replaced?

An analysis of the design and metrics of KEF, although quite useful in setting out the main principles on which universities could be compared in a very diverse sector, is not the aim of this research. Rather, this research seeks to understand the issues which the KEF is trying to address and its potential consequences. Therefore, a detailed evaluation of the KEF metrics, the information about knowledge exchange activities and how these are measured, and the interactive dashboard which has been co-developed with JISC to provide a visual representation of a university’s performance as spider graphs⁶, were considered out of scope for this research. These could be potential areas for future research, for example, the effectiveness of KEF design which uses clusters (groupings of institutions with similar characteristics), whether the framework captures the range of activities which could be categorised as knowledge exchange (called ‘perspectives’ in KEF), how universities engage with public and communities, and whether the KEF has had any impact at all in local growth and regeneration.

The main focus of this research is on the performative aspects of the KEF, and how the KEF as a regulatory framework, through its problem representations, ‘shapes’ researchers’ behaviours and translates into real, lived experience. The KEF framework is the most ‘prescriptive’ text (Bacchi, 2009, p. 34) which seeks to quantify and benchmark how

⁶ <https://kef.ac.uk/dashboard>

universities in England interact with business and the wider community. The following documents, available on the UKRI website, were selected for the analysis:

1. Knowledge Exchange Framework: Decisions for the first iteration

Available at: <https://www.ukri.org/publications/knowledge-exchange-framework-decisions-for-the-first-iteration/> Published: 14 January 2020

2. Review of the first iteration of the Knowledge Exchange Framework

Available at: <https://www.ukri.org/publications/review-of-the-first-iteration-of-the-knowledge-exchange-framework/> Published: 3 February 2022

3. Clustering and narrative templates: Report detailing the clustering arrangements and providing narrative statement templates for the first iteration of the Knowledge Exchange Framework

Available at: <https://www.ukri.org/wp-content/uploads/2021/10/RE-01102021-KEFClusteringNarrativeTemplateReport-Oct21deadline.pdf> Published: 2 March 2020

4. Knowledge Exchange Framework Metrics: A Cluster Analysis of Higher Education Institutions

Available at: <https://webarchive.nationalarchives.gov.uk/ukgwa/20210802101957/https://re.ukri.org/sector-guidance/publications/kef-metrics-cluster-analysis-hei/> Published: November 2018

There are, of course, a number of other policies, reviews and interventions by the Government and universities themselves which form the basis on which the KEF dashboard has been built, for example, data from HESA or the HE-BCI survey. In excluding these associated documents from the analysis, it is recognised that each of these will have their own problem representations. However, a comprehensive analysis of all the associated policies, documentation, legislation, and government intervention is not possible for research at a scale such as this, however, these have been cited in the analysis wherever relevant. In this sense, it is acknowledged that the WPR analysis can only be a constrained enquiry of what the problem was represented to be in the policies. It is not the intent of this research to study in detail the

universities data gathering processes for the KEF, or the ancillary documentation referenced in the KEF. It is also not in the scope to include in the analysis those policies which clearly comprise larger policymaking concerned with administration of universities research / KE processes. These were therefore excluded. Relevant documents however which are useful in setting the context under which the KEF is operating are briefly referenced where appropriate.

Aligned to Bacchi's view, that aims of the study may determine the relative emphasis on the different WPR questions, the scope of the research was set in terms of the respective questions themselves which may be more relevant and support the aims of this research. The public debate so far has focussed on whether the KEF metrics faithfully capture the KE aspects of a university's work, and iterations of KEF are being produced following consultations with stakeholders. The process of questioning, disrupting, and replacing KEF is very much currently focussed on the technical evaluation of KEF and how it can be improved, but without any questioning of the underlying purpose of KEF and what it has set out to achieve. For the purpose of the policy analysis therefore, questions 1, 2, 3, 4, and 5 (see WPR analysis section) were identified as the most salient and aligned to the aim of this research, which also support the empirical interpretive study of its performative impact. With regard to question 6, this research does not attempt to interrogate how the 'problem' representation of the KEF is produced, disseminated, and defended. This may be an area of future research, with regard to how the KEF dashboard is produced combining qualitative and quantitative information, how is it disseminated to the business and wider public in a visual format which is easy to understand and encourages engagement, and most importantly, how do the KEF outcomes provide easy to comprehend indicators to businesses which not only does justice to a university's KE activities but clearly signposts to elements which are relevant for the business. This will be crucial for businesses and the wider public to engage with the KEF in a meaningful way, but it is out of scope for the purpose of this analysis.

ii. Semi-structured interviews

Semi-structured interviews are well established in qualitative research and are frequently used in multiple-methods research. This research used semi-structured interviews with some prior instrumentation (Miles et al., 2020), as a particularly suited method to explore the specific understandings of participants.

The participants were all academic staff at Lancaster University. The areas from which the participants were chosen were selected carefully, the basis for which is outlined below.

First, the primary consideration of purposive sampling was to invite those to participate who stand to be most impacted by the changes, that is, who is harmed and who is benefitted (Bacchi, 2009). Participants were therefore drawn from the Faculty of Health and Medicine (FHM), and mainly from three departments within the faculty – the departments of Biomedical and Life-Sciences (BLS), Health Research (DHR), and Lancaster Medical School (LMS). These departments were chosen purposively because commercialisation and IPR issues are dominant in the healthcare and biotechnology arena; and the policy analysis of KEF metrics indicated a bias towards STEM areas.

Second, the areas from which participants were selected are those where most business and state attention has been focussed, in relation to impact of engagement and innovation research.

Third, the focus of universities in certain discipline areas was considered as more conducive to assetization, which may make performance easier, while in others may not be able to respond particular orientations and requirements.

As the focus in the interaction with participants was on construction of meaning, it enabled the discussion to be guided towards particular areas of interest, but also allowing respondents to raise their own views and issues, eliciting a rich source of data as actively constructed narratives

which can then be further analysed (Silverman, 2013). In particular, the aim was to explore in detail the change in researcher behaviour that the process of implementation of KEF may potentially lead to, such as a shift in their intrinsic motivations towards research that has potential to generate intellectual property (IP), or adoption of certain behaviours to increase engagement with business/third parties. Snippets from the interviews are provided in the data analysis section in order to demonstrate key points, but in keeping with the constructionist-interpretive paradigm no claims are made about generalisability or representativeness (Bryman, 2012).

(1) Data sample

A total of 14 interviews were completed. Each interview lasted for 60-minutes, approximately, excluding the introductions and other formalities at the beginning which do not form part of the interview data. Participants were all academic staff in permanent positions. The participants were purposively sampled, that is, recruited through direct email on the basis of existing contacts, snowballing, or through redirected email from the department administrators / officers in target departments. This allowed for selection of participants on the basis of their ability to respond to key issues identified in the research questions, to obtain rich and thick data as well as variation to gain different perspectives on the same issues (Creswell, 2013). Participation was entirely voluntary, and participants were free to withdraw for up to six weeks after taking part in the study. Participants were provided with a participant information sheet that provided further detail about the research, including the aims, introduction, and context, to help them decide if they would like to participate.

All reasonable steps were taken to protect the anonymity of the participants involved in the research. As the transcription was done on Teams, no other persons were involved in the

transcription of data. The data is stored in encrypted files on password-protected computers, in accordance with the University guidelines.

(2) Participant's work role and career stage

The recruited participants were at lecturer, senior lecturer, or professor level, with mainly research and teaching responsibilities. Staff with only teaching responsibilities were not invited to take part. Those selected included a mix of career stages in order to obtain perspectives from varied experiences reflecting their length of time in the role. In particular, the focus was to ensure that staff selected for the interviews who had the ability to 1) develop and pursue their own research agenda, 2) had some level of industry or third-party engagement in their role, 3) had applied for research funding previously or were in receipt of research funding for existing or new projects (the quantum of funding was not a limiting factor). At least two participants were in research management positions for their department, and it is recognised that their position within the departmental organisational structure would be a significant factor in their responses, in terms of how they perceived their role to have been impacted by the KEF.

(3) Academic faculty, department, and discipline

As outlined above, the participants were chosen from three departments within the Faculty of Health and Medicine – the departments of Health Research, Biomedical and Life Science, and the Medical School. As the participants were all from the Faculty of Health and Medicine it was anticipated that they would all broadly conceive the scope of their roles at the University similarly, in relation to the norms of their broad discipline. This ensured that sampling limitations, if any, did not compromise the validity of the research questions. Staff were not asked their specific areas of research or projects on which they might be working, nor were any distinctions made in the research in terms of their departments or their roles within.

(4) Protected characteristics

The participants race, ethnicity, age, or gender were not included in the scope of the analysis. Other than age as a factor determining the variation in the experience of participants in an academic role, as recognised above, there was no expectation that any of the above characteristics might affect individuals' experiences differently in terms of the potential impact of the KEF.

(5) Data collection process

The interview process was organised in two stages. In the first informal stage, the overall aims of the research, the proposed participant sample, and interview setting were discussed with two colleagues from Lancaster University, consisting of one academic from the Management Science Department, and the other a professional services member of staff. This essentially served as an initial sense check with respect to the operations / logistics of the data collection process – such as time frames for the interviews, methods for recruiting participants, tools for transcription, and mitigating any pitfalls using technology for online interviews and processing and storage of data securely. A pilot interview was then conducted with an academic staff member from the Environment Science department at Lancaster University, for a sense check to see how respondents might construct meaning of questions, to avoid common pitfalls. The pilot interview was recorded with prior permission from the participant, and they were reminded of the anonymity and confidentiality of the interview. During the pilot, two main issues were identified as some interview questions being unclear; and uneven flow / coherence in the order of questions.

There were 10 exploratory interview questions in total (see appendix 1). It was envisaged that not all questions will take roughly the same time, or that all questions will be explored. It was

recognised that during the interview there was a possibility that the interview might diverge from the topics into other areas not directly related to the topic, but given the exploratory nature of the research it was felt that it would be appropriate to not be constrained by any other issues that might emerge during the interview process.

The second stage consisted of formal interviews with the participants. All interviews were conducted over Teams and transcribed using the Teams Live transcription feature. This made the interviews more inclusive, as the live transcription appears alongside the video. The interviews were recorded, and a copy of the transcript was offered to the participants for their record. After the interview, the transcript was downloaded and saved on personal computer. The recordings and transcripts were deleted after one month. The transcripts were cleaned immediately after the interview of any orthographical signs – such as speech marks indicated by commas, ellipsis, pauses (‘umm’), repeated words, colloquial phrases (‘yeah’, ‘wanna’, ‘dunno’ ‘gonna’ etc.). The cleaned transcript was then recorded in an Excel file against each participant’s name as a matrix, with participant responses against each question in each cell. This matrix provided a mechanism for noting any issues or salient points which arose during the interview; and allowed for ease of searching for themes across the data set (Miles et al., 2020).

(6) Data analysis

The interviews provided a rich data source on individuals’ perceptions and experiences of the introduction of KEF policy, including their views on engagement processes. Thematic Analysis (TA) was used to systematically identify and explore patterns and meaning in the interview data (Braun & Clarke, 2012, 2014). The data was sorted in Excel in a matrix format, in order to make it easier to search for themes across the data set, instead of going through individual records. The purpose for doing this was to identify any patterns in the interview transcripts, of

meanings and experiences shared by researchers taking part in the interviews, which can then be linked to the broader theoretical framework of performativity and WPR policy analysis. Coding was not employed, either manually or through CAQDAS. There were three main reasons for this. One, this is a small-scale study, in terms of number of participants. Two, coding can lead to an overload of codes and overload of texts (Gläser & Laudel, 2013). Three, and perhaps most importantly, the focus of the interpretive research methodology is to identify and analyse themes and important meanings in data which are significant in relation to the research questions. Several patterns can potentially emerge from a data set during the process of coding, however, not all of these are important or meaningful. The aim of the analysis was to extract and process *only data which is relevant*, separating it from the original. The process for conducting this analysis broadly followed the Qualitative Content Analysis approach as suggested by Gläser and Laudel (2013). In contrast to the traditional deductive and inductive approaches to TA, which seek to either apply prior theoretical constructs to the data or derive theory from the data respectively, an interpretive approach allows the researcher to focus and interpret themes which are *relevant for the research and exclude data which does not necessarily link closely to the topics or research questions on hand*. Braun and Clarke suggest that it is practically impossible to be purely deductive or inductive for a researcher (Braun & Clarke, 2012):

“We always bring something to the data when we analyse it, and we rarely completely ignore the semantic content of the data when we code for a particular theoretical construct – at the very least, we have to know whether it is worth coding the data for that construct.” (ibid, p. 58)

Therefore, naturally, the process of identification of ‘themes’ is subjective, depending on the researcher’s judgement of what’s important or relevant for a particular topic or a research

question. In other words, in interpretive research, Thematic Analysis without coding avoids the extreme quantitative approach of beginning with predetermined codes, applying them, and then counting the frequency of the code occurrence on the one hand; and on the other hand, elides generating codes which are not relevant (Gläser & Laudel, 2013). Thus, instead of a mixed-method (combining qualitative and quantitative techniques) content analysis approach for systematically categorizing and coding textual data (Mayring, 2022), the core idea of the chosen method is to analyse only information that is relevant to the themes (categories) and “consciously leave the original text behind” (Gläser & Laudel, 2013). The analysis, using this approach, started from a set of themes (derived from the research questions in the context of this study), which were modifiable (new categories can be added and the dimensions of the existing categories can be changed) (ibid). This process –

“reduces the openness of the first step – creating the categories – but introduces openness to the second step – applying the categories to the empirical material. We see some similarities between this approach and the work with “data displays” suggested by Miles and Huberman” (ibid, p. 75-82)

The decision to adopt this method was driven by the consideration, in line with the philosophical and methodological assumptions, that predetermined theory and concepts should not be forced onto the data (ibid). The following steps were followed in the process:

1. Each response by the participants to the research questions was recorded in the Excel matrix, and paragraphs in each response formed the unit of analysis.
2. Paragraphs were read carefully, and categories were derived from the paragraphs which corresponded to the research questions.

3. Data not covered under original categories, but deemed relevant and significant, was incorporated in new categories which were created, or under existing categories which were modified as appropriate.
4. This information was extracted from the text and recorded in a separate excel file against each participant, who were anonymised to protect confidentiality.
5. The interpretive process involved *direct interpretations* of meaning arising from individual statements, and then establishing *patterns* (categorical aggregation), in order to ensure consistency and coherence, and to uniformly collate data where there was correspondence between two or more categories or between interview participants (Stake, 2014).
6. Each paragraph was read several times, interpreted, and interpretations checked against the researcher's own values for bias.

Finally, key snippets of data from the process above were included in the data analysis section as evidence, as the quotes from the interviews demonstrate the participants voice and minimise researcher's bias.

iii. Secondary research: Consequences for social justice

The key questions the research sought to explore were with regard to how intellectual property and commercialisation, as key metrics of KEF, might exacerbate inequalities through exclusion from knowledge of those that need it; by what mechanisms could KEF potentially undermine social justice, and what would be the conditions under which KEF could do so. A framework of categories was established in order to assess relevant literature which would be in scope for the theoretical analysis. Relevant extant literature on IPRs, and the relationship of IP with social justice, was then qualitatively analysed, searching for key underlying themes which fell within or out with the established scope (Bryman, 2012). Key journal articles and books were

identified and selected that related to the production and dissemination of knowledge with respect to IPR's philosophic foundations and justifications, general theoretical approaches to IPR, and IPR regimes and their impact on social justice in specific contexts around the world. Literature on legal issues and jurisprudence related IPR was excluded, as was historical and socio-cultural conceptualisations of IPR, as these are not relevant. The application of TRIPS was similarly excluded, as was scholarship on copyright, trademarks, and trade secrets.

d) Self-positionality and reflexivity

As suggested earlier in the methodology section, the awareness of one's own positionality allows for a sense-check through reflexive action. It is important to question own assumptions in qualitative research, in order to ensure transparency and objectivity to the fullest extent possible. Reflexivity has been considered as a major strategy for "quality control" in qualitative research (Berger, 2015) and therefore understanding how it is impacted by one's own positionality in the research assumes significance.

The assumptions that I have made in relation to the research, in terms of the topic, context, research philosophy, design, and methodology, have been weaved in the thesis sections throughout. This section considers my personal beliefs, my identity, as well as my position and relationships within the institution where the research was conducted (Lancaster University) and my relationships with some of the interview participants. I have also commented briefly on my positionality in the WPR process (See WPR analysis in the data analysis section). I have not commented on my age, ethnicity, and gender here as I do not believe these to be relevant in the context of this research.

Berger (ibid) suggests that challenges to reflexivity arise from three types of researcher's position: (1) reflexivity when researcher shares the experience of study participants, (2) reflexivity when researcher moves from the position of an outsider to the position of an insider

in the course of the study, and (3) reflexivity when researcher has no personal familiarity or experience with what is being studied. I do recognise the first and the third positionality outlined by Berger. To some extent, my workplace experiences are not too different from the study participants. As a Senior Lecturer at Lancaster University, albeit in a different faculty, I have followed with interest the increasing marketisation of the HE sector in the UK as it evolved over the years. For a brief period, I was a member of my departmental 'engagement' group, and supervised student projects and dissertations that contributed to engagement and KT, funded by the European Regional Development Fund (ERDF). I thus recognise some of the issues that arise from the processes involved under the engagement / innovation agenda, in formal and informal settings, which led to an appreciation of issues that guided this research.

I am also a union activist, and as a member of the University and College Union (UCU) I have held various elected officer roles in the local branch and at a national level. Over the years I have closely followed the changes in the HE policy environment in the UK, and the demands being placed on universities with regard to increasing measurements of teaching, research, and knowledge activities, along with the shift towards increasing marketisation of the sector. I have witnessed the trend towards commercialisation of research outputs, and have had numerous discussions with colleagues on its implications, which to a certain extent has provided the motivation and justification for this research.

I am familiar with two interview participants, as union colleagues with whom I became acquainted during union activities, for example, during industrial action. I have had no direct relationship or interaction with other interview participants before the research, although I knew some of them by name as colleagues working in a different faculty for the same employer. I appreciate that, if they were UCU members, they might have been aware of me as an elected union officer for the branch. In order to prevent any perceived power relations from affecting

their decision to participate, all interview participants were informed at the outset, in the email invite and the participant information sheet, that this research is not related to my union role, or in my role as an employee of Lancaster University. Participants were informed that their participation is totally voluntary and that they can change their mind at any time. Thus, every effort was made to conduct this research in as transparent and unbiased way as possible. Reflexivity in the process, that is, own assumptions were questioned in each chapter of the thesis, for consistency and logic of argumentation and in order to make sure that my own biases were not somehow affecting the analysis, or the judgements being made.

4) Data analyses

The data analyses section is divided in three parts. The first part deals with the policy document analysis using the WPR process. The second part analyses the interview data, and the third part analyses secondary data to theoretically explore the consequences of knowledge appropriation on social justice.

a) Policy document analysis of the KEF

The KEF policy, in a broad sense, measures how universities engage with the business world to stimulate economic growth and exert a positive social impact. The framework metrics are used to understand how universities are performing across various areas of engagement with business and communities. The framework is somewhat different to the Research Excellence Framework (REF) and the Teaching Excellence Framework (TEF), as it has not been designed as an ‘excellence’ framework which ranks institutions on the quality of their research and teaching. The KEF does not measure the quality of knowledge exchange, rather, its metrics are designed to measure the volume of exchange taking place. It does this through several metrics, including indicators for how universities help businesses to “access the world-class knowledge and expertise embedded” in English universities.

i. The KEF: A summary of policy

KEF is mostly based on data derived from the Higher Education Business and Community Interactions (HE-BCI) survey, which is run annually by HESA (Higher Education Statistics Agency). It also includes additional data provided by Innovate UK (Working with Business) and Elsevier (Co-authorship in Research Partnerships). The Public & Community Engagement score is derived from a self-assessment which comprises a short narrative about institutions work in public and community engagement. KEF does not have any faculty- or department-

level results, as the outcomes are measured for the university as a whole. Universities are grouped into ‘clusters’ of institutions with similar characteristics, to allow for fair comparisons with peers. KEF adjusts the metrics based on the size of the institution, for example by income and student numbers. KEF results are based on data from a 3-year period.

The KEF measures seven perspectives, or areas of activity, as below:

1. Research partnerships
2. Working with business
3. Working with the public and third sector
4. Skills, enterprise and entrepreneurship
5. Local growth and regeneration
6. Intellectual property and commercialisation
7. Public and community engagement

Each of these perspectives is measured through specific metrics as outlined below.

ii. The KEF metrics

1. Research partnerships

- i. Partners’ contributions to collaborative research
- ii. Number of publications with co-authors from non-academic partners

2. Working with business

- i. Income from Innovate UK (for Knowledge Transfer Partnerships and as grants)
- ii. Income for contracted research from non-SME businesses
- iii. Income for contracted research from SMEs
- iv. Income for consultancy and use of facilities from non-SME businesses
- v. Income for consultancy and use of facilities from SMEs

3. Working with the public and third sector

- i. Income for contracted research from the public and third sector
- ii. Income for consultancy and use of facilities from the public and third sector

4. Skills, enterprise and entrepreneurship

- i. Income from continuing professional development (CPD) and continuing education (CE)
- ii. Number of CPD/CE learner days delivered
- iii. Number of graduate start-ups created

5. Local growth and regeneration

- i. Regeneration and development income
- ii. Additional narrative/contextual information supplied by the university

6. Intellectual property and commercialisation

- i. Estimated turnover of active spinouts
- ii. Average external investment per spinout
- iii. Licensing and other IP income

7. Public and community engagement

- i. Self-assessment by university
- ii. Additional narrative/contextual information supplied by the university

Based on the outcomes of the measurement of above metrics, universities are assigned a decile score, which is then expressed in comparison to the average cluster score. KEF emphasises that the cluster averages are not benchmarks and universities are not expected to meet or exceed them, rather, it is a university's score relative to the cluster average which is important. Since the publication of the first iteration, a sequentially titled KEF2 version has been introduced in 2022, following feedback from the sector and stakeholders. While the design of KEF2 remains identical to original KEF, there have been some changes to the metrics which underpin the seven perspectives. For example, trade journals are now included within co-authorship under

research partnerships. There is an additional metric on average external investment for university spinouts which have been in existence for more than three years, under the IP and Commercialisation perspective. Some technical changes have been made to the methodology, and KEF results will now be presented in quintiles rather than deciles⁷.

iii. The WPR Analysis

Clearly, KEF is collecting significant amounts of data and information about universities work in the area of knowledge exchange. While financial data is captured in the metrics from existing data which universities submit to HESA, contextual engagement, and collaboration data, which cannot be easily quantified, is captured through narrative statements. The various aspects of KEF, from the extensive detail captured in metrics, to how the outcomes are presented and used, is not a complete and definitive representation of how universities are performing, given there could potentially be several ways of knowledge exchange which are not captured in the data. Therefore, it is important to understand what is the problem which KEF is trying to address, and whether the KEF represent the problem in a specific way.

The analysis was conducted by focussing on the six questions of the WPR approach. To do this, each question was considered in a step-by-step process, working backwards (Bacchi, 2009, p.48) to understand the root causes of the perceived problems which justified the policy intervention. While this approach worked well for question 1, the analysis of the remaining questions was not that straightforward. While doing the analysis it became clear that some of the responses to questions 2, 4 and 5 resulted from judgements which were made based on my experience of working in the UK HE sector for several years; and it should be noted therefore that some responses to these questions are inherently subjective and interpretive (also see

⁷ For more details, see: <https://www.ukri.org/publications/knowledge-exchange-framework-kef-decisions-for-the-second-iteration/>

‘positioning of self in WPR analysis’ at the end of this section). With respect to question 3, the range of material available which aligns with this question is immense, so it became necessary to be selective. While a full genealogy of how has a representation of the ‘problem’ come about is not practicable to be covered in this research, salient events and materials have been included with references for readers who might be interested to uncover more. It is also worth noting that since the KEF has been implemented fairly recently, there is no clear evidence base to validate its impact on the HE institutions and individuals, especially with regard to question 5, but critically interrogating text and then comparing and checking understanding with the data from primary research for any inconsistencies and deviations makes the method of analysis fairly robust.

1. What is the Problem Represented to be?

The development of KEF began in January 2020, in response to the UK Government’s Industrial Strategy White Paper (Department for Business Energy and Industrial Strategy, 2017), which requested Research England to develop a Knowledge Exchange Framework with an aim to measure the production and transfer of knowledge. The Government’s Industrial Strategy White Paper was represented as being spurred by the aspiration to remain competitive in a globalised knowledge economy, requiring a more detailed picture of universities contribution to the economy and wider society. The purpose of the KEF, as articulated in various policy documents, is to allow providers (universities) to better understand and improve their own performance in knowledge exchange, as well as provide businesses and other users with more information to help them access the research conducted in universities.

The main reason for the introduction of the KEF, as suggested by the framework documents, is that 1) it can be used as a tool by universities to understand, benchmark and improve their performance on knowledge exchange activities, 2) it can provide information to businesses and

other users about the research activities and new knowledge and ideas being created in universities. Underlying this representation is the fact that the UK Government is seeking to promote knowledge exchange between universities and business (mainly techno-scientific knowledge in practice) through knowledge transfer. Several studies over the last few years have suggested that the UK has a ‘productivity’ and ‘innovation’ problem. The problem set includes what are known as productivity gaps (that is, flat-lining productivity over last decade, which is sometimes referred to as the lost decade in popular financial / economics media and news reports), and the gap between levels of productivity in the UK and other countries (for example, see the speech given by the Bank of England’s Chief Economist at the Academy of Social Sciences Annual Lecture (Haldane, 2018); and innovation gaps, which highlight the importance of links between business sectors and higher education. Indeed, the strength of the UK’s higher education infrastructure and its potential to boost innovation has long been recognised as a key to closing the productivity and innovation gaps. The Government’s own evidence report suggests that the UK faces ‘significant competition and challenges’ compared to OECD countries⁸. The report seeks to support the Government’s innovation strategy, evidencing current strengths and areas for improvement for the UK. More recently, the Confederation of British Industry (CBI) has highlighted the importance of innovation for productivity, arguing that in-house effort by companies for developing new products, processes and the organisation need to be augmented by collaborative activities and networks with universities⁹.

One of the important factors which influences the pace of productivity and innovation is R&D, and how the dissemination of new ideas, knowledge and processes generated from R&D in the

⁸ <https://www.gov.uk/government/publications/evidence-for-the-uk-innovation-strategy>

⁹ <https://www.niesr.ac.uk/wp-content/uploads/2022/06/Productivity-in-the-UK-Evidence-Review.pdf>

universities can support businesses across all areas of the economy. The key underpinning premise here is that knowledge produced in universities can be commercialised and can be successfully appropriated through intellectual property rights to provide opportunities for the university and businesses for economic gains. The problem which is therefore portrayed is that of whether UK universities are playing their part in supporting businesses and the UK economic growth. The first logical step, in this problem situation, would be to have an evidence base of how universities perform in knowledge exchange activities. The KEF does precisely that, by evaluating the UK universities activities in various aspects of knowledge exchange.

In sum, the KEF is representing the problem as one of value creation (production of knowledge in universities) and how this value is then appropriated through the university-industry collaboration (knowledge exchange). In articulating the KEF as a tool that can help universities to measure, benchmark and improve their performance in the knowledge exchange areas, the problem is represented as the universities not being able to fully appreciate, in the absence of this data, the extent of their role in shaping UK economic growth. The underlying premise in this problem representation is that increased and improved collaboration for knowledge exchange between universities and businesses, and engagement with local communities, presents opportunities for benefitting the wider UK economy. The measurement and benchmarking of areas of knowledge exchange will therefore act as a proxy indicator of a university's capabilities and standing amongst its cluster group, which in turn will provide incentives to universities to 'accelerate' knowledge creation and knowledge transfer, in order for the universities to compete effectively amongst their peer group.

2. What presuppositions and assumptions underlie this representation of the ‘problem’?

The seven perspectives of the KEF, the clustering of institutions, and the introduction of narrative statements in some areas of knowledge exchange activity illustrate the assumptions that underlie this problem representation.

The KEF appears to be differentiating itself from the academic Impact in REF. While the Impact in REF covers almost all areas of academic activity, KEF seems to be focussing mainly on STEM and to a lesser extent on Management subject areas. While it does not say so explicitly, the seven perspectives that measure knowledge exchange activities are predominantly geared towards research activities in STEM. The HE-BCI survey data, which is used as a proxy for knowledge exchange, has a STEM and Management bias, for example, with questions that measure how many spin-offs and start-ups are generated by universities, including how many patents are granted; what are the business and community income sources for universities; and what is the scale and value of universities’ collaborative research and income from consultancy.

The clustering of institutions is a clear acknowledgement that the KEF is trying to cover an extremely broad and diverse range of activities across the sector, and that institutions in the sector will have different strengths in the activity areas. A clustering analysis undertaken by UKRI for KEF provides some objectivity, but the assumption remains that knowledge exchange is an activity which each institution is expected to participate in, and improve upon, irrespective of its focus in areas which may not warrant the same extent of activity as another in the same cluster. However, each university in a cluster is measured on the same metrics, creating a competitive ‘marketplace’ for knowledge exchange and how universities are then placed within it.

Given that the metrics are mostly based on financial measures, there are several other distorting factors which creates a bias in the way the outcomes are measured. For example, it is well known that the London-Oxbridge ‘golden-triangle’ generates the most income (from research, tuition fees, consulting etc.) and therefore is better placed to invest in capital-intensive areas of research, such as clinical and bio-medical, generating even more monetary returns and patentable research (Grove, 2023). Russell Group institutions tend to recruit the highest number of international students, and therefore higher incomes (including higher tuition fees income from higher number of home students) (Bolton, 2024), leading to better overseas links and bigger financial might for collaborative research partnerships, locally and internationally, than other non-Russell Group universities. Collaborative research, in any case, often takes place in STEM and technological settings, than compared to say History or Politics subject areas. The risk is that knowledge generation in less ‘popular’ areas of arts and social science is devalued, from a monetary point of view, although the intrinsic value of such knowledge is widely recognised. The metrics, which are adjusted by size of institutions (using academic staff FTE), do not account for the hugely varied income of institutions.

The narrative statements are designed to cover a range of activities for which sufficiently suitable and robust metrics have not been identified. These statements provide institutions with an opportunity to outline their institutional context, and their activities encompassing Local Growth and Regeneration and Public and Community Engagement, with a self-assessment score. Given that these narrative statements are the providers’ own estimation of its activities, the extent to which the narrative statement is accurate and specific, and the degree to which it can allow comparisons with other institutions, is questionable. This means that the stated aim of the KEF, that the KEF metrics will enable universities to benchmark their performance in terms of efficiency and efficacy, is in itself questionable. Judgements made about universities

performance from their narrative statements are therefore unlikely to be completely reliable or consistent across various iterations of the KEF.

One significant assumption perhaps which KEF is making is that institutions, in their KEF returns, will be able to identify and capture all the activities that are being undertaken in the areas encompassing knowledge exchange. Universities are large institutions with a largely semi-autonomous academic workforce, who work in roles with the private and third sector far beyond what their contracts stipulate. Knowledge exchange outside formal contracts (for example, in academic networks, in media, providing advice to Whitehall departments, consulting with public sector, membership of boards and advisory panels, and so on) is often done by academics in their own time, and mostly without any recompense, so it is extremely difficult to capture this data in any meaningful quantitative or qualitative manner by institutions filling in the KEF returns. It is therefore likely that engagement activities performed out of formal contracts would be less likely to be reported by researchers if they do not connect the significance of the work they are doing for the KEF purposes. It is also not unlikely that such activities, which are difficult to captured by the KEF metrics in any meaningful way, might be discouraged by institutions. If researchers are disincentivised from activities which do not lead to recognition by the institution, because these are difficult to be assessed for inclusion in the KEF metrics, it could potentially lead to a situation where certain types of activities are considered more valuable than others if it leads to more prestige / promotion / income for researchers.

3. How has this representation of the ‘problem’ come about?

The context for this representation of the problem is best illustrated by the changes in the UK industrial policy over the last few years. These changes are outlined below, chronologically.

The erstwhile Department for Trade and Industry (DTI) published a white paper *Our competitive future: building the knowledge driven economy* (DTI, 1998), which defined the ‘knowledge-based economy’ as one in which knowledge is a distinctive capability which competitors cannot easily match or imitate, and hence it must be exploited to the fullest extent to drive the economy. It further argued that to strengthen the UK’s capability to compete in the modern economy, the government should “vigorously promote the commercialisation of university research - including new incentives for researchers to work with business.” (ibid, online). The Government white paper was thus seeking to reverse Britain’s relative economic decline through increases in productivity and stimulating innovation, technology, and scientific progress in order to innovate and create high-value products and services, by encouraging commercialisation of knowledge produced in universities.

The DTI paper (ibid) was perhaps instrumental in the conceptualisation of university-industry collaboration as a key factor for economic growth amongst policymakers. A subsequent review by the HM Treasury of business-university collaboration (Lambert, 2003) found that compared with other countries, UK business was not research intensive and that R&D was concentrated in a narrow range of industrial sectors and in a small number of large companies, explaining this as the reason for the productive gap between the UK and other comparable economies. Suggesting that the UK’s business research base was both ‘narrow and fragile’, the review made several recommendations to influence public policy, which included proposals for building new networks among research-intensive businesses and supporting business-university collaboration schemes. Key amongst the review’s recommendations was encouraging knowledge transfer and ownership and exploitation of intellectual property (IP), but it steered clear of making any recommendations for introducing legislation along the lines of the US Bayh-Dole Act that permits private business to own IP arising from publicly funded

research. The review further suggested that the system of university accountability and regulation was uncoordinated and burdensome.

Following the Lambert review, and in recognition of the key role that universities could play in increasing knowledge transfer to ‘knowledge-intensive’ businesses in ensuring that the UK remains globally competitive, the UK Government soon after commenced a further review of Government’s Science and Innovation Policies (Sainsbury, 2007). The Sainsbury review argued that science and innovation had a key role to play in increasing the UK’s GDP per head in the face of competition from emerging economies such as India and China. Suggesting that the ‘quantity of industrial research and the volume of patenting’ were the two most commonly used measures of ‘innovation performance’, the review made several policy response proposals to stimulate ‘innovation’ in industry which envisioned a key role for UK universities. The review included knowledge transfer as one of the key fundamental activities for any university, along with teaching and research. The review made a strong case for public policy to support the use of intellectual property rights, and for the establishment of standards and metrology to improve knowledge transfer from universities to industry.

Both Lambert and Sainsbury reviews firmly prioritised economic need, and thus served as a precursor in determining what approaches universities should adopt in its production of knowledge, especially those that serve economic need best. The HE sector has broadly welcomed the KEF, and most universities have re-organised their activities in order to give knowledge exchange activities (called engagement) parity with research and teaching. However, recent research which reviewed data on 45 million papers and 3.9 million patents across six decades from six large-scale datasets found that the growth in the volume of new scientific and technological knowledge is slowing in several major fields (Park et al., 2023), which reinforces the problem representation that innovation and productivity in the UK is

lagging behind competitor countries. The introduction of the KEF in 2020 signals a shift in which government policy intervention is seeking a greater role of universities in industrial policy, in producing research and innovation which can be used by industry to provide a general social and economic stimulus for growth. The underpinning premise is that knowledge as a commodity, successfully appropriated through intellectual property rights (IPR, commonly referred to as patents), would provide opportunities for businesses for increased productivity and economic gains, particularly in the fields of biotechnology, engineering, and information technology.

4. What is left unproblematic in this problem representation? Where are the silences? Can the 'problem' be thought about differently?

The development and implementation of KEF demonstrates the value of knowledge exchange in measuring and monitoring the process of knowledge transfer to businesses to help them perform better. However, the process of knowledge production and transfer, and related incremental innovation and productivity gains which can be commercialised tends to favour STEM and new technology space over social sciences. A possible reason for this is that the outcomes from STEM and Technology domains are easier to quantify, and relatively easier for businesses to access and protect. Will this bias towards STEM and Technology push the universities to incentivise and invest more in research in these areas? Similarly, would there be more focus and energy for funding from research councils in these areas at the expense of social science and humanities?

Related to the above issue is the fact that the KEF doesn't recognise the extent to which knowledge production in social sciences and humanities informs and influences policy and practice in order to drive social benefits. For example, the social and economic value of research in social science, humanities and/or arts may not be fully captured in the KEF metrics.

In this regard, the HE-BCI survey data may be inadequate as a proxy-indicator for KE activities in social science, humanities, and arts. In future, if research funding is to become contingent on the KEF outcomes, then there might be a situation where universities shift their focus even more to STEM and technology. While the comparisons in the KEF are clustered by institutions of comparable research intensity, institutions which have a higher intensity/volume of research outputs in STEM areas would be at an advantage. Indeed, the creation of a new Department for Science, Innovation and Technology (DSIT) by the Sunak Government, in order to make the UK a ‘science-superpower’ and increase research spending on Science, Innovation and Technology, signals a clear priority by the Government for the direction of research in the UK. In effect, the DSIT would be responsible for, and focus on, funding streams from the UKRI into academia. Clearly, there is potential for the research priorities to be influenced heavily by the political choices of the Government in power, giving funders unwarranted influence on the direction of research, and over what theoretical approaches are preferred. Dominance of research funding in STEM areas could potentially further reinforce already existing inequalities not only between ‘top ranked’ universities and their perceived prestige, which consequently impacts on recruitment of students and attracting overseas research talent, but could also lead to further geographical economic inequalities in the UK in terms of growth in industry, public and private investment, and household incomes. For example, the London and Oxbridge ‘golden triangle’ is characterised by the concentrated presence of companies in several important sectors of the economy that collaborates for techno-scientific innovation with leading research universities in the region (Lawton Smith et al., 2013). Over the longer term, potentially a few specific hi-tech areas in STEM, for example biotech or AI-IT firms in geographical locations where multiple industry clusters are already established could possibly lead to a valorisation of these disciplines and industry sectors over others.

As outlined in the literature review section, knowledge which is highly specific but tacit, and highly context dependent, may not be captured by the KEF metrics. For example, how can KE with businesses in the sphere of training, for example leadership, management or administrative training, be quantified? Collaborative research with businesses often involves face to face collaborative training, especially with regard to organisational and leadership research, CPD for employees, and increasingly with regard to EDI research to help organisations increase their managerial capabilities and achieve diversity in the workforce. Most leadership, CPD and EDI research takes place in the form of face-to-face workshops in a consulting format. The KEF may not be able to capture a large chunk of the commercial KE intensive services in this area. In addition, the metrics within the KEF perspectives are mostly geared to measure ‘quantity’ of KE activities rather than ‘quality’. Even though there is provision for a narrative component to accompany the KEF return by institutions, inevitably there will be an inherent bias with measurements that subjectively assign a score for a particular metric.

There are two perspectives in the KEF that are not income focussed, namely, ‘Local growth and regeneration’ and ‘Public and community engagement’. These perspectives provide qualitative information about universities’ engagement activities to promote growth in their local areas and communities. The KEF in this regard provides an opportunity for universities and the government to collect this information in a structured way. The additional detailed narratives which universities submit as part of their KEF return provide evidence of the value that universities bring to their local areas and communities. This aspect of the KEF, which has perhaps not been given the attention it deserves by the sector, could be further strengthened providing an opportunity for the problem to be thought about differently. Universities play a very important role, above and beyond the traditional role of teaching and learning and research contribution to society, in terms of helping local economies and societies flourish. First, most

university departments have ‘outreach’ activities with schools and colleges. Outreach activities are valuable social interactions which help influence the choices which school-leaving adults make about their future with regards to education, work, or apprenticeships. For example, explaining the benefits of research to the future consumers of those benefits leads to a better understanding of the work done by universities. School visits to the university are exciting and enriching experiences for students considering various options about their future. Many universities run targeted programmes for school-leavers in specific socio-economic categories and areas, in order to raise aspirations and develop their skills for life. Second, most universities have some level of civic engagement with policy formulation, with respect to providing expert evidence for government panels and committees and university staff being on board of business advisory committees or board of directors of companies. Third, universities engagement to promote local growth and regeneration includes a wide variety of activities, such as contributing to local planning for public spaces improvements, increasing social inclusion, providing advice on infrastructure development, and several other activities that help local social and economic development. These examples of universities’ contributions to their local areas can provide useful insights for future direction of the policy.

5. What effects are produced by this representation of the ‘problem’?

The WPR approach can be a useful approach to think about the wider political context in which the policy operates. Bacchi suggests that the choice of representing a problem in a particular way produces effects which may advantage some groups and disadvantage others. This is not only a matter for social justice, but equally, in the way problems are constituted in policies produce effects that has implications for our behaviours. This is an important point for the purpose of this research, as briefly elaborated below.

Bacchi identifies three interconnected and overlapping effects produced by problem representations which need to be considered (2009, p.15):

1. Discursive effects
2. Subjectification (Foucault's '*Subjectivation*')
3. Lived effects

The Discursive effects (also see theoretical considerations for using the WPR process in the literature review section) arise from the deep-seated assumptions within problems representations, and from silences contained within the discourse. Bacchi argues that the way in which problems are represented and sought to be 'fixed' in policies makes it difficult to think differently, limiting the analysis and the options which can then be produced for certain groups. The deeper effects of the KEF and its representation of the 'problem' will probably manifest more specifically in a few years' time, given the newness of the KEF and the fact that UKRI and the HE sector is still jointly working through the issues as these become evident. The performativity potential of the KEF policy could potentially be reinforced by the discursive effects, which arise from the hegemonic discourse of KE, which asserts that knowledge production / innovation is key to economic growth; and that universities are key players in increasing the pace of innovation as major producers of knowledge and in supporting the transfer of this knowledge to business.

With regard to the subjectification effects, the way policies set up social relationships and positions 'subjects' within them modifies behaviours and thoughts. In other words, people make sense of the world from their positions, while being subjected to the full range of discourses constituting this position. In addition, as Bacchi argues, the representations of problems usually have built into them implications about who is responsible for the problem. A goal of the WPR approach is to therefore bring into the open these implied attributions.

Bacchi reinforces the Foucauldian notion of ‘dividing practices’, where the subjectification effects set groups of people in opposition to each other, which deserves closer scrutiny. Similarly, drawing on Foucault, Ball (1994) suggests that culture, subjectivity, and objects of knowledge are constituted, organised, and transformed through the dynamic interplay between discourse and material practices (Ball, 2015); which has implications for equity and social justice. Giving the example of schoolteachers, Ball suggests that the practices of policy translation and enactment are complicit in the self-formation and constitution of teacher subjects (ibid, p. 308). The notion of subjectivation of schoolteachers, in terms of how teachers make themselves subjects of policy through their own practice as described by Ball, is equally applicable in the context of subjectivation of university researchers, which is pertinent for this research.

The concept of lived effects considers how problem representations of policies can have *real* material effects. Bacchi gives the example of how access to resources within welfare categories depends on the premises on which the categorisation for eligibility is made (2009, p. 18, p. 18). Problem representations can impact unevenly on different groups of people, so a goal of the WPR approach is to analyse which aspects of the policy can benefit (or not) which groups. While considering what effects are produced by a certain representation of the problem, it is important for the researcher to consider who is likely to benefit or be harmed by the problem representation, and what can be done about it (p. 15). For example, it is possible that some researchers, particularly those who are able to respond to the changes by altering their research agenda in order to be seen to be supporting the university’s engagement strategy, might benefit more than others with regard to their individual advancement, while others may face increasing pressure in terms of their research. It is axiomatic that often researchers, who are critical of university league table rankings and resent the imposition of performance criteria, still see their

work as more of an individual outcome. The pull of individual growth and profit could potentially affect the direction of research for some (Ball, 2003).

Bacchi suggests that the five sub-questions below should be considered as an integral part of question 5 when analysing policy:

1. What is likely to change with this representation of the problem?
2. What is likely to stay the same?
3. Who is likely to benefit from this representation of the problem?
4. Who is likely to be harmed by this representation of the problem?
5. How does the attribution of responsibility for the problem affect those so targeted and the perceptions of the rest of the community about who is to 'blame'?

It became clear while analysing the sub-questions above, that although the questions are set out in a linear fashion, these are not sequential, but can be better analysed iteratively. As Bacchi suggests, there might be more than one problem representation at play, and there might be several conflicts and contradictions between them due to the ways in which problem representations 'nest' within the other (p. 21). However, it is still possible for the analysis to identify a general direction of the policy, which can be helpful to draw more general conclusions about its effects. For this reason, the sub-questions are not dealt with in any particular order, given the constrained nature of this research, but have been part of the consideration while answering the WPR Q5 overall.

Perhaps the most visible effect of the introduction of the KEF is universities competing with each other in a rankings race based on the KEF results. While the government claims that the KEF outcomes are intended to help universities understand their performance in knowledge exchange activities, and that the KEF results are not intended to rank institutions, in practice comparisons with institutions within the cluster, and with some universities outside the cluster,

have become inevitable, with many universities claiming a ‘position’ in terms of how they are working with business, research partnerships and public and community engagement, after the results of the first iteration of KEF were published. This might lead to a more pressured work environment for university staff, both academic and professional services. The need to provide evidence of their work has focussed the academics efforts to recognise their activities in the area of KE. In order to remain competitive, most universities are now setting performance targets in this regard, and it is a matter of time before these targets percolate down to staff. Professional services staff are being charged with preparing and filing KEF returns (including a narrative of the universities activities related to KEF in key areas). While most of the data for the KEF is collected by UKRI from existing datasets, as outlined in the KEF summary section, universities start preparing for the KEF return months in advance. The setting of potentially unachievable or unrealistic performance targets for staff can be considered as a ‘harm’ to these groups.

The KEF metric on public and community engagement has had a few unintended consequences. Universities are increasingly allocating workload allocations for ‘engagement’, in order to encourage academic staff to take part in activities which the university can then evidence as public and community engagement. Senior leadership positions with responsibility for engagement have been created, and most university structures now have a senior Pro/Deputy Vice-chancellor or Dean leading the institution’s efforts in KE. It is extremely difficult to envisage the range of activities the metric on public and community engagement might cover, given the ambiguity in how it is presented. The KEF does not provide any guidance in terms of the scale, variety, or quality of activities that may fall under this metric. There is a possibility that this ambiguity in defining the metrics may lead to researchers and universities ‘gaming’ or ‘playing’ the system, leading to some benefitting from this exercise.

The KEF has also refocussed universities efforts to make their research accessible and more visible to business and the public. The universities offering for businesses is becoming more accessible, informative, and sharper, as evidenced by a section on KEF on almost every university's website, including examples of projects which universities have previously worked on and identifying future opportunities to work with business, depending on the claims a university might make on areas of expertise. Clearly, some groups could potentially benefit from KEF activities.

Similarly, given the undue weighting of the metric on patents, it may potentially lead to a structural problem in universities, in that universities that have a 'balance' of research activities between STEM and social sciences, could be tempted to exit the market for arts, humanities and some social sciences in order to re-focus and invest more in areas of patentable knowledge, where they may potentially stand to gain in the KEF metrics, which means enhanced reputation to attract more students. Staff in non-STEM areas might possibly see their research and knowledge production activities being devalued, while those in STEM and Clinical Medicine area may benefit as universities compete to recruit staff in these areas. There is also the issue of confounding of research Impact with KEF – which potentially may lead to staff feeling that their research agenda may be compromised, or at worse, may feel pressured to make judgements with regard to the direction of their research. This is particularly important as recent news reports, and conversations with colleagues suggest that there is significant concern attached to the potential of funding being dependent on the KEF outcomes. This aspect is explored further in the interviews analysis section.

6. Positioning of self in WPR analysis

In a recent iteration of the WPR approach, Bacchi and Goodwin (2018) have introduced a seventh question, an additional 'step' in the WPR analysis process, which they refer to as 'self-

problematization'. Self-problematization is the process of understanding one's own position in the analysis. As part of this process, I questioned my own personal and professional beliefs continuously and iteratively during the research, and when writing this these, in order to appreciate to what extent my assumptions and unquestioned knowledge might have influenced the analysis. The subjectivity in the analysis has been acknowledged in places where this was felt to be relevant, in order to open up the assumptions and presuppositions to further interrogation and scrutiny by others (also see 'Self-positionality and reflexivity' section in chapter 3).

b) Interview data analysis

A total of 14 interviews were conducted with colleagues across a range of research roles in the departments of Biomedical and Life-Science (BLS), Health Research (DHR) and Lancaster Medical School (LMS) in Lancaster University. The analysis below explores insights from participants about their constructions of the KEF, particularly how they understand / perceive the KEF metrics and how these might impact on their current role.

i. A tool to measure performance, or a precursor for market?

The interview journey began by asking participants about their initial reaction when they first heard that KEF was being introduced, and if there were any specific aspects of it which they welcomed, disliked, or feared. Almost all participants overwhelmingly responded with concerns about the introduction KEF as another metric on which their performance would be judged, as can be seen from the following reactions –

"I was like oh no, not another metric, not another level of assessment. First TEF, REF, then KEF and I was like wow, are we going to just spend more time after seeing things in rather inaccurate way rather than focusing on our real jobs." (Participant 8)

“Not another framework!” (Participant 9)

“I suppose there was an element of concern that this would be another set of measures you know, and another set of tick boxing type things...” (Participant 10)

“oh no, not another thing that we’ve got to justify our existence by filling in or being judged on”, (Participant 11)

“I suppose possibly like some other people, it was a bit like another one. How many? Like how many directions are we going to be pulled in” (Participant 13)

This illustrates the dismay with which most participants viewed the KEF, and how it potentially might impact their roles. Most participants felt that another metric such as KEF would lead to more time being spent on assessing their work instead of focusing on their ‘real’ job. However, seeing the KEF as an instrument for just measuring ‘performance’ would be misleading, as it appears to be creating that context within which the market processes can form and take shape. For example, Participant 12 felt that:

“I thought, how is that going to be measured?...I have quite old fashioned views about the universities and the purpose of universities, a purpose within the law serving the local community, and that's sort of sense of social justice and wanting to help those and beyond universities beyond that traditional universe...but in terms of that kind of business and enterprise and entrepreneurship it (the KEF) just conjures up kind of like profit maximization attitudes”

Whilst it is understandable that most participants are concerned about the KEF being used as a performance management tool, it is clear that its metrics are focussing efforts of researchers to start thinking about the uses of their research outputs by non-academics and end-users, that is, industry. This suggests that the KEF seems to be acting as a precursor to creating the conditions

for the concretization of the market for research outputs, where profit maximisation subordinates the other benefits of the work being done by researchers. The KEF, as a tool for measuring research activity and outputs, is a potential way to encourage researchers to focus their attention firstly on which type of research could lead to outputs that could be codified for exchange, and secondly to consider which outputs could be appropriated into IPRs.

ii. A market device enabling calculability and framing

From the perspective of KEF as a market device, the KEF is creating a shared understanding of who are the key players in the market, and what exactly is being (or will be) traded in a future marketplace. As Participant 7 commented:

“Universities as people, as communities of scientists or academics...(are) doing kind of abstract academic research that has disconnected with communities and societies, or at least not connected in a way that's easy for people in our communities to see how they can benefit. One of my reactions was this is a good thing that it can help us to connect with communities, connect with businesses, and exchange that idea (of knowledge exchange)”

The KEF is measuring institutions on their capacity and capability to work with industry and build partnerships that encourage exchange of knowledge. Consequently, researchers are being encouraged, through universities engagement strategies, to build networks and establish relationships outside of academia. The KEF thus appears to be a strong signal for institutions and researchers to start thinking about cooperating and collaborating with businesses and with the government and the third sector. The participants saw communication and dissemination of their research outputs as a very important part of their role, but they felt that the KEF is encouraging them to think beyond publishing as the traditional route for dissemination of research. This suggests that an environment is being created where academics, who

traditionally perhaps found it difficult to engage with people outside academia, are being encouraged to interact and form relationships with stakeholders in business (and in society in general), outside higher education institutions and outside the classic research fields, with potential commercial relevance. For example, Participant 10 explained this as:

“Knowledge exchange can mean a lot of different things to different people and knowledge exchange at the very fundamental level is what we do at universities anyway. We fundamentally exchange knowledge between us and students, we also fundamentally exchange knowledge between each other as researchers, and other people within research and that's exchanging knowledge. To increase the impact of one's research, there is both a potential commercial side or a potential collaboration with other people.”

There was a general view amongst participants that the KEF is making universities and researchers think about the way that knowledge is generated and shared / exchanged with communities and businesses, as an engagement strategy adopted by universities. But how can agents (researchers) decide which ones, from the multitude of relations which will be created, be productive, that is, will serve to further their own and their institution's engagement agenda, and which ones will be not? As Participant 10 suggested:

“It depends on how you want to tell your story and where you're going...I think the next phase has to be about bringing it down to putting it into some kind of a defining framework...”

The overall data analysis suggests that the KEF metrics are the basis on which outputs are being defined and measured in certain types of relationships, in order to encourage knowledge exchange in these relationships. As a result, we see two distinct categories of interactions and relationships emerging, one where the researchers roles are being redefined in terms of their

relationships with industry, and the other being the normative processes for knowledge sharing but not necessarily in a marketised way. With respect to the former, any knowledge exchange with industry is likely to be underpinned by formal contracts to some extent, given that the KEF metrics are also focussing researchers efforts on potential commercial relevance. In this regard, the KEF is not only helping universities benchmark their own performance in terms of knowledge exchange with industry and third parties, but is also providing information to businesses about what services / products, relating to their knowledge needs, can be accessed from universities. In other words, the KEF is establishing a framework / structure, in which networks can be established, and information is provided to all parties enabling calculations about the potential future economic value of knowledge exchange. As outlined in the literature review section, the way performativity works in practice is by continuously shaping the operation of markets, that is, the constitution of economic markets is an ongoing process (intertwined with social and political processes). The existence of social networks, in which agents are embedded in a web of relations and connections, is the starting point for enabling provision of relevant information to agents in order for them to calculate economic value of an exchange.

iii. The potential impact on researchers' behaviour – the future direction and rate of research

The central question for this thesis relates to the performativity of the KEF, that is, whether it could potentially affect the functioning and actions of researchers, leading to a change in the rate and direction of research, and possibly shaping the future market for knowledge. There was a clear sense in participants responses that the introduction of KEF will change people's behaviour, even though they weren't very clear on how this might happen. For example, one participant suggested that the KEF might actually make researcher's more protective of their research –

“Are people going to look at that and think I am not having any of that I'm not giving away my research. I've slept, slaved for hours and in in the library, in the lab isn't that's just me giving it away?” (Participant 7)

There was a strong perception amongst participants that any change in the expectations of their job would depend on the direction in which the university pushes them. This, of course, is contingent on the KEF, as universities increasingly compete with each other to be positioned higher in their respective KEF cluster. Most participants recognised that this drive towards engagement is already in place, in the form of criteria for promotions and new jobs, where universities have placed research and teaching on the same footing as engagement. Implied in this development is that researchers probably will equally prioritise engagement activities and knowledge exchange.

In general, however, the majority were concerned about the likely impact of the KEF metrics in terms of it reducing incentives for universities (and researchers) for investing in and conducting basic research, because of its limited appropriability, and uncertainty of reward. As Participant 2 stated –

“It will absolutely affect research for critical thinkers, who think from a philosophical perspective rather than practical perspective. You don't know what the outcome will be and what will therefore the benefit be. When that research stops then it will have an impact.”

This suggests that those whose research is of a more fundamental / philosophical nature and who are not able to pivot to the practicalities of research towards which KEF propels might be adversely affected. When this fundamental / basic research stops it will have an impact, not only from a social justice perspective, but on the state of knowledge nationally. This is because the KEF works on the assumption that the tacit know-how of knowledge can be captured and

made explicit, and transferred to industry, and thus transforms the ‘exchange’ into measures of performance for universities. It must be emphasised, however, that basic and applied (commercial research) are not mutually exclusive, indeed, it is not unusual for a research programme to simultaneously have a fundamental scientific interest and yet be associated with its commercial application (Nelson, 1962a). The institutional and sector dynamics that characterise the inception of ideas and research programmes, the formation of collaborative efforts across academic networks, the consolidation and dissemination of research outputs, could potentially change in irreversible ways, characterised by very high levels of technoscientific focussed institutions and entrepreneurial researchers.

As Participant 6 asserted –

“Although you get told that the research agenda won't be influenced by the commercial, of course it will. So I think that what's happening is that...senior people are looking for ways to direct our research activity more towards partnerships with commercial with the commercial sector.”

Participant 4 was more explicit –

“Ultimately you will respond to the pressures which are you're put under in order to achieve your job. And there's an expectation that you fulfil certain activities in order to progress. You will do that. Everyone does, don't they?”

A few participants admitted that the KEF policy introduction would change their work, in terms of the focus of their research and who they work with –

“If I was doing the kind of the kind of thing that I think fits under the knowledge exchange framework, I would be looking to work with, not-for-profit organizations,

charities, the voluntary sector...yeah, it does shape what I do, I guess, yeah.”

(Participant 13)

“It's almost like as if people (the University) will allow the availability of money to dictate the direction that the research takes. So it's your life as a researcher is not the pursuit of a question that interests you or is it that is really important in some way, but rather the pursuit of financial targets in order to keep running on a kind of a treadmill.”

(Participant 3)

Some participants were cautious about how KEF might impact their work (Participant 7), others were hopeful that their current work would be valued by the university and that the KEF would have little impact on their work (Participant 7, 9 and 14), while only one Participant (2) was of the view that their role would change positively.

The interview data above suggests that given the quantitative nature of the KEF metrics, there is a potential scenario where universities could further reduce the KEF metrics to Key Performance Indicators (KPIs) that could be applied to individual researchers. The bias in KEF metrics, that rewards research which can be commercialised, will tend to favour researchers in STEM and Technology domains, as incremental knowledge in these areas are easier to quantify and access by businesses. It is clear from the interview data that some participants felt that it would be extremely difficult for the KEF not to have an impact on their research agenda. As Participant 9 commented, researchers would potentially also be influenced by the ‘nudges’ that come from the management, especially when putting together funding grant applications. Overall, the interview data suggests that there would not be any incentives for the researchers to continue with the current direction of their research and their research profile if it did not align to the university’s engagement strategy in order to comply with the KEF.

Another factor which emerged from the interview data, which has significant potential to impact on the rate and direction of research, is the prospective scenario of linking the KEF outcomes to research funding. From a policy perspective, investment in research and innovation, for knowledge exchange, only makes sense if it produces tangible economic benefits. Almost all participants expressed concerns with regard to the impact of linking research funding to KEF outcomes, as illustrated by some example comments below:

“There are a lot of people in government who think that if science funding doesn't produce tangible economic benefits within five years, then it's useless” (Participant 1)

“Support is given to research from a factory...who decides what is of impact and what's not, and then what to support and what not to support.” (Participant 2)

“All our universities will start pushing us to do more commercially focused research”
(Participant 6)

“I think it would be tragic.” (Participant 10)

“Anything involving financing and freedom (of) research is always a very difficult topic because I think that some areas are never appealing for financing... classic Greek is kind of a typical example. Should we stop? (doing it)” (Participant 9)

An outcome of research funding being linked to the KEF outcomes potentially could be to incentivise and accelerate research in some areas, dissuade researchers from carrying out basic research that has little or no commercial potential, while at the same time increasing apprehensions amongst researchers with regard to academic freedom and social justice. For example, if the KEF outcomes put a premium on the commercialisation and IP elements then it could potentially hinder research in social / health justice unless it is in the economic interest to fund it. This of course does not impact on external research funding from independent

agencies, but this forms a small part of the overall research. It seems to be the case from the interview data that linking the KEF outcomes to research funding could significantly reorient research activities, by increasing anxieties amongst researchers, as there would be increasing pressure to participate in some activities more (that are conducive to generate more research funding) than others. According to one participant, who is in a senior management role in the University hierarchy, that the pressure to do this will be felt differently by ‘junior’ researchers, who might have to do “*more of XY&Z to justify a promotion*”, which raises questions about academic freedom. Participant (7) claimed that linking research funding to the KEF outcomes would lead to the KEF metrics being ‘played’, as researchers would look for ‘brownie points’ for participating in activities which lead to increasing engagement with industry, stating that this move would:

“Inevitably encourage game playing...that's what happens once you know the rules of the game you figure out what you need to do to win. There's no question about that.”

Overall, the interview data seems to indicate that there are important questions which need to be considered, from a policy perspective, about the mission of the universities in society if financial incentives / funding were offered for certain types of research in particular areas / disciplines; in addition to general concerns about how the change in regulations for research funding that the KEF might bring about could possibly impact on research agendas.

iv. Assetization of knowledge

A key metric of the KEF is in relation to generating IPRs and commercialisation of knowledge. Clearly, knowledge production, and its appropriation as IPRs as an asset form, is considered in the policy as valuable for economic growth. The majority of participants were either extremely sceptical, or completely opposed to the idea of ‘assetization of knowledge’. For example,

Participant 13 said that they would personally shy away from working in areas for producing patentable technology:

“I wouldn't be looking to produce something that was a patentable technology”

In a similarly vein, Participant 14 suggested that they would not like to work with industry as it might impact on their academic freedom:

“I'm a bit shunned with industry collaborations anyway because I value my academic freedom.”

Participant 4 was more blunt:

“The universities are basically just now working for commercial companies taking money. And the ideas and innovations that are occurring within universities are being given to commercial companies. So they're subcontracting the universities in effect.”

A significant number of Participants (1, 2, 3, 7, 8, 9, 10) questioned the ethics, and value, of patents; were sceptical of the process to generate IPRs; felt that the metric on generating IP was restrictive; and that the notion of a metric on commercialising knowledge in order to encourage competition amongst universities for spin-offs and patent generation was flawed or unworkable. Only two Participants (5 and 8) thought that the drive towards more IP generation and commercialisation was inevitable, and also welcome, as it was leading to some benefit in terms of their knowledge products being made available to the market, while one Participant (6) thought that more imaginative and innovative ways need to be found to commercialise research produced in universities for the public good.

In sum, the metric of IP generation and commercialisation is perhaps seeking to create, in the longer term, a simulacrum of the economic reality which the UK Government wishes to see.

While researchers claim to be driven by their own inherent values and beliefs with regard to IP generation and commercialisation of their research, it is evident that a few researchers have accepted the inevitability that their role and research agenda will be impacted by this shift in the policy landscape.

v. *Conflicting value systems*

As the knowledge produced in universities is becoming even more central to innovation, entrepreneurship and for the overall economic growth in the knowledge economy (Etzkowitz, 2003), in general, it appears that universities are responding by building their capacity and capability to interact and collaborate with industry to support innovation, both across the sector and within individual universities, prompted by the KEF policy. However, the interview data suggests that building relationships with industry is perhaps fraught with tensions for researchers, due to conflicts with what they see the purpose of their research. Most participants see the purpose of their work as pursuing higher knowledge and providing enlightenment and emancipation to society through education and research. While being appreciative of the foundational importance of research and knowledge for industry and for the overall economy, and therefore subsequently society, participants in general were resistant to any idea of their research outputs being commercialised. Instead of a focus on strengthening of ties between industry and academia, with the introduction of KEF, researchers seem to be adopting a cautious approach to a collaboration with the corporation at best, and outright condemnation of the direction of travel at worst. Indeed, the majority of participants were indignant at the thought that the knowledge that they produce might be used for commercial purposes, or that any outputs that their research produces should generate income for a company or an individual. As Participant 12 suggested:

“There's a real sort of distaste to having commercial enterprises...I don't want to be working across business with business. I don't want to be working shoulders with business. If I did, I'd be in the business world...”

The idea of ‘monetising knowledge’, as one participant put it, did not sit well with many. Participant 5 bemoaned that any monetisation of knowledge done in the context of the NHS and other public services would be exploitative. Similarly, Participant 4 declared that their primary aim as a researcher was never going to be the commercialisation of their research outputs, stating:

“I don't believe that social or health care is a commercial enterprise should never, ever, ever think that you can make money out of providing healthcare for people or looking after them in a social care environment. So absolutely makes my blood boil.”

A few participants thought that having read more about the KEF and the associated information provided by the framework, they have come to understand more about KE and engagement, in particular, how collaborative projects with third sector could support research funding. But participants expressed clear concerns about establishing new relationships with the private sector. Participants who articulated their concerns about how, and which, private sector companies would be brought in for collaboration / engagement were concerned about the impact it would have on their research, and whether there would be any safeguards with regard to any concerns about an organisation’s practices that a researcher might raise. This indicates anxieties that researchers have not only about navigating a new system but also how it might impact them. The reluctance of academics to engage with the commercial sector for profit exposes inherent tensions, about with who they collaborate, including ethical concerns about whether the collaboration will potentially impact on their own research / outputs and how these will be used. Participants do not appear to have any problems with a free and informal exchange

of ideas and their research outputs, but the drive to commercialise competes with their inherent value system.

The interview data suggests that the conflicting value systems of participants may also lead to pockets of resistance. Participants struck a cautious note about the expectations that universities might impose on them, as they felt that pressures on researchers to change the direction of their research to suit commercial organisations would come at a cost of other things which universities achieve in terms of their social purpose. Some researchers belief system, about commercialisation of their work, might potentially affect how the universities engagement strategies evolve over the next few years.

vi. Social and community engagement

The interview data suggests that researchers are more relaxed about working with the public and third sector / charities / not-for-profit organisations; and some participants were positive about aspects of engagement with their local communities and wider public in general. For example, Participant 12 was appreciative that not all collaborations need to be with commercial partners, that is, do not need to involve any commercial terms, while Participant 13 was sympathetic to research outputs being used by small to medium enterprises or for supporting local businesses that contribute to the local economy or infrastructure. Similarly, others (Participants 3 and 5,) felt that working with commercial partners in a way that makes a positive change to current practice and to society would perhaps be acceptable. Most participants did not seem averse to the idea of collaborating with organisations in the voluntary / charity sector, especially in terms of publishing shared research outcomes in the area of health research. As one participant put it, as long as the collaborative work does not exacerbate already existing inequalities or generate new inequalities, then the idea of publications with a collaborator would be acceptable. The interview data suggests that researchers are also not averse to

actively engaging with their local communities and the general public to communicate the research activities that they or their institution might be involved with. Indeed, a clear sense from the interview data which emerged is that researchers would be keen to engage in activities which positively impact on the community, and increases the knowledge exchange between the university and wider society in order to generate benefits for their local communities and the wider public. Participant 2, for example, welcomed the principles of the KEF, suggesting that in the wider sense it would make researchers think about the way that knowledge is generated and shared, and think about the purpose of their work beyond publishing a paper. Many participants drew attention to the connections that they made in society and how these links were possibly was of more value than just the monetary value of a research grant – such as volunteering their expertise to sit on various boards and committees for local and national organisations to share their knowledge and thinking that could be applied for the benefit of society.

vii. *Academic freedom and autonomy*

It is clear from the interviews data analysis that academic freedom and autonomy were among the predominant issues that concerned participants with the introduction of KEF. Without doubt, the key issue for researchers was the pressure, perceived and actual, to commercialise some or all aspects their research, and to demonstrate engagement with industry and communities. As Participant 3 suggested:

“I think at the moment that similar pressures are already there but it's not so much that it's the stuff that businesses need. It's stuff that research councils and other funding bodies prioritise as areas that they want to invest in. So you know hence we have all of these research support offices who are busy sending us emails saying that this month there is this grant available, and this is what's been prioritised and so on. And it's

almost like as if people will allow the availability of money to dictate the direction that the research takes. So your life as a researcher is not the pursuit of a question that interests you, or that is really important in some way, but rather the pursuit of financial targets in order to keep running on a kind of a treadmill”.

It is very likely that this pressure is being created by the KEF metrics, and is trickling its way down to researchers at grassroots level.

Most participants expressed discomfort with competitive pressures of meeting targets related to obtaining research grants, generating IP, and focussing their attention on research from a financial perspective. Participant 4 expressed their own experience as:

“I did put in (an application) for an impact acceleration grant that I didn't get...(manager x) said to me, look, they're really interested these impact acceleration grants, it's just that they're interested in commercialization. All of this is now hitting home to me that, you know, what they're looking for is they want to see what commercial impact you're generating from your research that can generate commercial interest”.

Similarly, Participant 6 bemoaned that:

“If they put a premium on the commercial elements of the KEF income then all our universities will start pushing us to do more commercially focused research, and for me then the key issue from an academic point of view and an ethical point of view is where do we do research on social justice? Because the commercial sector will only fund it if it's in their interest to fund it...does that mean that research which is about social justice and health justice, whether it's global or national, local, gets completely squeezed out?”

Participant 14 considered the opportunity to demonstrate engagement with industry and to commercialise their research as a positive, although in a qualified way. They were of the view that changing research agendas to move with the demands of the institution / funding bodies, or aligning with the general trends in the engagement environment could be beneficial:

“So in some ways it's actually beneficial if you can name industry partners on the ground and you can evidence that they're going to give a kind of cash contribution to the project, then that actually increases your chances of getting funding. There's an obvious route to impact and they (funding bodies) quite like that kind of thing....so yeah, I think it can be it can be beneficial. It's a street fight trying to get money anyway. So I guess you just do anything. if the centre of mass moves, then you've got to follow it.”

Overall, the general feeling amongst interview participants was that while there may not be direct instructions to meet certain targets that may improve KEF outcomes for the University, there certainly was scope for management to influence / encourage researchers to take their research in certain direction which may be more conducive towards industry or third-party collaborations. Participant 9 summed it up as:

“Anything involving financing and freedom of research is always a very difficult topic because I think that some areas are never appealing for financing. So I think we need to be cautious that we might end up doing research on a very small number of fields. I think that universities (should) also advocate for what they are doing. Instead of just taking funding for the profitable areas, I think that they should also be a strong advocate for those areas that attract less funding but are also important for society as a whole.”

c) A theoretical analysis of the potential consequences for social justice

The introduction of KEF, in particular the IP metric (that is, licensing and other IP income), could potentially raise some unique social justice issues which need careful consideration. The UK Government, recognising the importance of IPR as a powerful incentivising tool for creativity and innovation, commissioned an independent review which found that innovation is the primary competitive advantage in a global economy, supported by an IPR system (Hargreaves, 2011). Patents therefore play an important role in the UK's important areas of economy, such as pharmaceuticals, IT, and precision manufacturing. In theory, a robust IPR regime is intended to incentivise innovation and invention, by enabling companies and inventors to protect their ideas and secure a monopoly return for their effort for the period of time a patent is in force through exclusive rights over the use of their product and / or disclosing and sharing their technology or knowledge with others. However, the idiosyncratic nature of knowledge means that neither is there a definitive economic argument for IPRs as a tool to promote efficiency and innovation in knowledge production, nor a clear-cut defence of IPRs from a social justice point of view which also addresses concerns about private property, which is central to the capitalist system and is embedded in Western cultural and social context. This suggests that there is a trade-off to be made between the two – especially with regards to commons property and public goods. The impact of IPR under conditions of economic inequality and underdevelopment have been well documented, for example, in terms of IPR regimes exhibiting an insufficient understanding of identities, historical and cultural issues (Sunder, 2012), human rights (Dwijen, 2011), or 'negative spaces', areas in which creation and innovation can flourish without the need for formal legal protection (Rosenblatt, 2013). IPRs can be a many-humped beast, and while the areas above are significant from a social justice perspective in demonstrating the adverse impact of IPRs, exploring these in detail is a separate and immense project which is beyond the scope of this thesis as defined in the IPR section in

the literature review. Therefore, this section will focus on a theoretical analysis of the issues that arise from the appropriation of knowledge, which have the potential to impact social justice. The presupposition in this section is that knowledge is a public good (Arrow, 1962), and its production for appropriation through IPRs is a matter of concern for researchers with regards to the impact this might have on social justice.

i) Access to and exclusion from knowledge

Central to the question of access to knowledge is the nature of knowledge. Knowledge is an output which needs knowledge as an input for any further knowledge production to take place. It is a resource which should be available to everyone, and relies upon sharing for its advance. At the very least, its availability should be subject to democratic considerations. Industry relies on public knowledge produced by universities, but the pro-regulation and anti-competition IPR regimes serve to restrict access to this knowledge to select few. Indeed, the concern for impact of patents threatening basic freedoms and social justice was notable amongst interview participants. Some participants (1, 3, 5, 9) expressed serious concerns about the impact of patents on dissemination of knowledge, particularly in developing and lower income countries. For example, the impact of patents in terms of dissemination of knowhow for producing Covid vaccines was a topic which kept coming up in the interviews. While the likelihood of patents restricting access to knowledge and excluding communities / countries has been established for some time, the Covid pandemic brought this to the fore. Many interview participants suggested the need to contribute to spreading their research outcomes, as a long-term objective, to further social justice aims. Dissemination of knowledge was seen by these participants as a development goal, as part of global social justice, for example, for genome sequence data or for drug discovery projects, and even for training on palliative care through online courses / MOOCs.

A theoretical analysis of existing literature can perhaps inform our thinking in this regard. For example, Ramello's work (2005, 2007) supports the argument that appropriation of knowledge limits access to knowledge to a significant extent. Using economic theory, Ramello demonstrates that over-extensive appropriation tends to produce an adverse outcome for both total amount of knowledge produced and for economic efficiency, the *raison d'etre* for IPRs, because wide access to knowledge as an input for knowledge production is crucial. Equally compellingly, restrictive access to knowledge has social justice implications, as it excludes others because of above-cost pricing and market-power that IPRs demand as necessary for their efficient functioning. The exclusion of those who cannot afford to pay the price premium dictated by IPRs has serious consequences, at least for the duration of the patent, as by definition most knowledge protected by IPRs cannot be replicated / used without paying the price. The exclusionary effects, and the tragic consequences of doing so, can be seen in several recent examples concerning pharmaceutical access, such as the scramble for Monkeypox and Covid vaccines, access to anti-retroviral treatments in Africa, and poorer R&D investments in drugs needed for diseases in low-income and developing countries (Angell & Reading, 2005; Mazzucato, 2018; Scherer, 2004). The fact that people on a low income from less developed countries cannot afford the price of medicines is, quite perversely, a function of reduced investments in health infrastructure if these do not provide the required returns through IPR mechanisms (Ridley et al., 2006). Drahos and Braithwaite, in their chronicling of TRIPS history in their book *Information Feudalism* (2002), demonstrate that appropriated knowledge through IPR systems is not only used to provide monopoly rights to corporations for excessive profits, but is also used as a source of political influence. They put into perspective the pressures that are being created by IPR regimes all over the world for stronger rights over intangible assets. The fact that lobbyists working on behalf of corporations influence the US Government to exert pressure on foreign markets to benefit US industry is well known, leading to lack of

access to pharmaceuticals and technology for developing countries. The authors comprehensively document how less developed economies continue to be exploited by IPR merchants through practices such as cartelism, bioprospecting, looking for ways to patent natural produces and seeds, profiteering from life-saving medicines (echoed subsequently in Mazzucato's works (2018)), and overall, the ugly history of profiteering at the expense of general public. However, academic literature suggests that the exclusion of knowledge as an input, through appropriation, generates its own inefficiencies, which suggests that efficiency concerns with regard to patents incentivising individuals and institutions to produce novel and commercially useful knowledge, and concerns for social justice, may not be that far apart; and that a trade-off may be possible that reduces inequality (Marchese et al., 2019). There is a wealth of literature on policy options and other interventions that are more egalitarian in their approach, that allow a more equitable access to drugs globally, but this is out of scope for this thesis to analyse (for example, see (Dietsch, 2008; Herder, 2017; Pogge, 2005)).

ii) The impact of IPRs on ecology, the natural environment, and biogenetic resources

Exploitative practices and asymmetrical policies of the developed world and its corporations continue to extract and deplete natural resources of less developed economies, by bioprospecting, attempts to patent nature, and through enforcement of trade related rules and regulations such as TRIPS and WTO which are heavily biased in favour of the developed economies (Draho & Braithwaite, 2002). Shiva's hugely influential work on conflicts over two natural resources – forests and water – in India, also demonstrates the politics of knowledge of ecology (Shiva, 1991). Shiva claims that modern economics, and by implication knowledge economy, is 'narrow' in its vision and therefore incapable of dealing with ecology and sustainable use of natural resources because "*modern western scientific knowledge is*

reductionist and fragmented” and is indifferent to “*resource use efficiency or need satisfaction capability*” (p. 41). Shiva discusses an approach where ecology is the basis for formulating a different approach to economics, rather than the criteria used by market economics (ibid), in which:

1. A knowledge system would be one with an ecological understanding of nature;
2. A technological system would waste minimal resources in the process of satisfying human needs; and,
3. The rationality criteria would demarcate vital and non-vital needs, and differentiate between resource destructive and resource enhancing technologies.

The argument Shiva is making is essentially for recognising an alternative system of diverse relationships between people and nature, where both co-exist in harmony, and there is recognition of the consequences of resource extraction beyond what is required to sustain life and livelihood. Shiva’s argument is similar to the calls for adopting a different approach to economics for public interest goods, for example, education.

A comprehensive examination of the key issues of how IPRs impact and interact with biogenetic resources that underpin traditional agricultural and healthcare systems is beyond the scope of this thesis, but Dutfield (2004) provides a significant amount of material on how these factors interact in practice, tracing the way in which stronger IPR has led to ideas such as ‘biopiracy’ and gene ‘patenting’. In particular, Dutfield’s position on the applicability of IPRs to ‘traditional’ knowledge is interesting, as it argues that many traditional societies have their own custom-based and complex ‘Intellectual Property’ systems that regulate access to and use of traditional knowledge, dispelling the argument of ‘common ownership and sharing’ of traditional knowledge in some societies.

5) Discussion

The key questions that this section considers relate to how the market for knowledge produced by universities, which thus far has been a quasi-market, is becoming more concrete with the mechanisms of exchange becoming more tangible. How is this market imagined in the first place, how does it become established, and then maintained? But more importantly, if a market is just a coordination device where agents can pursue their own interest in transactions through calculating a price, helped by market devices, what makes the market for knowledge economic? In other words, how does the assetization of knowledge work?

a) A reminder of the research questions and key precepts

This thesis set out to explore three main research questions as below –

1. What are the potential effects of KEF design on HE institutions in terms of knowledge production and exchange?
2. What is the performative potential of KEF on the knowledge production ecosystem, and on the knowledge producing labour, that is, academics and researchers behaviour?
3. What are the implications for social justice of the changes that might arise therein?

Knowledge that can be assetized is an economic resource that can generate future revenue streams. The value placed on knowledge in this context is different to the value, say, placed on a commodity, which allows the commodity to be sold or bought at market price. Instead, as discussed in the literature review section, knowledge is conceptualised as a rent-seeking asset that allows it to create and extract value through rent. While commercialisation of knowledge is not a new phenomenon, given that researchers and universities have for decades pursued strategies for revenue generation through industry, particularly through consulting for business

or specific industry projects for example, the conceptualisation of knowledge in such instances is very different to a rent-seeking asset. The thesis specifically focusses on IPRs as patents, because instead of other IPR forms it is patents that are mostly relevant for enabling the construction of rent, as part of the process of assetization of knowledge, given that rent is not inherent in knowledge per se.

The following section develops further the analysis of the data from both the WPR process and the semi-structured interviews, to provide a deeper analysis of the findings based around identified themes. As described in the methodology chapter, themes were identified across the data set. The discussion below sets out these themes by linking them to the broader literature on performativity and assetization. The focus is on discussing themes in the data which are relevant to the research questions. As such, this section brings together the previous sections to paint a richer picture of the potential changes that the UK HE sector is currently undergoing.

b) Concretization of the knowledge market

“Knowledge is and will be produced in order to be sold, it is and will be consumed in order to be valorized in a new production: on both case, the goal is exchange.”

(Lyotard, 1984, p. 8),

The policy analyses suggests that the KEF is representing the problem as one of value creation (how much of knowledge produced in universities), and how knowledge can be appropriated through the university-industry collaboration. The KEF policy envisages universities playing a key role in improving the UK’s ‘productivity’ and ‘innovation’ gaps. The KEF policy aims to incentivise universities to accelerate knowledge creation and knowledge exchange with industry (and in the process creating competitive processes in the marketplace of universities for knowledge outputs that can be commercialised). The *measurement* and *benchmarking* of areas of knowledge exchange, through the KEF metrics, is crucial in this respect, as the first

step in finding a way to understand what is it that needs to be measured, and to assess the value of the exchange monetarily. The KEF does this in two ways, by assessing the generated income from working with industry, public and the third sector, *as well as* rent from appropriation of knowledge through its licensing and other IP income metric, including the amount of investment by external parties in spin-off firms created on the back of IPR and the total turnover of active firms that are using the IPR assets. The central thesis is therefore that the KEF, acting as a market device, is potentially enabling the concretization of the marketplace for knowledge. More specifically, the concretization of the marketplace for knowledge involves the following steps:

i. Enabling calculability

“The most interesting element is to be found in the relationship between what is to be measured and the tools used to measure it.” (Callon, 1998, p. 23).

The KEF metrics are undergoing constant iteration in order to achieve some level of consistency and standardisation in how research activity across universities could be measured and benchmarked. The implication of this is that the KEF is creating a specific framework for ‘calculability’, where the KEF tools describe the boundaries of what is being measured and how, but it is at the margins of these boundaries that expectations of social and institutional agencies influence practice (Miller, 1998, p. 605). In other words, new calculative strategies emerge in the interactions between agents, that might lead to the establishment of new norms. The KEF, as a market device, is not a tool which is set and unbending – it is being constantly reconfigured, refined, expanding to include more qualitative and quantitative detail, as is evident from the third iteration of KEF which is currently underway.

Granovetter and McGuire (1998) suggest that it is the social structure which determines which trajectories industries take early on their development; for example, exactly what falls inside

and outside an industry's boundaries. However, when a market is not yet fully formed for a certain product or activity (as in the case of the quasi-market of HE sector in the UK, for example), then institutions in the given industry are not fully organised to make the maximum use of their resources. Extending Granovetter and McGuire's arguments, by logic, it is only when distinct products or services in the market emerge / evolve, that institutions in an industry structure and organise themselves similarly, self-define their competition, and articulate common goals. The market for that product or service then becomes a social reality, and moves the industry in a certain direction, which may not be optimal initially but evolves over time. For example, universities are able to draw relatively more meaningful comparisons with their competitors through the KEF data, data which thus far was either not recorded or held internally by universities, and most likely not analysed at the macro-level in any significant detail. The KEF dashboards, available publicly for universities, is potentially a tool that can be used to analyse areas in depth where universities may be lagging, or why some areas may be performing better than others. Universities, and indeed, individual researchers, can use the KEF results to examine the types of knowledge activities that industry and the third sector is seeking (working with business metric), understand the drivers for IP generation (IP and commercialisation metric), or spotlight the stimuli for public sector engagement (research partnerships metric), geographically or sector-wise. The KEF, in this sense, is a tool that is being used by the government, institutions, and individual researchers to develop shared understandings of knowledge products, create social connections and networks, and create organisational conditions that optimise knowledge exchange.

ii. Enabling framing and disentanglement

Callon (1998) has demonstrated that if calculations are to be performed successfully, then the agents and goods (and services) involved in the calculations must be disentangled and framed

(see literature review section on performativity for a fuller discussion of framing and disentanglement). Callon suggests that framing defines the effectiveness of the market because it is within the framing space that each agent can interact with others, and where agents take each other's viewpoints into account when reaching a decision.

“This concept of framing is easily applied to the interactions that interest economists, whether in the form of classic commercial transactions or contract negotiations. To negotiate a contract or perform a commercial transaction effectively presupposes a framing of the action without which it would be impossible to reach an agreement, in the same way that in order to play a game of chess, two players must agree to submit to the rules and sit down at a chessboard which physically circumscribes the world within which the action will take place” (ibid, p. 250)

The argument essentially is that economic agents ‘entangled’ in a sociotechnical network must ‘disentangle’ from the relationships, and ‘frame’ themselves in a commercial transaction, according to the established rules, in order to make economic calculations. So, what are the implications of this framing and disentanglement process in the context of the introduction of the KEF? Firstly, through encouragement of the establishment of relationships and networks, the KEF is enabling a shared understanding of who the actors might be in a future marketplace of knowledge, that is, universities, businesses, and individual researchers, and what are the goods which might be available in the market for exchange. Second, as per traditional economic theory, any calculativeness requires the agents to possess market information, to the extent possible, about the nature of the transaction they are about to execute. Apart from the socio-cultural contexts, the economic rationality of the transaction also needs to be considered. The KEF is a framework that is potentially enabling calculativeness and framing for a market-based transaction to take place.

Callon (1998) suggests several possible sources of calculativeness, such as contingent contracts, which reflect an uncertain world, implying renegotiation as information is produced and exchanged; or agents embeddedness in social networks where the relationships between the agents (which are variable and dynamic) shape the transactional outcomes. However, for any calculative agency to emerge, there needs to be some common knowledge or points of reference which guarantee efficient coordination for market purposes. Callon refers to these reference points as ‘focal points’ (ibid, p. 7), suggesting that the nature of these reference points may relate to a cultural or procedural shared understanding by which agents operate, thus coordinating market action. Clearly, such focal points do not govern the behaviour of agents completely, as agents’ interpretation of the focal points can differ. Callon suggests that the interpretive differences can be minimised during interaction and negotiation between agents, explaining the existence of highly efficient and coordinated markets with ‘disentangled’ agents.

The crucial point for the analysis is that the *process of establishment of a market* requires manifest reference points which *create the shared understanding amongst agents of what exactly is the market*, and the clear defining of the objects, good, and merchandise, which can be clearly identified on the basis of their conception, production, circulation, or use. This shared understanding and clear definitions of what is being traded in the market is what allows the market to take a concrete shape and develop its particular characteristics. Only then the process of disentanglement and framing can take place, *once* the market is concrete. Callon suggests that “no calculation is possible without this framing which allows one to provide a clear list of the entities, states of the world, possible actions and expected outcome of these actions” (ibid, p. 19). The KEF is potentially providing a framework for the establishment of specific reference points, which would enable the calculativeness of agents in the future where the current quasi-market in UK HE is concretised and evolves into a more definite marketplace of knowledge with clearly defined and reframed actors who understand the products being offered

and are more adept at calculability of the value of the products. In this envisioned marketplace, IPR assets generate value via rents, ergo knowledge is valued on the basis of its assetization into IPR / s, ergo on the future rent these IPR / s might generate.

c) The assetization of knowledge

The KEF potentially marks the beginning of the refashioning of the knowledge marketplace, reframing individual researchers, and reimagining the purpose of the research outputs produced in universities, through the establishment of certain criteria which could facilitate assigning of values on a future market of knowledge assets that generate rent revenue streams. The criteria also enable institutions, and the government, to compare the institutions within the marketplace on their production capacities (of knowledge) and efficiencies (in the production process), as determined by the metrics set by KEF. This comparison is essential for competitiveness in an efficient marketplace. The notion of KEF as a market device is useful in this context, as it helps us refer to the “material and discursive assemblages that intervene in the construction of markets” in a simple way (Callon et al., 2007). For assetization of knowledge to take place, its value is based on the rent it generates once appropriated as an IPR, and therefore this becomes the important criteria for establishing what kind of knowledge might be worth producing. Commercial organisations assess the value of knowledge assets such as IPRs on the basis of future revenue streams the assets might generate, and in many cases, are valued themselves on the basis of the IPRs the organisations own.

The clustering analysis undertaken by UKRI in order to implement the KEF makes the assumption that each university, irrespective of its strength and focus areas within a cluster, is still expected to participate in, and is measured by, the same metrics. The clustering process is potentially trying to *standardise* knowledge exchange. For any market, some level of standardisation of products, services and processes is essential for creating a shared

understanding amongst agents of what is being traded on the market, which allows for a competitive market exchange. Given that the outcomes of research from STEM domains are easier to quantify, and commercialise, the process of assetization of knowledge may possibly occur at a faster rate in these fields. The reconfiguration of research outcomes in STEM fields, as an asset through intellectual property mechanisms, is a key characteristic of contemporary ‘technoscientific’ capitalism (Birch, 2020). As Birch further argues, technoscientific capitalism is underpinned by rentiership, that is, the appropriation of value through ownership and control rights (such as IPR). The Intellectual Property and Commercialisation metric in the KEF is ideally placed to influence the rate of assetization of knowledge.

The UK Government’s ‘science superpower’ ambitions depend on the capability of its university sector to foster and ‘spin-out’ research and innovation at a much faster pace than before. Following the introduction of the KEF, most universities in the UK are investing to establish infrastructure to facilitate knowledge exchange activities, such as supporting processes to file for IPR in patent offices, setting up spin-offs, and offering patented technologies, data sets and know-how for business partnerships and collaboration. Indeed, the latest KEF data shows that the UK HE sector is worth billions in terms of the spin-out companies, with just Oxbridge alone generating annual revenues of about £12.5 billion from spin-offs (Grove, 2023). Bath, UCL and Imperial follow closely behind. This perhaps suggests that the researchers in institutions such as Oxford and Cambridge (and other universities in London region, referred to as the ‘Golden triangle’ for research in media) have already embraced the idea that their research would be commercialised and would lead to an overall benefit both for them as an individual researcher and their employer.

d) The impact potential of KEF on the rate and direction of research

The KEF could potentially influence / alter the rate and direction of research in two ways. One, the subjectification of researchers could potentially influence their research agendas, aligning it with the demands made of them in their job. Two, the commercialisation metrics in KEF (in particular, the IP metric), theoretically, could alter the rate and direction of research.

Historically, the significance of the rate and direction of knowledge production for governments (given the imperative of economic growth) gained importance after an extraordinary and highly influential conference organised by the National Bureau of Economic Research (NBER) in 1960, on the rate and direction of 'inventive activity'. The proceedings of the conference, published in 1962 address several fundamental issues, such as how patent policies influence the rate and direction of innovation and technological progress; and how these affects the accumulation and distribution of knowledge more generally in economic terms (Nelson, 1962b). The conference established the nature of innovation activity as an economic good and the economics of how it is organised. The NBER conference proceedings, and especially the paper by Nelson (1962a), also raise several other interesting social issues for consideration, such as the importance of freedom and autonomy (see section below on academic freedom and autonomy), and other incentives and motivators for researchers, including the role of institutions in shaping the behaviour of individuals.

While the individual contributions in the NBER publication vary greatly in terms of economic methods and techniques used, all are concerned, to a greater or lesser extent, with exploring the fundamental determinants that influence the rate and direction of research activity generally. Defining and measuring innovation activity is conceptually difficult, given the overlap between basic research, applied research, and innovation, and due to the fact that research direction cannot be defined as happening in one or more of these three areas due to

their interdependencies and close association. Nevertheless, as discussed in the literature review, considering knowledge as an economic good raises fundamental questions about its indivisibility and non-rival nature, and therefore about its appropriation with which we are concerned. In this regard, patents play a key role in influencing the rate and direction of research activity. The significance of the role of patents in knowledge creation was traced by Jaffe and Trajtenberg (2002), who analysed nearly 3 million U.S patents issued between 1963 and 1969, in terms of the citations that these patents generated. The authors demonstrated how knowledge is disseminated from those who do the research to others who benefit from this knowledge (that is, those citing the original patent). A logical corollary of this fact is that the citing researchers used the original knowledge, and may have even been inspired by it in their own research, to produce qualitatively new knowledge. In other words, technological innovation and progress rests upon the shoulders of previous researchers / innovators. Similarly, scholars have demonstrated, unequivocally, that commercial forms of research (that is, research which can be patented) arise from central ideas which come from basic research (Schmookler, 1962); that this knowledge can be extracted, processed, stored and distributed (Siegel, 1962); and that externalities in the production of, and zero cost of using public knowledge, will lead to an ‘underproduction’ of knowledge as firms seek increasing appropriability (Arrow, 1962). In other words, a stronger patent regime would incentivise underutilisation of both basic and applied research, although it must be noted that other economists disagree whether the scarcity of knowledge (due to reduced access to it) would lead to underproduction. However, on a macro- level, Arrow (ibid) claims that:

“We expect a free enterprise economy to underinvest in innovation and research...because it is risky, because the product can be appropriated to only a limited extent, and because of the increasing returns in use” (that is, returns which cannot be captured fully by the inventor) (ibid, p. 619).

In sum, the conundrum with the IP metric in KEF is that while on the one hand it incentivises appropriation of knowledge through patents, which possibly increases the value of the research outcomes for the researchers and institutions at the microeconomic level; on the other hand, theoretically, increasing appropriation would potentially lead to underproduction of knowledge at the macroeconomic level. Indeed, innovation success has been linked to state support and investment, where the state undertakes the risks by publicly funding large scale technological and scientific research, which underpins economic growth (Mazzucato, 2015).

e) The potential impact of the KEF on researcher behaviour: Academic freedom and autonomy

Evidence suggests that as universities behave more like private corporations, for example see (Henkel, 1997; Marginson & Considine, 2000; Slaughter, 2004; Slaughter & Leslie, 1997), the imposition of hierarchy, and reconceptualisation of the purpose of the university along with treating staff as labour and students as customers, will further erode the notion of autonomy as researchers know it. A discussion of various forms of managerial control and imposition of organisational values that impeded academic freedom and autonomy is beyond the scope of this thesis, but Lyer et al. (2023) provide a comprehensive analysis of the causes, trajectories and effects of the decline in university autonomy and its relationship to other dimensions of academic freedom.

Academic freedom and autonomy allows researchers to work on fundamental issues that confront society and engage with intellectual problem solving, instead of being pressured to engage in opportunistic research to serve industry. The context of autonomy helps prevent some researchers, who wish to engage in basic research, from being driven by narrow commercial criteria. The university then, as a place of work, provides a distinctive institutional context which is not immersed in the “everyday business of the economy where knowledge is

a commodity subject to the exigencies of market forces” (May, 2007 p. 120). This does not mean that there is no place in academic freedom of inquiry for contemporary issues facing the industry. But the scale and intensity of change that might happen under the current policy, which could lead to a qualitatively different set of rules which govern the production of research, needs to be recognised. It is also recognised that academic freedom and autonomy will hold a variety of meanings and values philosophically, and across disciplines. Indeed, Bridgman and Willmott (2007) compare and contrast the two perspectives of academic freedom – one, originating in Weber’s thinking that academics are ‘value-free’ impartial experts dedicated to scientific progress; and two, Laclau and Mouffe’s conception of a multiplicity of identities ‘forged and assumed in hegemonic struggles and through competing political projects’ (p. 151). The authors suggest that the demands of a knowledge economy can be accommodated without compromising the independence (impartiality) of researchers. But independence *within* a constraining framework or discourse (of KEF) is qualitatively different to the one which is autonomous, as no policy can be implemented in a neutral or depoliticised manner. It is not for this thesis to draw precise boundaries of academic freedom and autonomy, or locate these values philosophically, but suffice to say that the discourse and practice of higher education reflexively responds to any restraining of these values, as conceived / expressly typified within the disciplinary locations.

6) A conceptual framework

Following the data analysis and discussion above, that illustrates the political, social, and economic changes that the introduction of the KEF policy can potentially bring about, we can draw a conceptual framework that describes the political economy of knowledge production. The conceptual framework synthesises the interpretive findings of the research, in particular representing key ideas of the performativity of the KEF policy, and the various potential effects that could conceivably interact and overlap with each other in the knowledge production processes in UK universities. The conceptual framework brings together the policy effects (as evidenced by the interview data analysis), the policy intent (as explored through the WPR analysis), and the potential future effects (as discussed above in chapter 5) to paint an overall picture of changes that the introduction of the KEF policy has initiated, and the changes that it might drive further in the future in the UK HE sector. The pictorial representation of the conceptual framework below is intended as an aid for the reader in order to convey an overall sense of concepts and their underlying meanings.

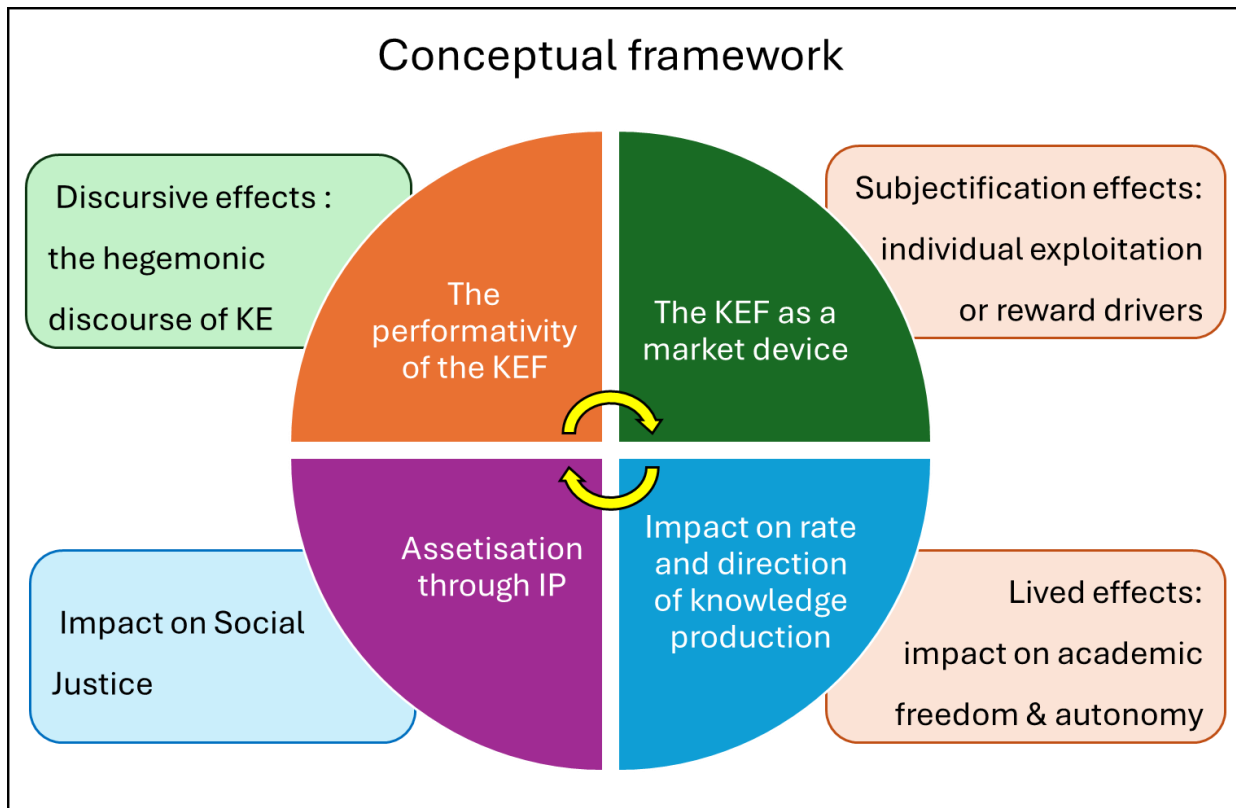


Figure 2: Conceptual Framework

a) Conceptual framework explicated

i. The performativity of the KEF

The conceptual framework envisions the implementation of the KEF policy as a crucial factor in the process of making a market for knowledge concrete and tangible. The KEF, acting as a market device, transforms knowledge into a rent-seeking asset. It does this through two mechanisms, at an institutional level and an individual level. At the institutional level, the performative potential of the KEF policy will likely influence the rate and direction of research. As universities organise themselves to be compliant and do well in the KEF assessment exercises, they also compete with each other, and potentially at some point in future the KEF metrics (currently designed at institutional level) could possibly be transfigured as performance objectives for individual researchers as the processes of engagement become more established.

As identified in the interview data analysis, there is an awareness amongst researchers of the potential of the KEF policy to lead to institutional ‘nudging’, where researchers may be encouraged to engage more or engage only with certain aspects of the engagement agenda of the university. If the institutional metrics for KEF are cascaded to individual researchers as performance objectives in some form, then this might lead to a further change in researcher behaviour.

At an individual level, the WPR analysis helps as an assessment tool in making inferences about the possible impacts of KEF policy, through the subjectification effects and lived effects it produces. The semi-structured interviews serve to complement the WPR analysis, allowing inferences to be made about how researchers *think / experience* how the policy is currently impacting their work and lives, or how it might do so in future. The subjectification and lived effects may lead to various unpredictable changes in researchers’ behaviour. In the context of this thesis, *ex ante*, it is likely that the extent of perceived or real constraints on academic freedom and autonomy might lead to dissatisfaction for some researchers, while others may find their ways around it by gameplaying. More importantly however, the subjectification effects, where the drivers of the effects are individual reward or a sense of individual exploitation, may lead to significant changes in the rate and direction of research at an individual level and therefore also at an institutional level in aggregate.

Overall, the conceptual framework understands the KEF as a key factor which is accelerating the knowledge assetization process.

ii. Social justice implications

From the theoretical analysis in section 4.c., it is possible, that as the KEF policy becomes firmly established, it could potentially raise several social justice issues in the future. In the longer term, the analysis has focussed mainly on two themes in this regard, 1) access to and

exclusion from knowledge of those that need it most; and, 2) the consequences of expanding IPRs on ecology and biogenetic resources. In the short to medium term, the policy has the potential to impact on academic freedom and autonomy which are matters for social justice. Under the conditions being created through the introduction of KEF, the pressure to engage with applied research and increasing the pace of innovation will conceivably be at the cost of basic fundamental research. Closer collaboration with the commercial sector also portends fears that researchers role as autonomous would be compromised, as researchers might desist from pursuing their own research agenda. Equally compellingly, the consequences of expanding IPRs on the environment and ecology, on free access to knowledge, and the exclusion of those from research who stand to benefit the most, are the well-documented egregious effects of increasing power and reach of IPRs.

7) Conclusions

The research for this thesis has sought to explore the political economy of knowledge production in UK universities. The ‘entrepreneurial university’ discourse is now hegemonic, and UK universities, especially research-intensive ones, have incorporated engagement with industry in their institutional missions. The depiction of the university institution as entrepreneurial, however, does not paint the full picture. The introduction of KEF, which provoked the universities into adopting the engagement function on an equal footing with teaching and research, firmly positions, and formalises, the university’s role in economic development of the country, not just in an entrepreneurial sense of collaborating with business and encouraging enterprise and risk taking for profit, but as an agent of the government, taking on the commercialisation of knowledge for the benefit of industry, ultimately benefitting society. The transformation of research, especially technoscientific knowledge, into economic goods and services is not a new concept, and much has been written about it over the last few decades, including swathes of scholarly literature on knowledge transfer and the relationships between university-business-government. What is new is that the introduction of KEF demonstrates the reliance the government and industry put in universities for the production of knowledge which is needed by the markets. The traditional channels for transfer of knowledge from universities to industry – through academic literature, consulting, recruitment of experts by business (and vice-versa), and informal mechanisms – are seen to be insufficient, inefficient, and ineffective; and thus the KEF is aiming to increase the efficiency and effectiveness of how this knowledge exchange takes place. In addition to this, the KEF policy is seeking to broaden the scope of exchange beyond technoscientific knowledge, to other disciplines and fields.

Within this context, the research set out to investigate the relationships between policy (KEF), assetization of knowledge, and the consequences for social justice, through qualitative

interpretive research. Specifically, this involved an empirical analysis of KEF policy documentation, an exploration of the potential performativity of the policy through semi-structured interviews, and secondary research to consider the theoretical implications for social justice. This thesis brings the three strands of the research together, to explore a particular aspect of increasing marketisation of the HE sector in terms of the issues that arise from the processes involved under the engagement agenda.

a) The evolution of the knowledge economy from social and economic to political

The knowledge economy is in more developed stages of evolution, as it makes further advancements from the social and industrial change which characterised it in the past few decades. From the general notion of innovation as a driver of economic growth and prosperity, the knowledge economy narrative is now a political hegemonic discourse. The introduction of the KEF policy is a significant milestone in the marketisation process, as the research suggests that the KEF is potentially not just reshaping the construction of the marketplace for knowledge, but having a performative impact on the direction and rate of knowledge production. For the government, the KEF policy is about the necessity of measuring the quantity and value of research outputs from universities, in order to benchmark the universities performance. The policy is thus also a tool for the government to exert political control over the process of knowledge production which it deems crucial for economic development. The emphasis of the knowledge exchange narrative has therefore shifted to a measurement of how much knowledge is being produced, how much of it is appropriated by business in monetary terms, and making the mechanism and processes of the so-called knowledge exchange efficient. The allusions to research funding of universities being linked to their performance on KEF outcomes is part of the UK Government's striving for political control of the research ecosystem.

b) The performativity of the KEF: Assetization in action

The notion of measuring the quantity and economic relevance of research is a prerequisite for any commercial use, and the KEF, in this respect, is acting as a market device facilitating the creation of a market for knowledge, by facilitating the processes of transformation of knowledge into a rent-seeking asset. The performative constitutive power of the KEF policy lies in its role as the key constituent of the processes which bring together researchers, universities, and industry, to facilitate knowledge flows. The KEF, through enabling calculability, framing, and disentanglement of agents is embedding market-based processes in the knowledge exchange processes formalised in the role of the university, and overseen by the government which monitors and exerts political control on the exchange process. So, whilst on the one hand the KEF presupposes economic exchange and a network of economic actors and relationships which it seeks to measure in its metrics, on the other hand it creates these very elements with their very unique properties in the process.

The hegemonic discourse of knowledge exchange as being crucial in a global knowledge-economy could push institutions into a trajectory of accelerating knowledge production which can be appropriated by business for economic gain. It is therefore likely that demands from industry dictate, and possibly direct to some extent, the research agendas of institutions, and in turn, those of individuals. These changes potentially lead institutions (and by implication researchers) on a path where research and innovation maybe impelled by industry needs and demands, creating a momentum of its own, and in the process, creating its own structures, norms, relationships, and behaviours which may be difficult to change easily in future.

c) The rate and direction of knowledge production

Knowledge demands from industry, or third parties, in specific areas, amidst increasing competition within universities, will potentially not only make knowledge outputs in certain

areas more valuable, it may also lead to opportunistic behaviour from researchers who might be willing to transact with the highest bidders or only seek particular type of collaborations. At the institutional level, the focus and importance of research in some non-STEM areas may diminish over time if it is not recognised fully in the KEF metrics. These effects will become more pronounced should university research funding be linked to KEF outcomes, in which case, research performance of institutions, as evaluated in the basis of KEF metrics, could increasingly gear towards knowledge production which is attractive and viable for commercialisation and patenting; constraining disciplines (and researchers within those disciplines) which are not compatible with knowledge production which has commercial relevance.

d) Implications for social justice

Access to and exclusion from knowledge is a key social justice issue that the KEF could potentially exacerbate, given its emphasis on commercialising knowledge, especially through the IP and licensing metric and the income generated via IP by universities and researchers. However, the notion of knowledge as a public good is by no means as clear-cut or consensual as a natural resource, and there are questions around how innovation might be incentivised in the absence of property rights, especially in the pharmaceutical and technology sectors. As the engagement agenda becomes normative, building relationships with business, and how the relationships are regulated, may be the driving forces for the universities and the government respectively in the short-term. In this regard, the UK HE sector could potentially mimic the US HE sector with regard to the nature and type of relationships that universities will develop with industry over the next few years. Over the longer term, the UK HE sector could potentially see the development of various types of formal long-term relationships with industry to make the assetization process more efficient. These could be the development of strategic relationship

alliances with select corporations, the formation of research groups for specific purposes, sponsored by one or more companies in a particular sector (for example, technology, pharmaceuticals), investments by corporations in capital projects of universities in return for contractual IP returns, and establishment of research-centres in joint collaboration. Some of these developments – for example the Astra-Zeneca – Oxford partnership for Covid vaccine, may just be a harbinger of things to come. Constructing alternatives to the current economic systems that rely on IPRs can be possible only outside the boundaries of TRIPS and WTO, and that too at the fringes in some sectors which are outside corporate control, such as in areas involving traditional knowledge in food or medicines. IP regimes notwithstanding, the use and development of biogenetic and intangible resources of developing nations by corporations and advanced nations could be done in a more equitable manner.

The potential impact of the KEF on academic freedom and autonomy may have a destabilising effect on the research ecosystem, at least in the short-term. The pressures to engage with industry could potentially lead to a transformation of the researchers role, where an entrepreneurial mindset becomes normative. Researchers who are able to develop their research agendas to the needs of the market might stand to benefit individually. For example, the 'star' professor syndrome could possibly shift from those who achieve the most impact in the REF to those who can generate the maximum returns through commercialisation of their research to generate IPRs and spin-offs that promise increasing valuations and future rent revenues. As the normative structures of self-regulation in universities change, the curtailment of academic freedom and autonomy could possibly generate conflicts in the short-term, with those who are unable to adapt forced out, or relegated to work in teaching / administration roles.

As the pressures from management to improve the KEF outcomes flow through to researchers, people will find ways of ameliorating against their conflicting positions, where on one hand they are part of the system where the work they do is important for their individual career benefits, while on the other hand they need to mitigate against their discomfort and guilt of having a more egalitarian social justice position. In terms of the former, there is no doubt that at least for some participants, the change in their behaviour would be an unintended consequence of being driven by particular metrics rather than doing what they think to be the right course of action. This has the potential to blur the original meaning of academic freedom. Indeed, questions around academic freedom and autonomy might become the biggest challenge that the universities may need to overcome in the near future.

e) Limitation of this research

First and foremost, it is important to acknowledge that researcher worldview in qualitative interpretive research is unavoidably subjective, although every effort has been made to conduct this research in as transparent and unbiased way as possible. Reflexivity in the process, that is, checking for own assumptions regularly has helped with respect to an intuitive and continuous process of checking for consistency and logic of argumentation. As outlined in the ‘Self-positionality and reflexivity’ section, being explicit about the philosophical position, and transparent about the process, provides the appropriateness for the research design and methodology.

It is also important to recognise that this research may not have fully uncovered all the other contributing causal mechanisms for findings attributed to the introduction of KEF. For example, certain institutions already on a trajectory of IP generation and spin-offs naturally pull more funding from research councils and industry for big projects, are more attractive to a certain kind of researcher, and perhaps already have existing research partnerships that work

relatively efficiently and effectively and would have continued in the direction of ever-increasing techno-scientific innovation even without policy intervention. Researchers who are relatively entrepreneurial and do not have any moral compunctions about commercialisation of their research may intuitively be drawn to areas of research where there is already existing potential for commercialisation with high rewards. The reinforcing of IP regimes and strengthening of WTO rules through the IMF and World Bank could possibly have had similar impact on social justice even without the KEF intervention.

The limitations of sample size of interview group may not represent the views of all groups at different universities, as the impact of institutional culture and individual personal motivations vary greatly. Also, the process of analysis of problem representation of the KEF, given its relatively recent introduction, has perhaps not allowed for a fuller or a more in-depth analysis of areas which are left unproblematic or where there are silences. These are potentially areas for further research.

An obvious limitation is the UK-centredness of the research. There is a need to study other comparable countries policies and instruments, in order to study the performative effects of policy and the overall impact potential of the policy in market-making of the higher education sector.

f) Future research and recommendations

Firstly, the performativity of the KEF may not be a universal influence across the knowledge economy, as individuals and institutions will be impacted by the policy to a greater or lesser extent. And indeed, given the diversity of ways in which markets can be configured and analysed, the general rule is a misfire unless appropriate socio-technical agencements are in place for a successful performativity. Thus, institutions may not fully embrace the KEF policy in all its aspects, or some reconfiguration of the policy in its subsequent iterations may change

the nature of its performative impact on institutions and researchers. The focus of universities in certain discipline areas conducive to assetization may make performance easier, while in others may not be able to respond particular orientations and requirements.

An interesting area of future research might be to explore the performative impact of the policy, particularly in institutions which rank highly in the KEF metric dashboard. Relatedly, it would be interesting to explore in monetary terms, at an aggregate level, what impact the KEF policy has had from these institutions in terms of the income from engagement metrics, that is, the volume and value of knowledge production and appropriation. Some recommendations for the policymakers stemming from this research could include further research to address questions such as –

1. Has the introduction of the KEF incentivised the universities to invest more in research in STEM and Technology domains? Has knowledge production in basic science been impacted, and if so, to what extent?
2. If it is the case that research funding is made contingent on the KEF outcomes, would there be a potential for the research priorities of institutions to be influenced by the political choices of the Government? That is, would a top-down process in terms of how funding streams are directed push universities to shift their focus of research more in some areas than others to attract more research funding? Would this put some institutions at an advantage over others?
3. What other policy interventions, if any, the government might make in order to align outlying institutions fully with the aims of the KEF policy?
4. Has the impact of the KEF policy brought about changes in focus in universities research function to align with specific metrics, and does it vary with geography and / or institution-

type? (for example, will the Oxford-Cambridge-London golden triangle stand to gain the most from working with industry, as is already evident?).

5. How will the relationships with industry impact on students, and the teaching and learning experience?
6. Future research may also seek to correlate the findings of the impacts of KEF through a further study involving business and university managers. All these might be case studies for future research and analysis.
7. How does the KEF work together with the REF and the TEF? Will this lead to further compartmentalising of the teaching, research and engagement functions, and disciplines, moving further away from the idea of a Humboldtian university?

Secondly, future research by policymakers could focus on specific aspects of policy that may potentially impact on specific aspects of social justice in certain disciplines. It might look to consider the level and strength of interactions / intersections between the KEF elements and other forms of IPR, such as copyrights and trademarks. It may be interesting to look at specific cases of patents impacting on social justice aspects in greater detail, in order to firmly establish the links between the theoretical impact of the KEF metrics and access to and exclusion from knowledge.

Third, a recommendation for policymakers and institutions would be to conduct further analysis at the individual researcher level, to help build a picture of how the policy is being enacted at the local level. It is possible that institutions may seek to act, through its engagement policies, that individuals' performance is aligned to institutional engagement goals. Future research could potentially explore how has the introduction of the KEF impacted on researchers' motivation and participation in the engagement agenda, and whether the policy has met its stated aims of increasing knowledge exchange. Universities may wish to explore

in future the differential effects of the policy introduction on researchers, and whether it has reinforced existing inequalities or created new ones.

g) Final thoughts

This research explored the political economy of knowledge production, specifically in the UK HE context, in the context of the introduction of the new policy KEF. Through interpretive qualitative research, it has outlined how the KEF serves as a source of calculability, helps in the assetization process, and constitutes the performative impact of the policy, acting like a market-device. The research has helped reveal the discursive effects of the KEF, and its subjectification and lived effects on researchers. It has furthered our understanding of the possible consequences of the political economy of knowledge production on social justice, including the influence the KEF policy is likely to exert on academic freedom and autonomy as a matter of social justice. The research has brought to the fore the extent to which the KEF as a tool might be used by the government to strengthen the state bureaucratic control over academic activity through the policy, and ultimately through funding control; and to what extent it positions academia instrumentally, subordinate both to the state and the market.

Ultimately, a different relationship between universities, researchers and industry might develop in the longer-term, which possibly could be symbiotic, but not necessarily working in the interest of social justice. The current pluralistic model of research could turn myopic to focus on the type of knowledge industry needs. The hegemonic nature of knowledge exchange for economic development may subordinate all else. Slowly but surely, this shift will lead to a corrosion of the putative *raison d'etre* for the existence of universities – to equally engage in basic research in order to expand frontiers of knowledge – in order to serve society.

8) Ethical Approval

The research was granted ethics approval from the Faculty of Social Science Ethics Committee of Lancaster University. The methods for the research conform to the ethical standards of the British Education Research Association (BERA), including interview techniques, and participation, anonymity, and access to data protocols.

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10) Appendix 1

Format and interview questions

Participants were recruited through direct email, through snowballing, or through redirected email from department administrators/officers in target department/s. Participants were provided with a participant information sheet that provided further detail about the research, including the aims, introduction and context, to help them decide if they would like to participate, and with a consent form for participation. Each interview lasted for 60-minutes, approximately, excluding introductions and other formalities.

Questions

1. Can you recall your first reaction when KEF was introduced? Were there any specific aspects which you welcomed/disliked/feared?
2. Have your thoughts about KEF changed since then as it has now been operating for approx. 3 years?
3. Have you had any formal communications from your HoD/University about KEF, and how it might potentially impact on your role? If yes, did it lead to any change in your thoughts about KEF?
4. Knowledge exchange is defined by the ESRC as a two-way exchange between researchers and research users, to share ideas, research evidence, experiences, and skills. It refers to any process through which academic ideas and insights are shared, and external perspectives and experiences brought into academia. Has there been any formal communications from your HoD/University about what kind of 'knowledge exchange activities' you might be involved with which KEF is designed to promote? Have you been provided with any examples of such activities?

5. Have you had any formal or informal discussions with your HoD, or with other colleagues in the department or outside, on the impact of KEF on your research? If yes, what are your overall thoughts emanating from the discussions?
6. There is a metric in KEF that focusses on universities working with business (WB). It has five sub-metrics, which looks at 1) KTP income as a proportion of research income; contract research income with 2) non-SME business, 3) SME business, 4) the public and third sector; and 5) consultancy and facilities & equipment income with non-SME business. Do you think that your role has been/will be impacted by these metrics on which universities 'performance' is being measured? How do you think your role has changed/will change due to the influence of KEF? I.e. has there been (or you think there will be) a change in your research area or focus?
7. Similarly, another metric focusses on research partnerships (RP). This metric measures the contribution to collaborative research with business (cash) as proportion of public funding; and co-authorship with non-academic partners as a proportion of total outputs. Do you think that your role has been/will be impacted by these metrics on which universities 'performance' is being measured? How do you think your role has changed/will change due to the influence of KEF? I.e. has there been (or you think there will be) a change in your research area or focus?
8. There is a metric in KEF about IP and Commercialisation (IPC)¹⁰. How do you think this will impact on dissemination of knowledge? For example, do you think increasing licensing and IP will increase inequality in any way? (give example of Covid vaccines, and patents on pharmaceuticals).

¹⁰Estimated current turnover of all active firms per active spin-out, average external investment per formal spin-out, and licensing and other IP income as proportion of research income

9. If the volume of research funding for institutions is made contingent on KEF outcomes for the institutions, do you think it would have an impact on the type of research that you do, and/or your freedom and autonomy to do the research which you want to do?
10. Finally, how is KEF related to social justice in your view? (if no views expressed, or don't know, then move to next question).