**Playing the fields: Theorising research impact and its assessment**

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**Abstract**

How research is assessed affects what types of knowledge are valued, incentivised and rewarded. An increasingly important element of contemporary research evaluation is the measurement of the wider impact of research (e.g. benefit to society, culture or economy). Although the measurement of impact has been highly contested, the area is under-theorised and dominated by pragmatic research policy imperatives. Informed by a sociological perspective, this article intervenes in this context by reframing research impact as the attainment and maintenance of capital (i.e. symbolic power or status) in various fields beyond academia. It argues that research impact occurs at the intersection of these fields of power. The article shows that impact involves various combinations of capital from the scholarly field, the field of politics, the field of application, the media field and the economic field, which provide credibility, clout, utility, visibility and weight, respectively. In exploring the forms of worth and value that underpin the pursuit of legitimacy in these fields, the article provides a new theoretical framework for understanding research impact and its assessment.

**Keywords**

Research Evaluation, Research Impact, Knowledge, Fields, Power, Metrics

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How research is assessed affects what types of knowledge are valued, incentivised and rewarded. An increasingly important element of contemporary research evaluation is the measurement of the wider impact of research (e.g. benefit to society, culture or economy). Although the measurement of impact has been highly contested, the area is under-theorised and dominated by pragmatic research policy imperatives. Informed by a sociological perspective, this article intervenes in this context by reframing research impact as the attainment and maintenance of capital (i.e. symbolic power or status) in various fields beyond academia. It argues that research impact occurs at the intersection of these fields of power. The article shows that impact involves various combinations of capital from the scholarly field, the field of politics, the field of application, the media field and the economic field, which provide credibility, authority, utility, visibility and weight, respectively. In exploring the forms of worth and value that underpin the pursuit of legitimacy in these fields, the article provides a new theoretical framework for understanding research impact and its assessment.

**Introduction**

Expert research is essential in addressing the most pressing social, economic and environmental issues of our day. The assessment of this research shapes how research systems judge value, justify merit, and assign limited resources. However, research policy imperatives around accountability, transparency and efficiency (Nedeva, Boden, Nugroho 2012) have led to an inherent pragmatism in the development and use of assessment methods. Currently, research evaluation includes an array of concepts and methods to determine whether excellence is being achieved, including varying definitions and practices around ‘quality’ and ‘impact’. How excellence is conceived and measured shapes how researchers make decisions, and in turn, the types of knowledge that are produced and potentially transformed into political, economic or social outcomes. Yet, the existing literature has thus far neglected underlying elements of worth and value. Research evaluation has tended to be thought of as a technical or pragmatic activity designed to capture objective elements of the research process that can be incentivized or rewarded by science policy makers. Theoretically-informed work is required to understand value in research and the effects of evaluation practices for research actors.

An increasingly important element of contemporary research assessment is the measurement of the wider impact of research (e.g. benefit to society, culture or economy). Although discussions of how best to measure impact have been highly contested, the area is under-theorised and dominated by utilitarian research policy concerns. Informed by a sociological perspective, this article intervenes by reframing research impact as the attainment and maintenance of capital (i.e. symbolic power or status) in various fields of power beyond the academy. Accordingly, it locates effective research impact as occurring within a ‘space between fields’ (Eyal 2011), where the goal of assessment is to capture how research actors attain and maintain the capital of established fields, such as scholarly or political authority. These symbolic resources can in turn be exercised in various ways by research actors, potentially making impactful researchers more influential within the science system. The impactful academic thus exists in the context of a variety of fields where power can be created and circulated for particular purposes. This paper provides a specific definition for capital in each of these fields, and explores ways they could be evaluated and measured. It thus interprets research impact assessment in terms of the different forms of legitimacy it can signify and provide. By making explicit the multiple criteria and logics at play in these interconnected but distinct fields, it shows that the evaluation of research impact needs to account for the different forms of symbolic resources made available outside of academia.

The article offers a novel understanding of research impact and its assessment through the lens of multiple symbolic resources, whereby value is recognised and attributed according to the logic of different fields. It seeks to do two things. First, it sets out a framework for understanding how impact can be created by mobilising combinations of capital via the various extra-academic fields in which research actors can operate. Second, it shows how impact assessment works as a set of practices, and the effects this has on the practice of science. The article begins by setting out the policy dilemma that gives rise to the inherent pragmatism in the evaluation of research impact. It outlines the shortcomings of existing approaches, and considers what is currently missing from the literature. The article then offers a new conceptual framework for research impact, which incorporates multiple sites of external capital. It outlines the affordances (i.e. forms of legitimacy, prestige and power) that are provided by different fields, and argues that effective impact requires the combination of symbolic resources from these different spheres. It then discusses the steering effects of assessment practices during the research design, production and evaluation phases, and provides insights on the implications of a capital-based evaluation framework. In doing so, the article provides an approach that can illuminate the underlying judgments of worth and subtle forms of power involved in the measurement of impact. This new way of understanding research impact and its assessment permits researchers to be deliberate about the types of power they want to cultivate, and can also allow science policy makers to better specify what kinds of impacts they wish to stimulate in return for making available those forms of power to researchers.

**The inherent pragmatism in the evaluation of research impact**

Research evaluation provides systematic ways to help research organisations and systems make more informed choices about what they produce, how they produce it, and with what impact. There is increasing acknowledgement that greater investment in research should lead to enhancements in policy, practice and the benefit of the community. Until recently, the value of research was assessed by measuring inputs (i.e. human, physical and financial capital). However, there has been a policy shift towards measuring outcomes as part of broader accountability processes (Keevers et al. 2012), which some have characterised as a key manifestation of the ‘audit society’ (Strathern 2000; Dahler-Larsen 2007). Contemporary research policies now frequently mandate demonstration of ‘the value that public investment in research generates for increasing scientific competitiveness and excellence of the country, wealth creation, productivity, and social well-being’ (Reale et al. 2017). It is clear that the purpose of research evaluation systems is to incentivise research processes and outcomes that benefit society. Thus, impact is an increasingly important issue for policymakers. Indeed, so pronounced is the political pressure around impact that science policy studies have often been urgent and reactive responses to policy interventions, resulting in a situation where policy has outpaced theory (Muhonen, Benneworth & Olmos-Peñuela 2019).

Globally, there have been growing policy imperatives around impact since the early 2000s. Momentum was gained with the Australian Prime Minister’s launch of a strategy that included the wider benefits of research in 2001 (Commonwealth of Australia 2001), the introduction of impact into the 2003 Standard Evaluation Protocol in the Netherlands (VSNU, NWO and KNAW 2003), and the 2005 Memorandum from Research Councils UK outlining impact requirements (UK House of Commons 2005). From this initial impetus, one of the earliest national attempts to explicitly measure impact was the Australian Research Quality Framework (RQF) trial in 2005, which utilised a case study approach to demonstrate and justify public spending on research. Researchers gave information on the economic, societal, environmental, and cultural impact of their research that were then verified by an expert panel (Duryea et al. 2007). This approach was later taken up by the Higher Education Funding Council for England, which implemented an initial methodology and pilot exercise in 2010, supported by a model developed by Brunel University (Williams & Grant 2018). The resulting approach, the Research Excellence Framework (REF), first conducted in 2014, assessed narrative ‘impact profiles’ using a case study approach (REF 2014; HEFCE 2011). The impact assessment component of the REF has been subject to criticism from a number of camps, often centred around explicit steering attempts by government (Ladyman 2009; LSE 2011; Russell Group 2010). In addition, there are many areas of contention in its implementation, such whether impact is a final outcome (e.g. presence of a specific health or economic outcome) or whether it includes ‘secondary’ impacts (e.g. inclusion in guidelines, patents, and clinical trials, or leading to drug or policy development) (Samuel & Derrick 2015). Despite resistance to specific policy interventions and proposals, it is expected that the political commitment to impact will continue. The debate is expected to move towards reducing the perceived costs and burden of impact assessment, potentially through the use of metrics (Williams & Grant 2018).

Research evaluation can thus enable monitoring, management and understanding of performance, and provide accountability to government, stakeholders, and the wider public, in addition to facilitating understanding of the methods and routes by which research leads to impact (Penfield et al. 2014). However, the demands of policymakers around the demonstration of public value and measurement of societal benefit have led to a reactive common-sense orientation in research evaluation (Donovan 2017). For example, although the UK’s REF comes at a high cost to taxpayers, it can be justified by the high level of university funding that follows the assessment, whereas the Excellence in Research for Australia (ERA) does not directly affect funding and is thus more likely to display reliance on quantitative measures of impact that are cheaper to implement (Williams & Grant 2018). As a result, conceptual understandings have been constrained by political and bureaucratic exigencies (Benneworth 2015). Despite a multitude of approaches and frameworks that reflect a range of motivations and stakeholders (Penfield et al. 2014), the operationalisation of research impact has tended to take restricted forms, which has hindered endeavours to improve understandings and measures of the broader impact of research (Muhonen, Benneworth & Olmos-Peñuela 2019). As Milat, Bauman and Redman (2015, p. 13) explain, ‘research impacts are complex, non-linear, and unpredictable in nature and there is a propensity to ‘count what can be easily measured’, rather than measuring what ‘counts’ in terms of significant, enduring changes.’ Thus, there is a lack of empirical and policy interest in more nuanced frameworks, combined with current policy imperatives that prevent deepening conceptualisations of impact. There is a need to move from this pragmatic stand-off to a new framework for understanding the patterns of value and power that underlie different systems of evaluation.

**The operation of research evaluation through existing approaches**

The increased attention to the wider contribution that research makes to society (Bornmann 2012; Donovan 2011; Wouters 2014) has been wrapped up in the reformulation of science systems that has occurred over the last few decades. There has been a shift towards more applied, socially accountable research, produced by an increasingly diverse set of research institutions, with greater emphasis on the costs, output and quality of research (Davies, Gottsche, & Bansel 2006; Vidovich & Currie 1998). Many authors have noted a broader transformation in the allocation of public resources towards principles of efficiency, cost-effectiveness and operational rationality, resulting from a shift away from collegial administration to a more commercial system of management (Hood 1991; Parker & Guthrie 1993). This shift has moved the focus towards efficiency and transparency through performance management practices, which reflect the promotion of competition, instrumentality, and privatisation (Deem 2004, Leisyte & Dee 2012). Universities thus now exist within a complex commercial and intellectual milieu. For example, public universities increasingly resemble corporations (Schramm 2008; Burawoy, 2012), which emphasise ‘outputs’, ‘outcomes’ and ‘key performance indicators’, and which ‘manage’ academics and intellectual labour using overt performance and quality indicators for research and teaching (Deem 2004). A range of evaluation measures are now employed for a variety of purposes, including managing internal performance, allocating funds, demonstrating public accountability, showcasing competitiveness and generating business through recruitment of students and staff.

Within this context, research impact assessment has tended to involve two overarching categories; impact within the science system and impact outside of it. Table 1 shows examples of evaluation measures, loosely grouped according to these two prevalent categories and on a continuum from more to less established. Scientific impact has primarily been derived through bibliometric methods, which involve factors including the number of publications and citations. These metrics focus on the influence of research within academia, and are often accompanied by other quantitative measures, for example research income, such as in Australia’s ERA and the United States’ STAR metrics. Although scholarly impact is not perfectly measured by bibliometrics (Vonortas & Link 2012), it is widely accepted that these types of metrics are a reasonable proxy of influence within the science system (Petersohn & Heinze 2017). Key to research impact assessment, however, is also the operationalisation of impact beyond the science system (e.g. Bastow, Dunleavy & Tinkler 2014). ‘External’ impact has been studied using a range of techniques and methods, such as economic or statistical measures of commercial income or intellectual property creation as well as surveys, content analyses, case studies and expert judgement (Penfield et al, 2013).[[1]](#footnote-1) Despite a range of possible methodologies, growing policy pressures have resulted in a range of formal research evaluation systems that operationalise impact in pragmatic ways in order to gain legitimacy with both academics and policymakers (Benneworth 2015; Petersohn and Heinze 2017). However, an enduring problem is that these systems are often assessed solely based on their utility, rather than themselves being scrutinised and made transparent. For example, Bozeman (2011) argues that the implicit division between scientific and external impact has resulted in the dominance of academic and economic value sets. Given that robust best-practice approaches are labour- and resource-intensive, there remains a prevailing ‘common sense’ approach to measuring impact (Muhonen, Benneworth & Olmos-Peñuela 2019), coupled with a lack of theoretical work that can be used to hold evaluation measures accountable. Theoretically-informed attention to the assessment of impact is required to interrogate overlooked suppositions and assertions that are built into existing measures. A reconceptualisation of research impact and its assessment is thus essential.

[TABLE 1 ABOUT HERE]

**The shortcomings of current approaches**

The available tools for the assessment of impact vary in their characteristics and criteria, and, as a result, reflect and reproduce challenges around defining impact, its characteristics, and its role in research evaluation (Holbrook & Frodeman 2011; Samuel & Derrick 2015). There is a sizeable body of research on the formal characteristics of assessment mechanisms utilised in research evaluation systems (Fealing 2011; Reale & Seeber 2013). This literature often focuses on incremental adjustments to research policy, particularly around methods (de Rijcke et al. 2016). Although many have highlighted the accountability that researchers have to the society that funds them (Martin 2011; Pettigrew 2011), the focus on wider research impact has also been seen as contributing to a narrowing of acceptable topics and approaches (de Lange et al. 2010; Parker & Van Teijlingen 2012; Smith, Ward & House 2011). A key concern centres around the privileging of disciplines and topics for which impact can be more readily evidenced, to the detriment of fundamental or ‘blue skies’ research. This is exacerbated because some disciplines are more easily able to invoke an ‘investment logic’, for example, where there are direct connections between universities, spin-offs, the biotech sector and pharma companies (Benneworth 2015).

Some work has focused on the inherently social and organisational nature of evaluation, in addition to the cognitive and epistemological aspects of knowledge production (Whitley 2000; Hemlin 2006). One current approach that has gained traction with policy and academics communities is ‘productive interactions,’ which focuses on the dynamics of impact pathways, based on interviews with academics about the processes of knowledge translation (Spaapen & van Drooge 2011). The approach considers ‘exchanges between researchers and stakeholders in which knowledge is produced and valued that is both scientifically robust and socially relevant… Social impacts of knowledge are behavioural changes that happen because of this knowledge’ (Spaapen & Van Drooge 2011 p. 212). This is a crucial study of the relations between researchers and other actors, but it does not illuminate the elements underlying the categories of value, including ‘scientific robustness’ and ‘social relevance’. Indeed, this question of bringing relevant societal values to bear in evaluation has been an enduring question (Bozeman 2011). In addition, the productive interactions approach does not clearly illuminate the ways that these two facets – the ‘scientific’ and the ‘social’ - interact. Muhonen and colleagues (2019) have further developed the productive interactions approach by identifying the range of the mechanisms by which research leads to societal impact (i.e. dissemination, cocreation, reacting to societal change, and driving societal change), which goes some way to address this issue. However, there remains a need to understand the social elements of value that are provided by the contextual arenas and fields of power in which these mechanisms occur. Thus, existing approaches do not provide a framework for the social patterns that underpin encounters between the science system and societal actors. There is therefore a need to consider the relations of power that underlie research impact.

A related issue, given the contested nature of evaluation mechanisms around impact, is that it is imperative to be able to empirically assess the effects of these procedures on researchers and research systems. There is a political dimension to assessment that underpins the contestation around how social benefit is defined and measured. On the one hand, proponents of greater accountability hold that measurement is essential for good management and improved performance (Pettigrew 2011). On the other, critics of managerial forces have emphasised the adulterating effect of the ‘impact agenda’ on the capacity for critical and reflexive work (Watermeyer 2012). In this view, there is a contradiction where the demands of the performance of impact may weaken the contributions researchers can make to society and science. How evaluation systems are designed and implemented (i.e. what is measured and how it is reported) shapes how the objects of evaluation are perceived and conceptualised, attaching value and worth to both objects and people (Espeland & Sauder 2016). A key concern therefore relates to the potential steering effects of particular measures, given the ways that researchers respond to measures are not always intended by policymakers. Bozeman (2011) highlights the problems that arise from a dominant focus on scientific and economic indicators: ‘First, science values and economic values are available as accepted and dominant surrogates for all other values. Second, public values are supported by no coherent set of conceptual tools to aid in choice. Third, and in contrast, many such tools are available for science and economic values’. There is thus a great deal at stake for researchers and for the production of knowledge, given that evaluation practices can force a choice between adapting to demands or being penalised for straying from what is deemed legitimate and valuable. Furthermore, there is a critical gap in knowledge that arises from the obscure nature of the interactions between the practices of evaluation, which are typically closed to outsiders (Derrick & Samuel 2016), and the processes of knowledge production, which take the form of the experiences and actions of research actors (Wouters 2014).

There are therefore two key problems with the existing literature on research impact assessment. The first is the lack of an overarching theoretical framework that can be used to understand value and relations of power. Although current practice in evaluation tends to distinguish between academic and external impact, there is no clear theoretical work that illuminates what constitutes ‘external’ nor how these two elements interact. There is little attention to the value judgements that underpin these evaluations. Addressing this issue is essential, given that the ways that impact is understood and measured exert effects on what knowledge is valued and how research is done. The second is a lack of a understanding of how research impact assessment operates as a set of practices, and the effects that this has on research actors and science. Addressing this issue is crucial to break the current reliance on discrete single or aggregated properties at the expense of explicit identification of specific aims, intentions or values and how these link to various research outputs (Bozeman 2011). These issues require a dual focus on the ways capital can be mobilised through various extra-academic fields and the effects of evaluation on researchers and systems.

**A new conceptual framework for research impact**

To rectify the limitations of existing approaches, the insights of the sociology and research evaluation literature can be combined. Field theory provides a useful framework for dealing with the problem identified in the previous section. Fields are a site of struggle where actors have shared understandings and ways of being with tacit knowledge and embodied habits (Bourdieu 1990a; DiMaggio & Powell 1983; Fligstein & McAdam 2012). The concept of struggle presumes that actors have a collective understanding of implicit rules, a sense of opportunities and risks, and an interest in achieving a positive outcome (Bourdieu 1993). It is the process of actors investing energy into these shared understandings that creates the field (Lamont & Lareau 1988; Lucas 2001; Medina 2014). Actors within a field share conceptions of certain field-specific types of capital, and pursue influence and control over these symbolic resources. For example, a field theory approach could look at the way research impact is jointly understood by people within an area of expertise that has an internal logic, such as health research, and how this shapes their habits and experiences. Alternatively, a field approach could examine the arena of research impact itself and how it reflects broader more established fields of power. This article is primarily concerned with the latter. That is, it seeks to understand how actors who are invested in being ‘impactful’ manage necessary resources, skills and proficiencies. To understand how fields shape structures and cultures of evaluation, the related concept of ‘habitus’ is useful. Habitus refers to the ‘system of durable, transposable dispositions…which generate and organise practices and representations’ (Bourdieu 1990b, p. 53). In short, the habitus is the socialised tendencies and outlooks that shape behaviour and thinking. This perspective allows for scrutiny of the complicated interplay of social structures and cultural forms (Benson & Neveu 2005, p. 12). The habitus is the link between the structure of the field(s) and the agency and cognition of the individual. It is attained and set through socialisation or induction that reflects the specific interests of the field.

In the production and evaluation of impact, there is a need to account for the ongoing competition for legitimacy and power that occurs in a hybrid space which contains the logics and resources of different parent fields. This article seeks to reframe research evaluation as occurring at the intersection of more established fields of power. To do this, it is necessary to examine multiple types of capital and multiple field logics simultaneously. Building on the sociological work of Bourdieu (1993), Medvetz (2012b) and Hauck (2017), Table 2 sets out the symbolic forms of power and prestige that are made available by different parent fields related to impact. Medvetz (2012b) offers a description of four relevant fields that come into play for think tanks; knowledge production, politics, media and business, and Hauck (2017) gives a description of potential results of attaining these types of capital. In this article, these elements are conceived not as features of a specific type of institution (i.e. think tanks) as in Medvetz (2012a), but as an expression of the ongoing endeavour of researchers to gain and maintain legitimacy.

[TABLE 2 ABOUT HERE]

 In this conceptualisation, research impact occurs at the intersection of various fields. Specifically, effective impact involves various combinations of capital from the scholarly field, the field of politics, the field of application, the media field and the economic field, which provide credibility, authority, utility, visibility and weight, respectively. For example, the field of application relates to impact in the form of processes and practices that shift or dominate the way things are done. This type of capital can be harnessed through language and skills that influence practitioners or (re)define procedures and actions. For instance, successful journal articles or schools of thought in health research can gain dominance by specifying how ideas ought to be applied to real world instances, which then may be translated in clinical guidelines or procedural manuals. The field of application, therefore, makes available a specific type of power. This in turn, offers status and reputation around utility, which can function as a type of legitimacy. This framework thus permits an understanding of impactful research as occurring within a hybrid space which involves capital from multiple arenas.

**Effective impact as the combination of symbolic power from different fields**

Researchers are now encouraged or expected to create change in different fields, using their existing forms of power and prestige to create impact, and conversely, creating impact with a view to bolstering their legitimacy and power. Although prestige and power in research have traditionally centred around citations within the science system, wider societal impact is playing an increasingly prominent role in gaining status (Williams & Grant 2018). Thus, to demonstrate impact, in addition to scholarly excellence, research actors also need to be competent in political expression that shapes policy, proficient in pragmatic expression to get things done in specific ways, capable of broadcasting a message widely or able to create economic value. The language, logic and resources of each of these fields can be borrowed and held in balance in the performance of impact, in order to demonstrate worth and gain legitimacy. For the range of actors who must demonstrate wider impact beyond the academy, the space between parent fields provides links and connections that might otherwise not exist (Eyal 2011). For example, combining academic abilities with media skills (e.g. wide online dissemination) and proficiency in political expression (e.g. engaging policymakers) can simultaneously garner credibility, visibility and authority. Combinations of capital from different fields therefore become paramount in effective impact.

To be impactful, research actors draw on expertise, ideas and skills from fields outside of the scholarly field (e.g. Hochmüller & Müller 2014), while remaining credible and authoritative within academia. Being impactful involves negotiation of capital between academia and one of the other four fields, and requires simultaneous competence within the science system and outside of it. There is no uniform approach, and the weightings and combinations of different types of capital may vary for different organisations, research evaluation systems, and national research contexts. It is a constant process of affiliation and disaffiliation (Medvetz 2012b), for example, if a research centre goes too far towards the media field of power (i.e. focused on wide dissemination), it may gain visibility but lose its claim to rigour and independence of the scholarly field, which is crucial for credibility. Thus, actors may seek to maintain a balance between different fields; for example, by coupling scholarly and media capital to demonstrate impact outside of the economic field of power. By doing so, actors can attain a new form of power, derived from impact itself, which in turn can allow impactful academics or institutions to disproportionately set research agendas. That is, actors that can successfully combine various forms of capital from different fields can translate this cumulative power into research funds, promotions and other opportunities to influence the direction of science.

Not all research actors are invested in the same standards around impact. Some are able to ‘play the game’ easily, anticipating or rapidly adapting to new developments in assessments and rankings and easily accommodating new forms of evaluation (Paradeise & Thoenig 2013). Others must implement sometimes radical strategies to gain legitimacy through the external recognition of impact, while others instead deemphasise the importance of external assessments in favour of investments in local reputation or their specific institutional mission. However, within the UK and other countries or systems that seek to explicitly measure and incentivise impact, it is increasingly difficult to escape the pressure to demonstrate wider benefit to society. In addition, not all disciplines or areas of expertise require proficiency in all parent fields to demonstrate value as impactful. In some (sub)disciplines, for example theoretical physics, knowledge is produced and evaluated according to its own academic logic. In these cases, evaluation may be more straightforward, given relative agreement on importance of different evaluation criteria (in this case, those of the scholarly field, such as citations). However, even in these cases, the impact imperative may add additional complicating evaluation criteria. For example, although theoretical physics operates within its own logic, divorced from application to policy or practice, a physics department in the UK, as a whole, must submit a certain number of impact case studies linked to the number of academics they employ, thereby requiring an orientation to fields of power beyond academia.[[2]](#footnote-2) In interdisciplinary areas of expertise, such as international development, terrorism studies or European studies, conducting research evaluations, and more fundamentally, understanding the value of such research and to whom is even more difficult. For example, an international development research centre at a university exists in a much less regulated space than a theoretical physics group, and accordingly is it not always clear whether it is more important to be scholarly, to reach a wide audience, to influence change or to make work attractive to funders. Thus, it is important for this type of organisation to gain legitimacy through the external recognition in multiple fields other than academia. In these cases, the demonstration of impact becomes an extension of this process of gaining and maintaining capital from a range of fields of power to maintain legitimacy.

**The effects of evaluation on behaviour**

The emergence of new practices of knowledge creation make possible new kinds of capital. To survive in a context of scarcity of resources and plurality of actors in the knowledge production arena, research actors have adjusted their priorities to include the performance of impact. Investments in new technologies or metrics, specific research impact staff and more diligent marketing of ideas outside of academia have become more common. Increasingly globalised information and communication technologies also support new areas of engagements outside of the academy, creating new opportunities for the production and dissemination of knowledge. Thus, as the landscape of knowledge production develops, there have been shifts in the creation, dissemination and evaluation of outputs. Many research actors now seek to engage wider audiences by producing specialist blogs or blog posts, open access working papers, policy briefs or interactive online tools or visualisations. In turn, rapid developments in digital academic communication make available new forms of data that can be applied as indicators of impact or engagement (Holmberg 2015). For example, the alternative metrics community is focused on emerging digital tools designed to gauge the impact of research on diverse audiences by measuring ‘mentions’ (e.g. policy documents, blogs, news, Wikipedia), ‘shares’ (e.g. Twitter, Facebook), and 'bookmarks' (e.g. Mendeley, ResearchGate) (Priem et al. 2010; Roemer & Borchardt 2012). Growing avenues for dissemination and increasing use of online or alternative measures in the practices of production and evaluation potentially make new types of capital available. For example, on the research production side, it may become possible for a researcher to gain or strengthen legitimacy in different fields by demonstrating a large social media following, or to bolster credentials by combining citations and mentions in policy documents on a CV or in a performance evaluation. On the evaluation side, funders, publishers and research institutions may also be able to gain legitimacy through demonstrating economic value and policy-orientation by reporting download counts of external reports, policy documents and other non-academic materials. The factors that can provide legitimacy thus continue to develop, potentially ahead of formal evaluation systems.

The various fields of power thus have important effects on organisations, individuals and knowledge. They contain socialised tendencies and outlooks that shape behaviour and thinking. Actors embody the cognitive structures arising from objective conditions, such as evaluation or funding mechanisms, and in turn, the habitus structures perceptions and mentalities as those actors come to internalise the objective constraints of their environment. That is, fields shape research cultures, which in turn shape the knowledge that is produced. Thus, the logic of impact becomes reproduced in the minds of individual actors, and in their actions. In this context, policymakers have been eager to use evaluation practices to encourage certain activities. However, this type of steering can have unintended effects on scientific behaviours that may not themselves be desirable in terms of the overall academic knowledge creation. Investigations of the influence of policy interventions on knowledge production has shown that researchers adapt their behaviour in response to managerial governance strategies and research evaluation systems (Gläser & Laudel, 2007). Thus, the configuration of research evaluation systems (e.g. frequency, effect on funding allocation) and the relevant contextual influences (e.g. diversity of funders, extent of organisational autonomy) can lead to various effects, such as shifts in organisational and field classifications, contests for reputation or intellectual vibrancy and diversity (Whitley, 2007).

Moreover, in the case of research impact, there is a double loop effect, whereby scientific researchers can accrue capital in non-scientific domains, which can be translated into more powerful or prestigious opportunities or positions, and, in turn, strengthen capital in the academic field. For example, if a researcher attracts a lot of media attention, they may then parlay this into grant success or a promotion in academia, through which they can more effectively set the terms of knowledge production. As such, by affording power around impact, evaluation can affect the underlying scientific process (towards the kinds of activities more commonly undertaken by impactful academics). Inadvertent steering is therefore not a trivial issue because the creation of capital in other domains can be leveraged in the academic field, which has an overall steering effect on the direction of science. In other words, those actors who are deemed to be appropriately impactful can then use that power to shape science.

The rhetoric of science policy bodies is often that impact must come after excellence. However, in effect, both the steering of research and the agency of researchers operates before, during and after research, and impact comes into play at these this different stages. Accordingly, it is far more complex than this simplistic rhetoric suggests. This also has implications around the use of evaluation measures, as scientific steering power is allocated on the basis of fairly poor impact measures, which reduces the ability of science policy bodies to shape science in beneficial ways. It is therefore not just the evaluation that is lost to private interests, but the allocation of scientific power and thus steering power. Thus, care needs to be taken to ensure that new evaluation practices do not lead to steering effects that reshape knowledge production in undesirable or unintended ways. Attention to intended and unintended effects can potentially guide the development of measures of research impact that are underpinned by specific societal goals or values. This can ensure that proposed measures contribute to stimulating desirable impacts and research processes. By considering the underlying meaning of impact assessment measures, this article offers an alternative perspective to the primary focus simply on the utility of these measures. Accordingly, it suggests that evaluators must understand the relevant fields, and the types of capital they make available, to determine the worth of the research to different groups.

**The characteristics of legitimacy and power in different fields**

Research actors are thus able to accrue legitimacy by drawing on the symbolic resources of diverse fields for different purposes. Table 3 sets out the framework developed in this article by linking fields to specific research practices. Penfield et al (2014) set out some key elements of the research process: research outputs; communications and interactions with stakeholders and the wider public; research developments based on stakeholder feedback; outcomes; and impacts. By highlighting how impact works as a set of practices at the design, production and evaluation stages, it is possible to identify potential steering effects. At the research design stage, which involves the intended aim or value (i.e. desired impact), the primary concern is around the research agenda. Here, steering relates to the intellectual concerns that shape the timeframe, complexity, value-proposition, and extent to which work is embedded in formal disciplines (Williams 2019). At the production stage (e.g. data collection, writing up, dissemination), which involves type of outputs, forms of communication and mechanisms for feedback, the main concerns relate to investments in the form of human and financial capital. At this stage, steering relates to allocations of time, energy and resources. For example, this might involve developing online and offline networks with policymakers and relevant communities for fieldwork or knowledge exchange, and providing resources for conferences, policy briefs and workshops. Finally, at the evaluation stage, which involves outcome measures and impact assessments, the main concern is around the measures themselves. Here, steering relates to interpreting the value that is ascribed by evaluations. For example, this might take the form of monitoring or gaming of citation and alternative metrics. Each of these potential steering effects relate back to the capital and affordance provided by a particular field. For example, in demonstrating scholarly impact, a research actor might enact an academic research agenda (e.g. long term, rigorous, couched as inherently valuable and/or discipline-based), invest in publishing in peer-reviewed journals and academic conferences, and demonstrate a concern with citations and other scholarly metrics. Likewise, in demonstrating impact in the field of application, a research actor might enact a pragmatic research agenda (e.g. short term, more accessible, economically valuable, and less discipline-based), invest in producing policy briefs and end-user workshops, and demonstrate a concern with the uptake of ideas in grey-literature or positive feedback from practitioners. Importantly, it is typically no longer sufficient to focus on single type of knowledge production without engaging other fields of power; with the increase of the impact agenda, legitimacy is more and more gained through various combinations of these elements.

This table thus shows methods of gaining legitimacy and modes of steering, according to each parent field. For example, at an organisational level, research institutions have historically sought credibility from the scholarly field by mandating or incentivising the production of journal articles and conference presentations informed by an academic research agenda. Where relevant, this primary goal has often been combined with engaging traditional media outlets to gain visibility from the media field or delivering training or external reports to change how things are done in practice and thus gain a reputation based on utility from the field of application. These supplementary goals sometimes necessitate adjustments to the research agenda, based on disciplinary, epistemic, temporal or commercial concerns (Williams, 2019). In turn, these institutions typically use a range of established tools to measure the importance and influence of the work they produce. For example, they have often focused on expert peer review to assess the quality of journal articles, analysis of news articles to assess shifts in public debate via the media, and quantitative metrics such as patent or clinical citations to assess influence on practice. This ability to incentivise, measure and communicate impact is thus now a critical requirement for many research actors, which can feed back into the attainment of legitimacy.

[TABLE 3 ABOUT HERE]

The crucial task is therefore to determine the underlying indicators of worth in each parent field. Using the framework above as a guide, Table 4 shows the theoretical foundations of credibility, authority, utility, visibility and weight. This can provide guidance for thinking about what is missing from existing impact assessments. In addition, if impact is going to be measured, it can provide guidance for how each of the five types of capital can be measured effectively. Crucially, though, it allows deeper consideration of the implications of trying to measure these different forms of capital. It also provides an new way of observing and understanding changing formations of capital, whereby new tools and practices of impact assessment might make available new types of legitimacy and, in conversely, where new forms of legitimacy might lead to the development of new evaluation methods or practices. Research and policy in this area requires a theoretical framework, rather than simply a utilitarian focus on the risks or benefits of such tools.

[TABLE 4 ABOUT HERE]

**The implications of a capital-based evaluation framework**

Despite the rise of global interest in research impact, and in related technologies, studies have yet to adequately examine how these features take on meaning in practice. This article has shown that the assessment of research impact occurs at the interaction of various fields of power, which confer different forms of legitimacy. The production and evaluation of research must be considered in the context of this space between fields. The approach presented in this article diverges from sociological approaches that explain intellectual labour by way of disciplinary elements or personal tendencies. It also diverges from research evaluation approaches that tend to focus on the usefulness of measures and systems, rather than underlying elements of worth. Instead, this framework permits exploration of how specific evaluative structures relate to the design, production and evaluation of research, and ultimately, the creation of knowledge. In analysing impact, local institutional processes and practices are still important despite the emergence of global standards aimed at defining impact at a national level. However, the continued development of the impact agenda does substantially reconfigure patterns of value and worth.

By providing a link between the research evaluation and sociological literature, this framework allows us to be reflexive about what is valued in research. The approach permits research actors and evaluators to consider the weighting and relative importance of each parent field. For example, research actors seeking to gain visibility and shift public debate might invest in, and implement evaluation incentives for, the production of accessible outputs that can be widely shared via established news outlets or Twitter (Table 3). Relatedly, it can direct attention to the language and actions that research actors can employ to gain legitimacy, for example, through emphasising scholarly credentials or highlighting policy relevance. In addition, the approach can be used analytically to build up a picture of the fields of power that are involved in gaining legitimacy. For example, the underlying values of worth for each field (Table 4) could be used as the basis of a coding structure for analysis of narrative impact case studies, potentially combined with insights from bibliometrics and other metrics. Similarly, the approach permits theoretical understanding of data that is gained from research impact assessments. For example, formal indicators of worth and value in an organisation or context (e.g. document analysis of promotions materials and incentive schemes) can be understood in relation to the informal indicators of worth (e.g. ethnography of research cultures) and the actual production of knowledge (e.g. bibliometrics and alternative metrics). It thus provides a way to bring together a range of data types in an analytically meaningful way. Crucially, as well as the analysis of outcomes and impact, the framework can guide analysis of the effects of assessing impact in terms of research agenda, concern with measures, and investment. In turn, such an approach can be used by evaluators or science policymakers to ensure that the development and use of evaluation measures are more closely aligned with what generates legitimacy in the various fields of power, which is necessary to facilitate the accumulation of capital across fields according to public values and aims.

Clear articulation of underlying patterns of value is particularly important as knowledge production continues to shape and be shaped by policy imperatives. Metrics and measurements create power relations that are not neutral for the scientific system. For better or worse, elaborate research evaluation systems are now a feature of intellectual life, and a reflexive approach is needed to ensure that the measurement of impact encourages constructive outcomes while avoiding unintended consequences and biases. New developments in knowledge production, dissemination and evaluation, including a growing number of knowledge producers and increasing interest in new technologies reflect changing loci and sources of power. In this context, understanding the taken-for-granted value judgments is more important than ever. Key issues will arise, for example, around the dominance of bibliometrics, subscription-only academic databases and paywalled journals, and around the development of new metrics, renewal of the open access mission, and more systematic engagement with audiences beyond the academy. Each of these issues will involve various standards, made relevant for research actors because external stakeholders act on them (e.g. direct funding allocation, and indirect consequences of ranking systems such as hiring decisions and enrolments). As a result, both actual and symbolic resources are increasingly dependent on an externally demarcated set of judgments and meanings around impact. Research actors are engaged in contexts that involve multiple markers of legitimacy, of which impact is just one. How these actors find solutions, implement tactics and position themselves towards these markers, and with what consequences for the range of stakeholders they serve, is crucial knowledge for research organisations and systems, as well as society at large.

**Conclusion**

By attending to the attribution and creation of value according to logics of different fields of power, this article provides a new theoretical framework for understanding research impact and its assessment. The approach avoids the dominant pragmatic bias that is inherent in much of research evaluation literature and practice by reframing impact as involving combinations of capital via a range of extra-academic fields, and exploring the effects of impact assessment on the practice of science. Forms of legitimacy, prestige and power are provided by different fields, and impact requires various combinations of symbolic resources from these different spheres. Thus, effective impact increasingly involves not only scholarly or economic outcomes, but also the ability to affect (and assess) change via policy, practice or the media. Increasingly, research actors maintain hybrid intellectual and research practices to satisfy the demands of legitimacy across these various fields of power. This has implications around specific types of criteria that are used in evaluation, and the cultural signifiers that indicate what is valuable research. This might result in greater technological developments (e.g. greater ability to harvest mentions in online policy documents), changes in incentive or reward structures (e.g. incentivising outputs that speak to both policy and media audiences), or more strategic production, measurement and interpretation (e.g. introducing policy briefs and summaries to gain authority via the field of politics). It could also lead to reconfigurations of research agendas, forms of investment and specific assessments measures and methods that are aligned with what impact actually is. As research impact assessment develops and changes, it will be important to understand and harness the underlying symbolic resources made available by various fields of power.

The framework presented here could be developed further to facilitate a detailed understanding of emerging cultures of evaluation around research impact and the structures that underlie them. That is, there is a need for analysis that can account for formal evaluative structures (e.g. local or national incentives and assessments), and how they relate to informal evaluative cultures (e.g. the tacit way of doing things in a given organisation, system or country) and the actual production of knowledge (e.g. the research and outputs that are created, shared and measured). Crucially, empirical investigation of potential steering effects is a crucial task for future research, which can then inform the design and implementation of research evaluation methods to facilitate constructive outcomes without introducing new biases into the system. These avenues can provide rich insight into the various ways in which research actors might enact and situate their work, and variations in strategies and investments, without relying on a limited set of values and models (e.g. bibliometrics or economic measures). Overall, this approach can illustrate the power relations that are produced by various measures, and encourage theoretically-informed ways of understanding and measuring impact.

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*Table 1. Examples of established and emerging measures of research impact*

|  |  |  |
| --- | --- | --- |
| **Broad type** | **Credibility** | **Measures** |
| Academic | More establishedLess established | bibliometricscitationsresearch grantsresearch incomePhD completionsgoogle scholar citationsdownloadsconference presentationsuse counts for specialist blogsdata/text mining of academic outputsmentions in syllabi, Wikipedia and academic sources abstract, PDF, HTML views of books and journal articlesexport saves and readers in Mendeley, Endnote |
| External | More establishedLess established | expert judgementcase studiessurveysinterviewsportfolio analysisquestionnairesclinical citationspatent citationsnews citationsperformance/exhibition metricsevents/stakeholder attendancedocument countsnews/magazine citationscommercial revenueintellectual property econometrics and statisticssalescontent analysissocial media shares, postsdata/text mining of outputs, briefs, reports, grey literature and policy documentsdownloads, export saves and readers of briefs, working papers, booksmentions in Wikipedia, Facebook public pages, cultural sourcesHTML views of data visualisations and blogs abstract, PDF, HTML views of outputs, briefs, reportsknowledge exchange/stakeholder events via e-calendarsaggregate measures in altmetric.com, plum analyticsdownloads, export saves, readers of press briefingsabstract, PDF, HTML views of consulting/contracted reportsdownload counts, export saves, readers of consulting/contracted reports |

*Table 2. Fields, capitals and affordances involved in demonstrating research impact*

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Impact** | **Means to gain symbolic power** | **Affordance** |
| Scholarly | Advancing knowledge | Proficiency in academic language and conventions | Credibility |
| Politics | Changing policy and governance | Language and skills to influence political, policy and governance actors | Authority |
| Application | Changing processes and practices | Language and skills to influence practitioners, processes and practices | Utility |
| Media | Changing public debate and perception | Skills and technology to harness publicity and media coverage | Visibility |
| Economic | Economic changes | Proficiency in gaining and generating scarce resources | Weight |

*Table 3. Components of research production and evaluation by stage and potential steering effects*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Field** | **Affordance** | **Timeline** | **Element** | **Components** | **Mode of steering** |
| Scholarly | Credibility | Design | Aim | Produce research that advances knowledge | Concern with research agenda |
| Production | Outputs | Conference presentations and journal articles, specialist blogs | Concern with investment  |
| Communication | Invited talks, workshops, seminars, dissemination via social media and networks (e.g. Twitter, Mendeley) | Concern with investment |
| Feedback mechanisms | Collegial input, peer review feedback, feedback on academic blogs, social networks | Concern with investment |
| Evaluation | Outcome measures | Citations, publication data from academic databases (e.g. Scopus, WoS) and google scholar, mentions in academic sources and specialist blogs  | Concern with measures |
| Impact assessment | Literature review, citation analysis, citation networks, science maps | Concern with measures |
| Politics | Authority | Design | Aim | Produce research that facilitates public debate and perception in policy  | Concern with research agenda |
| Production | Outputs | Policy briefs and presentations, working papers, policy briefs | Concern with investment  |
| Communication | Policy talks, think tank workshops, dissemination via social networks and blogs | Concern with investment |
| Feedback mechanisms | Collegial input, feedback from stakeholders, online feedback | Concern with investment |
| Evaluation | Outcome measures | Policymaker engagement and stakeholder events, document counts, blog usage, downloads, mentions in grey-literature  | Concern with measures |
| Impact assessment | Document analysis, policy analysis, impact case studies, network analysis, text mining | Concern with measures |
| Application | Utility | Design | Desired impact | Produce research that facilitates changes in practice | Concern with research agenda |
| Production | Outputs | Datasets, presentations, reports, working papers | Concern with investment  |
| Communication | Training courses, practical workshops, dissemination via social networks, online forums and courses  | Concern with investment |
| Feedback mechanisms | Collegial input, feedback from practitioners, stakeholders, online feedback | Concern with investment |
| Evaluation | Outcome measures | Practitioner engagement and stakeholder events, clinical practice citations, patent citations, grey-literature citations, mentions in cultural sources and Wikipedia, aggregate ‘alternative metrics’ | Concern with measures |
| Impact assessment | Document analysis, interview analysis, impact case studies, network analysis, text mining | Concern with measures |
| Media | Visibility | Design | Aim | Produce research that facilitates changes in public debate and perception | Concern with research agenda |
| Production | Outputs | Presentations, op eds, magazine/newsletter articles, blogs, data visualisations and blogs | Concern with investment  |
| Communication | Blogs, press releases, dissemination via social networks | Concern with investment |
| Feedback mechanisms | Collegial input, feedback from readers, communications staff, online feedback | Concern with investment |
| Evaluation | Outcome measures | News clippings, downloads of press briefings, news citations, social media | Concern with measures |
| Impact assessment | Media analysis, network analysis, text mining | Concern with measures |
| Economic | Weight | Design | Aim | Produce research that facilitates economic changes | Concern with research agenda |
| Production | Outputs | Consultant/contracted reports, presentations, datasets, software, online products, apps | Concern with investment  |
| Communications  | Consulting, training courses, briefings for clients, online dissemination | Concern with investment |
| Feedback mechanisms | Collegial input, feedback from clients, management, online feedback | Concern with investment |
| Evaluation | Outcome measures | Econometrics and statistics, revenue, intellectual property and sales, download counts of reports, usage counts for datasets, software, and products, administrative data, aggregate ‘alternative metrics’ | Concern with measures |
| Impact assessment | Return on investment/economic analysis | Concern with measures |

*Table 4. Examples of established and emerging measures of research impact by field*

|  |  |  |  |
| --- | --- | --- | --- |
| Field | Impact | Underlying values of worth  | Affordance  |
| Academic | Advancing knowledge | Positive peer judgment or prestige, demonstration of cognitive independence, rigor, expertise | Credibility |
| Politics | Changing policy and governance | Inclusion of idea on policy agenda, provision of useful policy recommendations, improved policy outcomes, attention/positive feedback from policymakers | Authority |
| Application  | Changing processes and practices | Provision of recommendations and guidance, enable improved practices or processes, improved implementation of ideas or policies, positive feedback from practitioners | Utility |
| Media | Changing public debate and perception | Accessibility of work, broader reach of outputs to public, greater attention to a topic or idea | Visibility |
| Economic | Economic changes | Value to colleagues and clients, contribution to economic system  | Weight |

1. Emerging digital tools (e.g. Altmetrics.com or Plum Analytics) are also being designed to try to measure online engagement and impact beyond academic circles (Franzen 2015; Paradeise & Filliatreau 2016), but which have largely lacked credibility (Andrews 2018). [↑](#footnote-ref-1)
2. A minimum of two impact case studies are required, with those over 20 Full Time Employees (FTEs) requiring an additional case study per 15 FTE for the first 110 FTE submitted, then decreasing to one per 50 FTE. [↑](#footnote-ref-2)