The IMPACT of THE SOCIAL SCIENCES

HOW ACADEMICS AND THEIR RESEARCH MAKE A DIFFERENCE

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Preface

There is an interesting asymmetry between the huge volume of literature on the mission and core practices of the individual social science disciplines and the very restricted amount of serious discussion of the social sciences taken as a whole. For each subject like economics, sociology, social psychology or political science, there are swathes of inward-looking books, papers, commentaries and reflections, setting out radically different views and disputing fiercely over future directions, subject priorities, methods issues and rival conceptions of the discipline. When we first began this research in 2009 we naively expected that what was true of the component disciplines must also be true of the discipline group. Yet our searches for any equivalent massing of views and approaches at this broader level yielded only a smattering of gold-dust (extensively referenced in the pages to follow), after which our searches quickly petered out in subject-specific discussions of little wider relevance or in silted-up backwaters of the history of academia or methods development.

So in the end we have written a far larger and more ambitious book than we originally anticipated. In some small part this has been to compensate for the missing contemporary literature on the broader role and mission of the discipline group and its place in the development of contemporary human societies. But far more extensively it reflects the extraordinary value of the 'impact' lens as a way of capturing and addressing some common problems and current changes across the social sciences as a whole. When we ask why social science research and insights have been scantily adopted in business, and have been less influential than one might expect in government and civil society; and why the public prestige and government funding of the social sciences lags so far behind that of the 'physical' sciences – these questions automatically point to and prompt a social science solidarity. They draw on a commonality of experience, and awaken awareness of some foundational affinities that the daily academic practice of each discipline tends to fragment and sublimate. There is a fundamental similarity in how social science disciplines are placed within the fabric of our modern, globalizing civilization, one that is thrown into sharp focus by questions about improving impact.

Every social science focuses on constantly shifting human behaviours; conscious that human beings have an innate and un-erodible capacity to change what we do in response to being told why we act as we do, or how we are expected to act in future. No social science produces immutable laws that once established last unchanged. And despite the apparatus of proofs and lemmas found in some mathematicized sub-disciplines, no social science propositions can be proven logically – without depending on a usually extensive and always contestable repertoire of assumptions

and 'primitives' (such as the concept of what a 'rational actor' will or must do). All social science generalizations are inherently probabilistic, none are determinate, and all depend on large and baggy *ceteris paribus* clauses. Every social science must handle an inescapable tension between knowledge advanced by the reductionist research tactic of focusing down on simple processes while 'controlling' for more and more factors; and the recognition that all social processes operate in complex, multi-causal environments, where hundreds or thousands of influences flux and interact with each other to shape any given social or behavioural outcome, and where the same outcome can eventuate through multiple diverse causal pathways.

As a result of these features, every social science has a research process that is cumulative, largely missing the 'breakthrough' discoveries or 'lone genius' insights on which public images of the physical sciences and technological disciplines still focus. Only a tiny percentage of social science research results in patents (for which embedding in physical products remains essential), and the vast bulk of university social scientific achievements are solely new (or partly new) ideas. They cannot be copyrighted, protected by intellectual property rights nor used to build scaleable products or comparative advantage for firms in the way that physical technologies often may. And despite many social scientists lusting after the outward trappings of 'normal science' practices, all social science disciplines still operate in ways that are a long way off what Randal Collins (1994) calls the 'high consensus, rapid advance' model that has served the physical sciences so well since the mid-nineteenth century. Asking about the ways in which social science subjects resonate (or not) with business, government, civil society or the media, unfailingly throws these inherently shared features across the discipline group into a tightly focused spotlight.

Impact as a focus also addresses some critically important aspects of contemporary change in the social sciences. For any societal research to be successfully applied in public or organizational decisions it must be timely, produced speedily, capturing the salient features of a situation and behaviours that may shift quickly in response to new factors, or interaction with previously separate phenomena. All applied and impactful academic knowledge must also be 'translated' from single-discipline silos; 'bridged' and integrated with the insights of other disciplines in the social sciences or beyond in the applied and human-focused physical sciences; and assimilated into a joined-up picture so as to adequately encompass real world situations. Research advances and insights must also be communicated or transferred to non-academic people and organizations, and their lessons mediated, deliberated and drawn out in useable ways.

In the modern world the transformations of information systems and now scholarship itself via digital changes condense and accelerate many of these necessities, creating a vastly extended set of interfaces between academia and business, government and civil society; allowing the direct and open access publication and broadcasting of academic research and ideas without the intermediation of conventional publishing or media systems; and greatly speeding up the potential tempo of knowledge production and transfer. Again the impacts agenda speaks directly to these potentially common, civilization-wide changes that now occupy a central place in the evolution of modern academia.

For these reasons we make no apology for the resolutely 'broad-front' focus of this book on the social sciences as a whole, and our complete refusal to discuss in

particular detail any component subject within the discipline group. We recognize that thinking at this scale is not familiar or easy for most social scientists. But we urge readers to make the intellectual leap involved, to scale up their frame of reference, and to look wider than has become customary in universities in our specialized age. The social sciences have a critical role to play in the development of human civilization, but it will not be achieved in fragments or by focusing down on bit-part roles or narrowly technical scraps of argumentation. The post-war wave of research specialization has yielded enormous benefits and advances, so that all the social sciences of today are almost unrecognizably further developed than they were in the 1930s. Yet the dialectic of intellectual development has now swung emphatically towards an open social science – one that is far more inter-disciplinary, far more integrated with many applied physical sciences, and far more democratically accessible to and directly interacting with citizens and organizations in civil society.

Of course, a necessary defect of working on a big canvass is that key details may be brushed over, and no small group of authors can have mastery of the whole field. So we warmly encourage readers to update us, and to contest, critique, extend or comment on the book's analysis in any form that seems best.

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1 The social sciences in modern research

> Thou shalt not sit With statisticians nor commit A social science.
>
> *W.H. Auden*[1]

> [N]o public policy can be developed, no market interaction can occur, and no statement in the public sphere can be made, that does not refer explicitly or implicitly to the findings and concepts of the social and human sciences.
>
> *Björn Wittrock*[2]

We live now in a world without frontiers to the unknown, one intensively-investigated planet with a pooling civilization, converging cultures, a single mode of production, and a fragile but enduring peace between states (if one still marred by inherently temporary imperial adventures, civil wars, ethnic divisions, dictatorial excesses, and governance collapses). Human societies also operate within a single global ecosystem, from whose patterns of development there is (and can be) no escape. Perhaps the single best hope for the survival and flourishing of humanity lies in the development of our knowledge – about 'natural' systems; and about the complex systems that we have ourselves built and the ways in which we behave within them. The scope of systems on Earth that are 'human-dominated' or 'human-influenced' has continuously expanded, and the scope of systems that are 'purely' natural has shrunk – to such an extent that even the climate patterns and average temperatures across the planet are now responding (fast) to human interventions in burning fossil fuels.

This is the essential context within which the social sciences have moved to an increasingly central place in our understanding of how our societies develop and interact with each other. The external impact of university research about human-dominated and human-influenced systems – on business, government, civil society, media and culture – has grown enormously in the post-war period. It is entering a

[1] Quote from the poem Under Which Lyre: A Reactionary Tract for the Times (Auden, 1946).

[2] Wittrock (2010: 207).

new phase as digital scholarship produces knowledge that is 'shorter, better, faster, free'. The social sciences play a key and more integrated role in contemporary knowledge development. Yet the processes involved in social science research influencing wider decision-making have been relatively little studied in systematic ways, and consistently under-appreciated by observers outside academia. Within universities themselves scholars in other discipline groups have also been consistently and often vocally sceptical, especially physical scientists and technologists, whose central roles in knowledge development is already universally recognized and (mostly) lauded.

This book is an attempt to redress this past neglect and to re-explain the distinctive and yet more subtle ways in which the contemporary social sciences now shape and inform human development. It is based on a three-year research study of UK social science, which on most indices and for most disciplines is ranked either second in the world (to the US), and sometimes first (BIS, 2011). In objective world terms the UK is a small island of 60 million people – but in academic terms it can yet punch above its weight, and not least in the social sciences.

Britain is also a mature advanced industrial country, with a stable (perhaps inflexible) system of governance and political process, a services-dominated economy with a vibrant civic culture and media system. These generally favourable background conditions set up very neatly some of the key problems in the funding, organization and transfer of academic knowledge into other spheres of the economy and society. While the UK is in no sense 'typical' of anywhere else in the world, it is none the less a case study with many lessons for elsewhere. Britain as a medium-sized country is large enough not to face the 'group jeopardy in world markets' problem that sustains exceptional academic and societal cooperation in the small economies of Scandinavia. At the same time it does not have the 'imperial' reach of the US's or (now) China's political systems and corporations, a scale and exceptionalism that creates distinctive problems and opportunities in the interactions between universities and external actors. Finally, Britain inherently sits within a European civilization and society (much broader than the country's recurrently disputed membership of the European Union). In Europe the practices of higher education institutions have converged rapidly over the last two decades, partly on an Anglo-American model. So although our focus is primarily on UK social science, the impacts that we chart here play out on EU, wider European and international scales. The issues we discuss are far from being only domestically focused.

We begin by defining what we count as the social sciences, and scoping out how large this field of academic endeavour is in the UK, in terms of resources and the numbers of academics and students involved. The second part concludes our scene-setting by discussing in a preliminary way how the social sciences fit into the wider analysis of 'human-dominated' and 'human-influenced' systems, and the burgeoning inter-connection of knowledge that such complex systems encourage and necessitate. If we are to understand academic research contributions it is vital that we have schemas and concepts in mind that are attuned to contemporary realities, and not defined by the entrenched mental silos of disciplines, professions and universities.

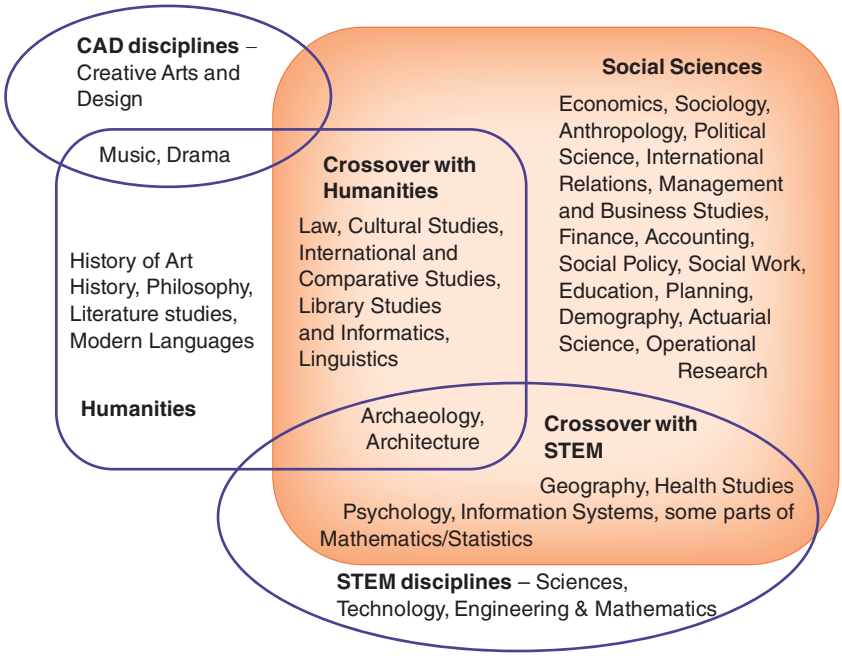
1.1 The scale and diversity of the social sciences

> For historical reasons, the social sciences are often defined as the disciplines that are in between the humanities and the natural sciences. As a result, the decision on which disciplines are parts of social sciences and which are not varies a great deal from one country to another and over time.
>
> *Françoise Caillods and Laurent Jeanpierre*[3]

> Any discipline with science in its name, isn't
>
> *Ron Abrams*

Most of the core social sciences with the strongest 'scientific' aspirations (such as sociology and economics) do not have science anywhere in their name. Even in political science there are scholars who insist on a broad 'political studies' label still, while other analysts distinguish between a wider, eclectic mass of 'political scholarship' and its vanguard area 'political science' (Dunleavy, 2010). The social science discipline group also spans across a very wide range of subjects shown in Figure 1.1, some of which make many, and others relatively few, claims to scientific practice. Many social sciences

Figure 1.1 The social sciences and how they relate to other disciplines



Source: LSE Public Policy Group.

[3] ISCC (2010: 3).

overlap extensively with the STEM (science, technology, engineering and mathematics) discipline group. Here, our focus includes strong 'social' sub-disciplines within wider disciplines such as psychology, geography, health studies, information systems and archaeology. The most qualitative modes of enquiry occur in large sub-fields that are centred and rooted in social science theories and analytic or quantitative methods, yet that also stretch into the humanities discipline group, including law, history, philosophy and modern media analysis.

What unites the disciplines grouped as social sciences in Figure 1.1? The key common features are:

- They focus on the study of contemporary human societies, economies, organizations and cultures, and their development.
- The intellectual spine of all these subjects is provided by formally set out theories, normally developing logically consistent 'models', often utilizing mathematical notation, but always with distinct rules and logics of theory development.
- They focus a great deal on systematically collecting data and information using well-worked out and rigorously tested methods, with most branches making significant use of quantitative data.
- All social sciences look for 'laws' of social development, for patterns of association and causation that make sense theoretically and can be evaluated by careful empirical investigation.
- Finally, the social sciences strongly share or seek to emulate standards of good science and of effective scholarship as developed in the physical sciences, stressing the importance of using carefully checked data, analysing data rigorously, replication of information, critical testing of evidence and critical engagement with theories and models, and a conditional acceptance of 'knowledge' only to the extent that it survives falsification.

Many sub-disciplines within the Figure 1.1 social science category harbour doubts about one or two of the features above, or contain scholars whose work stresses very informal modes of theorizing, very detailed qualitative work, or authors who emphasize narrative and persuasive writing in their scholarship. But such variation does not qualify the common features above. And wherever disciplines use quantitative data and analysis, 'digital scholarship' methods, formal theoretical statement, or social theory as their intellectual spine, their identity as social sciences seeking 'laws' of social development is especially apparent.

We shall use the core discipline group labels in Figure 1.1 repeatedly across the rest of the book:

- the STEM disciplines – the (physical) sciences (including medicine), technology, engineering and mathematics;
- the CAD disciplines – creative arts including design, art, film, drama, some forms of media, and creative writing;
- the humanities; and
- the social sciences.

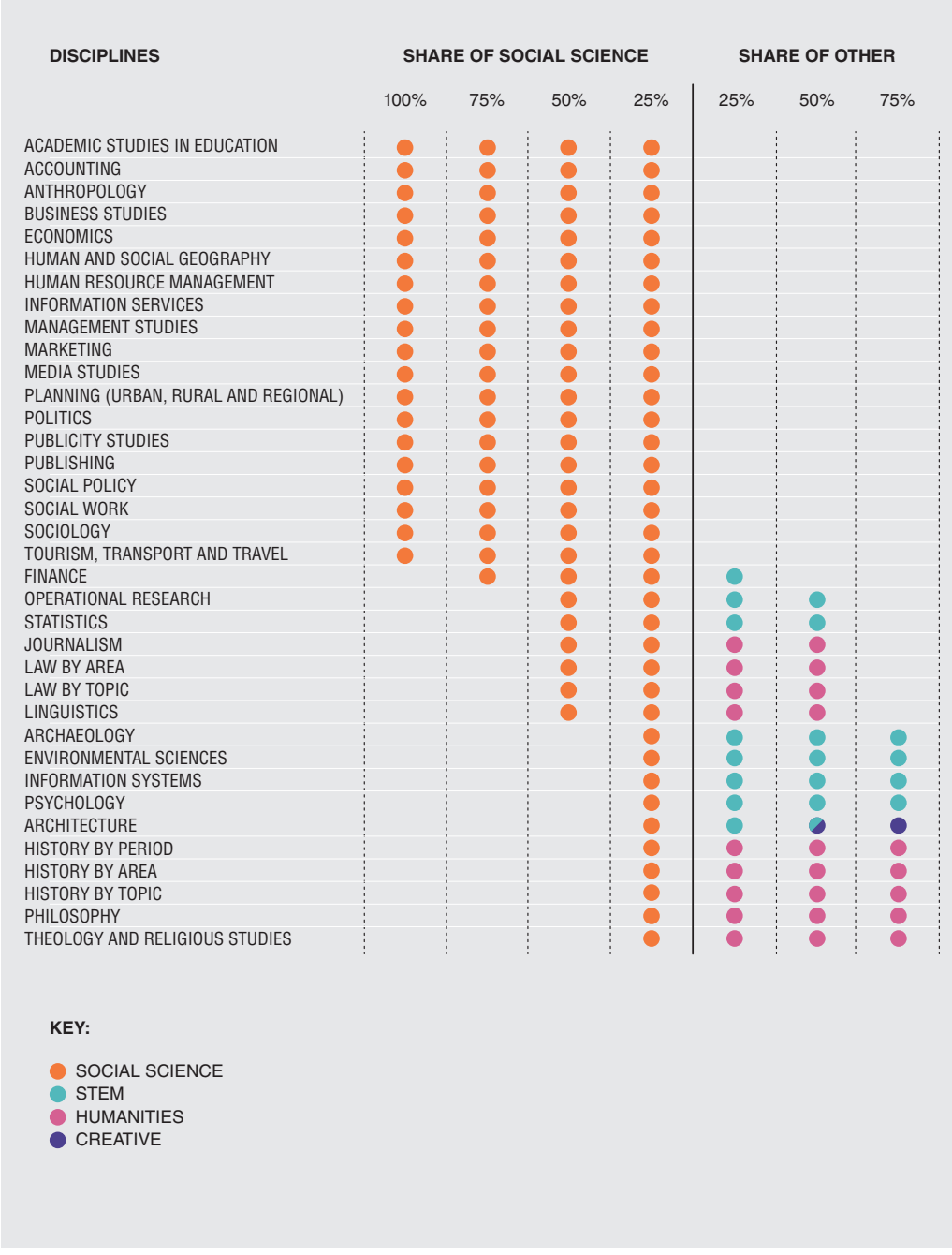
These categories seem obvious, in some sense sanctified by recurrent usage and myriad variants of 'similar discipline' groupings enshrined in university organization across the world. Most universities and governments also denominate the physical sciences more carefully. In government's case this is because it is these disciplines that receive the lion's share of funding, so a boundary has to be drawn. The longer-established physical science professional organizations (like the Royal Society in the UK) have long played an important role in determining government policies and priorities. Yet still, a report by the Science and Technology Select Committee of the House of Commons (STSC, 2012) found considerable difficulties in defining what constituted STEM subjects. The MPs pointed out the need for concerted action by government and university groups to agree on a common definition of STEM subjects. To go further in firming up any of the four discipline groups above is still surprisingly difficult because of an absence of any well-developed official or government categorizations. Systematic statistics can only be produced when such typologies are fully and stably elaborated. So the problems that we tackle here for the social sciences are not unique to them.

To characterize UK-based social science research, we set out to determine the number of staff active in research across the discipline group, the numbers of post-graduate research students, and the financial resources flowing into the university sector both from government funding and from non-academic external sources. Because building up such a well-quantified picture in a reliable way is not a straightforward undertaking, the sketch of the scale and diversity of social science research as a discipline group that we provide here is littered with 'rule of thumb' approximations or assumptions that are eminently contestable. We offer it as a preliminary picture only.

Our key source is the Higher Education Statistics Agency (HESA), which has collected data for many years from British universities on numbers of university research staff and post-graduate research students, as well as other supplementary figures, such as the monies spent on research grants from external funders to universities. Collating standardized information of this kind is supposed to be the core competence of HESA, yet it is still not possible to reach what we might call a definitive set of figures on the number of academic research staff working in social science disciplines. Whereas HESA collects data on the numbers of students studying particular social science disciplines, they do not collect equivalent data on the areas in which staff do research (and teach). They record only the subject disciplines in which staff received their highest qualification. In this format, they ask universities to provide a primary subject discipline for their researchers, and then also give a sub-discipline or a secondary discipline where applicable, in order to narrow down their field of expertise. For example, a political scientist may specialize in public policy or a researcher may have qualified in computer science, but minored in sociology. These data give a reasonably layered picture of the qualification background and expertise of researchers. But they do not provide an accurate picture of the disciplines in which researchers are currently or primarily working. Some degree of estimation is therefore inherent in our numbers.

HESA also does not collate together in any standard way a discipline group for the social sciences, opting instead for a large number of highly specific subject or single

Figure 1.2 Our definition of the 'social sciences'



Sources: Our analysis of HESA data, 2010–11. Visualization by Amy Ricketts.

Figure 1.3a The numbers of students in UK universities, by discipline groups for academic year 2010–11

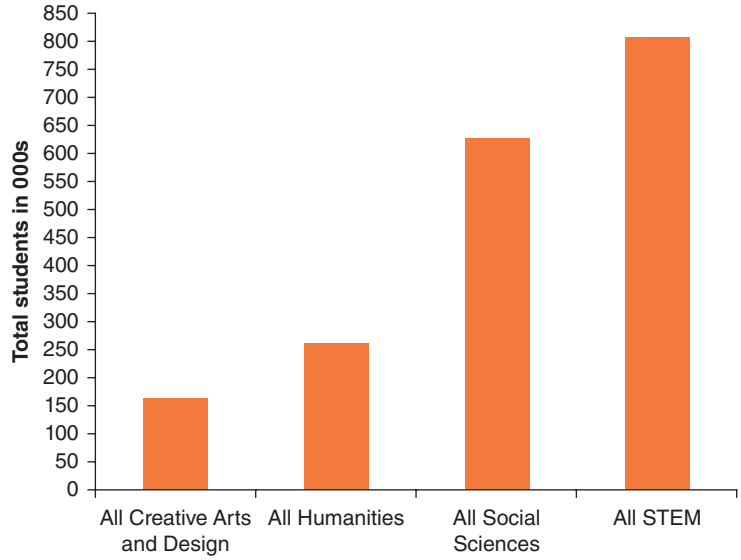
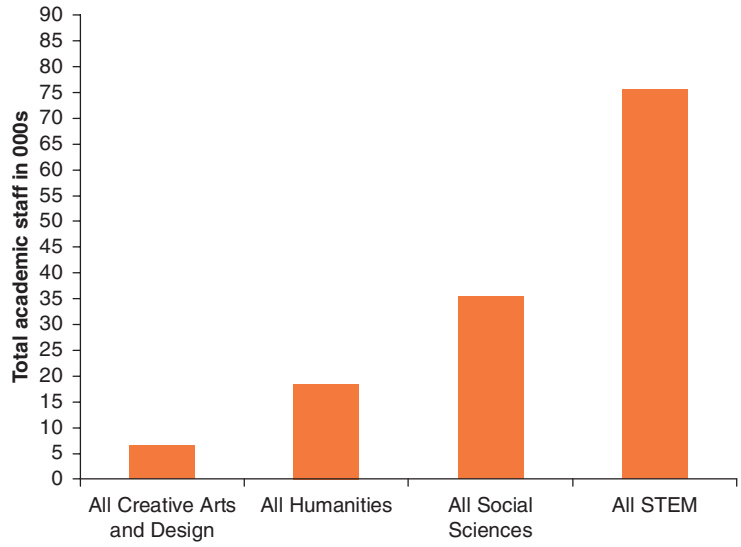


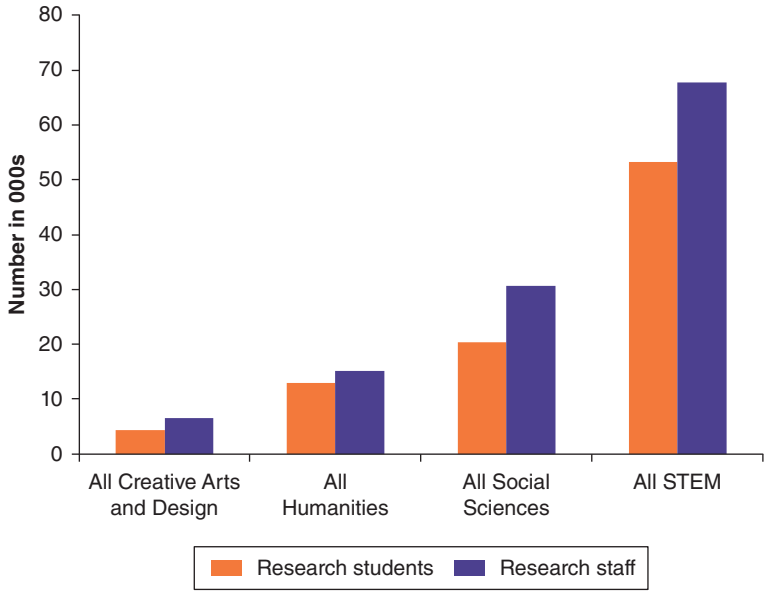
Figure 1.3b The numbers of academic staff in UK universities, by discipline groups for academic year 2010–11



Source: Our analysis of HESA data, 2010–11.

discipline labels. So we have had to decide which HESA categories are inside or outside the social science grouping. Figure 1.2 shows the 'blueprint' classification that we ended up using, after making many different checks. We distinguish 'core' social science subjects, such as sociology, economics, or anthropology, where all the staff

Figure 1.4 The numbers of research students and research staff, by discipline groups for academic year 2010–11



Source: Our analysis of HESA data, 2010–11.

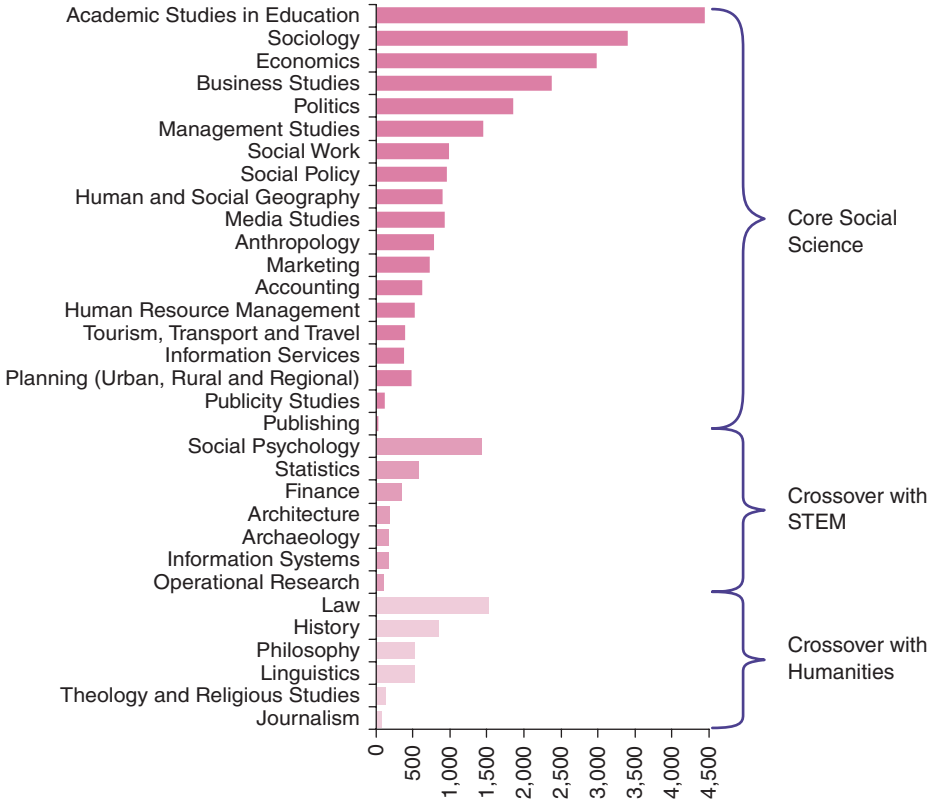
Note: We exclude taught undergraduate and Master's level students from student numbers.

involved are social scientists, and 'crossover' subjects where varying proportions of staff are social scientists. We cannot measure this last number in any fine-grained way using HESA data, and have instead opted for assigning quartiles of staff as lying within overlapping areas. This is an important limitation, which should be carefully borne in mind when interpreting all the data below.

Using this template, Figure 1.3a shows that there were just under 630,000 social science students registered in UK universities at undergraduate and postgraduate levels in 2010–11. There were approximately 35,500 academic staff involved in social science teaching, research, or a combination of both (as shown in Figure 1.3b). For comparison there were just over 800,000 students and more than 75,000 staff in STEM disciplines in UK universities, while the humanities and CAD discipline groups were far smaller. Roughly speaking, the staff:student ratio in social science was one staff member for every 19 students. This is a lower level compared to the staff:student ratio of 1:11 in STEM subjects. Comparing ratios is somewhat misleading, however, because around 35 per cent of STEM scientists work in research-only jobs and therefore have little or no contact with students, whereas for the social sciences this proportion is only 11 per cent.

Some social science staff across the university sector hold 'teaching only' positions, but in Figure 1.4 we estimate that there are around 32,500 academics in UK universities engaged in research work in social science disciplines (the bulk of those in the field). This number is broadly compatible with previous detailed estimates carried

Figure 1.5a Estimated number of social science academics doing research in UK universities, 2010–11

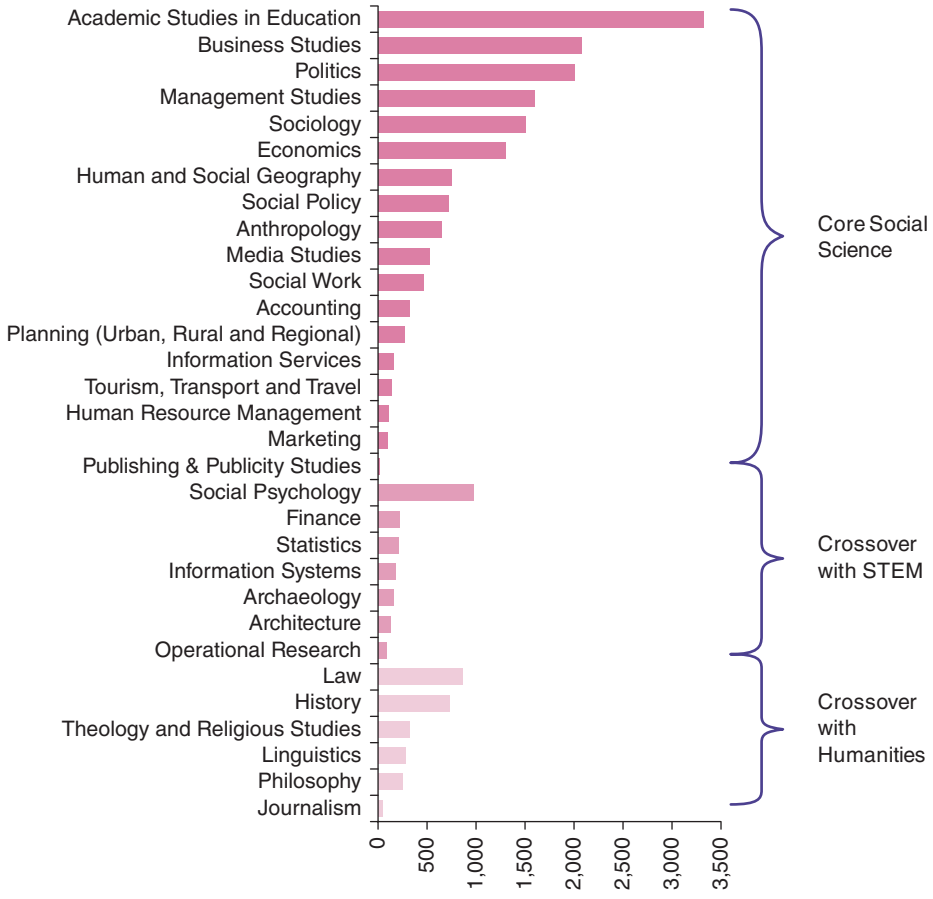


out in the last ten years by the Economic and Social Research Council (ESRC), the government funding agency for social science (ESRC, 2006).

Looking in more detail, Figure 1.5a shows the disciplinary backgrounds of research active staff, shedding light on how many researchers are working in core social sciences or the social science components of crossover social science disciplines (again using the allocations in Figure 1.2). The HESA category for 'academic studies in education', economics and sociology are top in terms of staff numbers. But there are several business-focused sub-disciplines included in the HESA categories (including business studies, management, marketing and accounting). If they were cumulated into a single 'business studies' heading they would be close to the top of the list with around 4,000 staff. In the crossover disciplines, social psychology and statistics are the largest STEM overlap disciplines, and law and history are the largest subjects in the overlap area with the humanities.

Turning to the profile of research students as shown in Figure 1.5b, both 'academic studies in education' and business studies/management studies clearly top the core disciplines table, while economics research students are less common than staff numbers might lead us to expect. In the humanities crossover area there are relatively few law research students and relatively numerous history ones. In the STEM crossover

Figure 1.5b Estimated number of social science students doing research in UK universities, 2010–11



Source: Our analysis of HESA data, 2010–11.

Note: We include research Master's and doctoral studies students.

area social psychology students are relatively numerous, but numbers elsewhere are fairly low.

A final important dimension of assessing social science research concerns the funding of research efforts across the discipline group. Of course, in Britain much of the funding flows 'automatically' into research from government via two mechanisms:

- The support of high quality research (so-called QR funding) within universities across the country, which is distributed following a government-audit exercise previously operated under the label of Research Assessment Exercise (RAE) but from 2008 called the Research Excellence Framework (REF). In 2012–13 the QR sums amounted to £1.6 billion for all UK universities.

Figure 1.6 Estimated value of research grants and contracts to UK universities in 2010–11, by type of donor and discipline area

Source of funding (in £ millions)	Creative Arts and Design	Humanities	Social Sciences	Science, Technology, Engineering, and Maths	*All Disciplines*
Quality-related (QR) research funding from HEFCE	78	135	312	1,033	*1,558*
Government research councils	14	45	138	1,428	*1,625*
Total internal government	**92**	**180**	**450**	**2,461**	***3,183***
Total as percentage (%)	**3**	**6**	**14**	**77**	**100%**
UK civil society	2	19	53	838	*912*
UK government	6	4	144	622	*776*
Government outside the UK	4	6	90	293	*393*
UK industry	3	1	47	224	275
Other sources	2	4	37	111	154
Industry outside the UK	0	0	15	122	137
Civil society outside the UK	1	3	15	106	125
Total external funding	**18**	**37**	**401**	**2,316**	**2,772**
Total as percentage (%)	**1**	**1**	**14**	**84**	**100%**
Total for all internal and external sources	***110***	***217***	***851***	***4,777***	***5,955***
Percentage of total grants and contracts	***2***	***4***	***14***	***80***	***100%***

Source: HESA Statistics, 2010–11.

Note: Data for Quality-related (QR) research funding is for 2012–13. Data for is taken from the most recent available year, 2010-11, and includes all funding from MRC, EPSRC, BBSRC, ESRC, NERC, STFC, and AHRC, plus the Royal Society, British Academy and the Royal Society of Edinburgh. See List of abbreviations for further details.

- Finance for specific research projects from government research councils for medicine, various STEM sub-groupings, the social sciences and the arts and humanities, all of which distribute grants in response to project applications that pass stringent review procedures. In 2010–11 these totalled £1.6 billion (see Figure 1.6).

It might be argued that these inflows to the university sector do not reflect concrete 'demands', since they are basically administered by academic committees and reviewers on behalf of government and the research councils involved. However, all these inflows are highly responsive to the efforts made by academics and departments to attract funding through academic success.

We estimate the breakdown of these two flows in the first two lines of the table in Figure 1.6. In the STEM subjects the research councils accounted for over a third of all

Figure 1.7 Total expenditure across simplified discipline group categories in UK universities, 2010–11

	Humanities and CAD disciplines	Social Sciences	STEM Disciplines
Total higher education expenditure	£1.53 bn	£3.35 bn	£5.53 bn
Percentage of total expenditure	14.7%	32.3%	53.1%
Disciplines included in each grouping	Humanities and language-based studies. Archaeology. Design, creative arts and performing arts.	Administrative, business and social studies. Education. Architecture and planning.	Medicine, dentistry and health. Biological, mathematical and physical sciences. Engineering and technology. Agriculture, forestry and veterinary science.

Source: HESA Finance Statistics, Table K, 2010–11. Analysis by Cambridge Econometrics.

research income. And their proportion was almost half for the humanities and CAD disciplines (which receive few funds from elsewhere). However, these 'automatic' funds accounted for only just over a quarter of funding for social sciences research. The rest of Figure 1.6 shows that a big component of the remaining funding for the social sciences comes from research directly paid for by UK government departments and agencies. A further large component comes from overseas governments, including here European Union agencies and funding programmes. STEM disciplines receive large amounts from UK civil society (chiefly foundations or charities supporting medical research). Apart from this, the social sciences funding patterns is quite similar to that for STEM subjects, albeit on a much smaller scale (less than a fifth of the large grouping). By contrast the amounts received by the humanities and CAD disciplines from funding sources other than government are very small.

We show only the second of these two flows in the first line of the table in Figure 1.6 looking at the value of research grants. In the STEM subjects the research councils accounted for over a third of all research income. And their proportion was almost half for the humanities and CAD disciplines (which receive few funds from elsewhere). However, these 'automatic' funds accounted for only just over a quarter of funding for social sciences research. The rest of Figure 1.6 shows that a big component of the remaining funding for the social sciences comes from research directly paid for by UK government departments and agencies. A further large component comes from overseas governments, including here European Union agencies and funding programmes. STEM disciplines receive large amounts from UK civil society (chiefly foundations or charities supporting medical research). Apart from this, the social sciences funding pattern is quite similar to that for STEM subjects, albeit on a much smaller scale (less than a fifth of the large grouping). By contrast the amounts received by the humanities and CAD disciplines from funding sources other than government are very small.

Figure 1.8 How spending is allocated within the main discipline groups

% of total expenditures spent on:	Humanities	Social Sciences	STEM disciplines
Academic staff costs	63.9	60.9	57.1
Other staff costs	16.9	15.3	19.1
Other operating expenses	18.3	23.0	21.1
Depreciation	0.9	0.7	2.7
Totals	100.0%	100.0%	100.0%

Source: HESA Finance Statistics, Table K, 2010–11. Analysis by Cambridge Econometrics.

Figure 1.9 The economic impacts of the spending of UK social science departments, in 2010–11

	£ billions
Value added in social science departments (direct)	2.7
Value added elsewhere in the economy (indirect)	0.5
Value added that is stimulated by spending from wages for academics and other staff (induced)	1.6
Total value for the economy	**4.8**

Source: HESA Finance Statistics, Table K, 2010–11. Analysis by Cambridge Econometrics.

Overall, although social science disciplines account for just over 20 per cent of all research staff and research students in the UK, they receive around 14 per cent of the total research funding flowing to UK universities. By comparison, STEM subjects account for around 60 per cent of research staff, compared to 80 per cent of total research funding.

Finally in sketching the importance of the social sciences we asked Cambridge Econometrics to analyse the scale of economic activity undertaken across the discipline group. Because of the make-up of the financial statistics used by HESA, it was necessary in this analysis to use a more simplified and condensed version of the discipline groupings than that we deployed above. In particular, the consultants merged the humanities and CAD disciplines data from Figure 1.6 into one category. And the dividing line between the social sciences and STEM disciplines was necessarily somewhat cruder to fit with available statistics. The key conclusion shown in Figure 1.7 though is that the social sciences accounted for over £3,350 million of expenditure in 2010–11: approximately a third of all UK university spending from all sources. The STEM disciplines accounted for the largest slice (over half the total), and the humanities and CAD subjects for somewhat less than a sixth. Even on this cruder basis of division, the social sciences as an 'industry' are clearly more than twice as large as the humanities and CAD subjects.

Using the same groupings, Figure 1.8 shows that patterns of spending are relatively similar. All three spent around three fifths of expenditure on academic staff, somewhat more in humanities and less in STEM subjects where other staff costs are higher – for instance to operate laboratory equipment – which also boosted

depreciation here. The social sciences showed the largest proportion of 'other operating expenses', for reasons that are not entirely clear.

By 2010–11 the UK government was no longer providing any grant support for students undertaking first degrees in social science, so most resources flowing into social science departments consisted of student fees for courses, plus support for research and some limited grants for students to do PhDs. It should be apparent that the UK social sciences are a large-scale activity, and it is worth mapping out their role in the wider economy in somewhat more detail.

These sources of income sustained the bulk of expenditure across the departments, which on the limited Cambridge Econometrics definition amounted to £2,700 million, as Figure 1.9 shows. In addition, however, this volume of extended economic activity had two extra effects:

- indirectly, the spending on social science work added to demand in the economy for other products and services, generating extra value added of £500 million; and
- the salaries paid to academic staff and other employees in social science departments created 'induced' demand in the rest of the UK economy, a multiplier effect that amounted to £1,600 million.

Adding these effects to direct spending, and remembering that the definition of social science used here is a restrictive one, we can conclude that by 2010–11 the social sciences were a substantial industry sub-sector, creating more than £5 billion annually in gross value added to the UK economy.

1.2 The social sciences and human-dominated systems

> One foot on the concrete shore, One foot in the human sea.
>
> *Jackson Browne*[4]

> Disciplinary and subdisciplinary specialization, and the emphasis on internal academic communication, peaked in the late twentieth century. North American social science is increasingly oriented outward and focused on pressing public problems.
>
> *Craig Calhoun*[5]

The concepts we use to organize our thinking are never neutral. Instead they tend to produce specific effects that are progressively lost to sight the more they become 'conventional' categories. The juxtaposition of the social sciences with the 'natural' or 'physical' sciences, deployed in the previous section, is a case in point. The contrast seems intuitive, has spread universally and is easily recognized by wide audiences. It

[4] From the song 'Walking Town' by Jackson Browne featured on the album 'The Naked Ride Home' (released 2001 on Elektra Records).

[5] Craig Calhoun, 'Social sciences in North America' (ISSC 2010: 58).

also lends itself readily to the propensity of western thought to revolve around antonyms and contrasts. For decades, almost from the moment that 'social science' came into use, a surprisingly wide range of scholars in STEM disciplines have revelled in the sense of superiority that the dichotomy creates for them. As late as 2009 Michael Kinsley could write without fear of contradiction that: 'Many "hard" scientists regard the term "social science" as an oxymoron. Science means hypotheses you can test, and prove or disprove. Social science is little more than observation putting on airs' (Kinsley, 2009).

Yet the invocation of an acronym, STEM, to group together science disciplines, and even more overtly the antonymic and ideological terminology of 'hard' and 'soft' disciplines, both speak to the decreasing usefulness of the idea of 'natural' or 'physical' sciences. In an increasingly human-made world, in what sense are the subject matters of engineering, medicine, dentistry, agricultural science or modern mathematics concerned only with 'natural' or even 'physical' systems? In what ways too are mathematical or quantitative social sciences such as econometrics or actuarial science any less 'hard' than biology or zoology? How is a randomized control trial carried out in social work or public management any less 'hard scientific' than one in medical pharmacology?

The mathematicization, quantification, formalization and theorization of the social sciences are still very partially advanced, but they are clearly the intellectually dominant trends in most disciplines – although the first three shifts are contested bitterly by a still predominant rear-guard of 'constructivists' opposed to any 'normal science' or 'positivist' model of the social sciences. But the impact of successive waves of scientific advances and fashions have made evident changes to the standards of what counts as 'evidence' in every social science discipline. In 1995 the biologist Edward O. Wilson could still lament in highly critical language the persistence of foundational disputes in social science: 'A great many [scholars] even enjoy the resulting overall atmosphere of chaos, mistaking it for creative ferment' (Wilson, 1995: 182). Yet constructivist critiques have shifted character in all the social sciences in the last decade, only infrequently now decrying the use of organized empirical evidence. Instead they emphasize the need for multiple sources of evidence, multiple methods of study, a focus on holistic phenomena, close attention to meanings as well as behaviours, and frequent triangulation of different kinds of evidential information.

From the early 1960s commentators began to note that the old C.P. Snow concept of 'two cultures' – one formal, mathematical and scientific versus the other informal or thematic, literary and qualitative, and mutually unable to understand each other – seems inadequate (Leavis, 1962). Recognizing the scale and salience of the intellectual effort charted in Section 1.1, some observers suggest 'three cultures', with social science in some sense bridging the previous divide, deploying mathematical and quantitative approaches in similar ways to STEM subjects, yet also in repeated dialogue with more foundational internal critics inside and across humanities disciplines. The 'third culture' is also adapted to the fact that law-like propositions are hard to formulate when applied to human behaviours, with their ever-changing capacity for reflexivity, where actors may change behaviours as they discover that their previous patterns of response have been analysed. Thus, most

social scientists would probably now agree with John Gerring (2011: xxi) that: 'Social science is not simply an offshoot of the natural sciences or the humanities ... It is, rather, a distinct realm of inquiry'.

It is also important to point out that both in their origins and in their current patterns of development, most social sciences do not form any kind of field opposed to STEM disciplines, or are in orthogonal conflict, contradiction or even competition with them. The social sciences were founded initially, and expanded (after 1945 especially), in a kind of lock-step with STEM subjects. Craig Calhoun (2008: 20) observed that in the latter half of the nineteenth century

> the social sciences came to the fore as part of a rebellion against exclusive study of the old disciplines [such as classics, law, philosophy, or rhetoric]. They grew along with science and technology because they were deemed forward-looking and important to 'progress', relevant to solving contemporary problems and furthering positive innovations.

In their book on the changing knowledge institutions and forms of academic work, Ian McNeeley and Lisa Wolverton (2009) credited 'the laboratory' together with the German model of a research university as the last two of the essential ingredients of the modern academic paradigm. Yet they also stressed that it is wrong to think of a closed laboratory as just a building, or an isolated physical environment where closely controlled conditions can be created for the reductionist testing of single causes in experiments. Instead, many sciences have fieldwork where lab-like conditions of control are replicated externally. For instance, in Pasteur's key investigations leading to the development of inoculations against anthrax, although closed lab work was vital, an equally important role was played by the development of an ability to undertake carefully specified field investigations in complex, multi-causal environments (Stokes, 1997). For many physical sciences, 'the lab' was not just something inside the university, but an ability to create an environment for close observation, measurements and manipulation in the wider natural or social world outside. This is overwhelmingly a matter of professional training, socialization and careful organizational specification.

The other key element of lab experiments and field investigations alike was the development of reliable statistical analysis to allow researchers to systematically anticipate probabilities, and to differentiate results from small samples that might apply within wider populations from those that could not. These techniques developed first in physical sciences to help researchers distinguish causal influences from multiple confuser variables in multi-causal field situations. Later the development of randomized control trials played a key role in medical and drug development, extending scientific methods into realms (like holistic human physiology) where lab controls were infeasible. But the same sequences of statistical developments also impacted and defined the social sciences, albeit often requiring long time lags for the successful specification and accumulation of controlled data and the development of theories to explain multi-causal processes.

> The growth of well-informed social reflexivity and understanding from the late nineteenth century drew extensively on the societal applications of statistics, but

> also on key social science theories and expansions of understanding. Between the 1880s and the early 1950s the development of reasonable economic analysis of economic cycles, the development of reliable social surveys and opinion polls, and the extension of social psychology created radically changed self-knowledge capabilities in advanced industrial societies. Combined with rapidly evolving capabilities in organizational design and analysis they also made feasible huge increases in social control capabilities, changes that have been variously characterized as liberating or oppressive (Dunleavy and Tinkler, 2014, section 1.1).

It was during the explosive growth of the research university – first in late nineteenth century Germany, and then the United States, fed back later into the slower-changing university systems of Britain and France – that the social sciences emerged and grew, especially in sociology, psychology and anthropology, with Marshallian economics already beating a significantly differentiated and more Anglo-American path. This familiar story is regularly told in terms of 'great books' and classic authors, who at first like Marx or Comte often operated outside university systems as independent intellectuals. Yet the less familiar story is of the initially German and later American specialization of disciplines that first strongly created sociology, psychology, political science and anthropology as separate academic professions, each based around PhDs and professional journals following the science model. Figure 1.10 charts some later significant institutional milestones for the mainly Anglo-American and European development of these four core disciplines, in terms of the founding of key departments, professional bodies and journals.

The most extensive period of foundational activity stretched from the 1880s to the early 1950s, with many apparently 'obvious' developments often taking decades to achieve, and involving many detours, especially in political science. For instance, the first chair of 'political science' in England was founded in the 1890s in the history faculty at Cambridge, before later becoming part of an anti-social-science humanities bloc that stopped Cambridge creating a genuine politics department until the 2000s. Similarly, the London School of Economics and Political Science was founded in 1905, but chose to later create a Department of 'Government'. And it was nearly 50 years before a UK Political Studies Association was established, which to this day also eschews any scientific pretensions in its name.

Yet particularly since the late 1960s the concreting-in of highly siloed disciplines spread from STEM subjects across the social sciences, with

- the progressive elimination of polymath intellectual gurus like Marx or Weber (and, of course, their more disastrously ideological early counterparts such as Spengler or Sombart)
- the pushing out of strongly or overtly normatively or ideological driven theories (especially in the normalization after the Second World War), and
- the fuller acceptance and implementation of Weber's model of 'neutral' and objective professional practice within the bounds of academia.

As Debray (1981) noted for France, from around 1930 the universities progressively ceased to be the key habitat of public intellectuals, with this locale moving first to

Figure 1.10 Timeline of some key developments in US and European social sciences

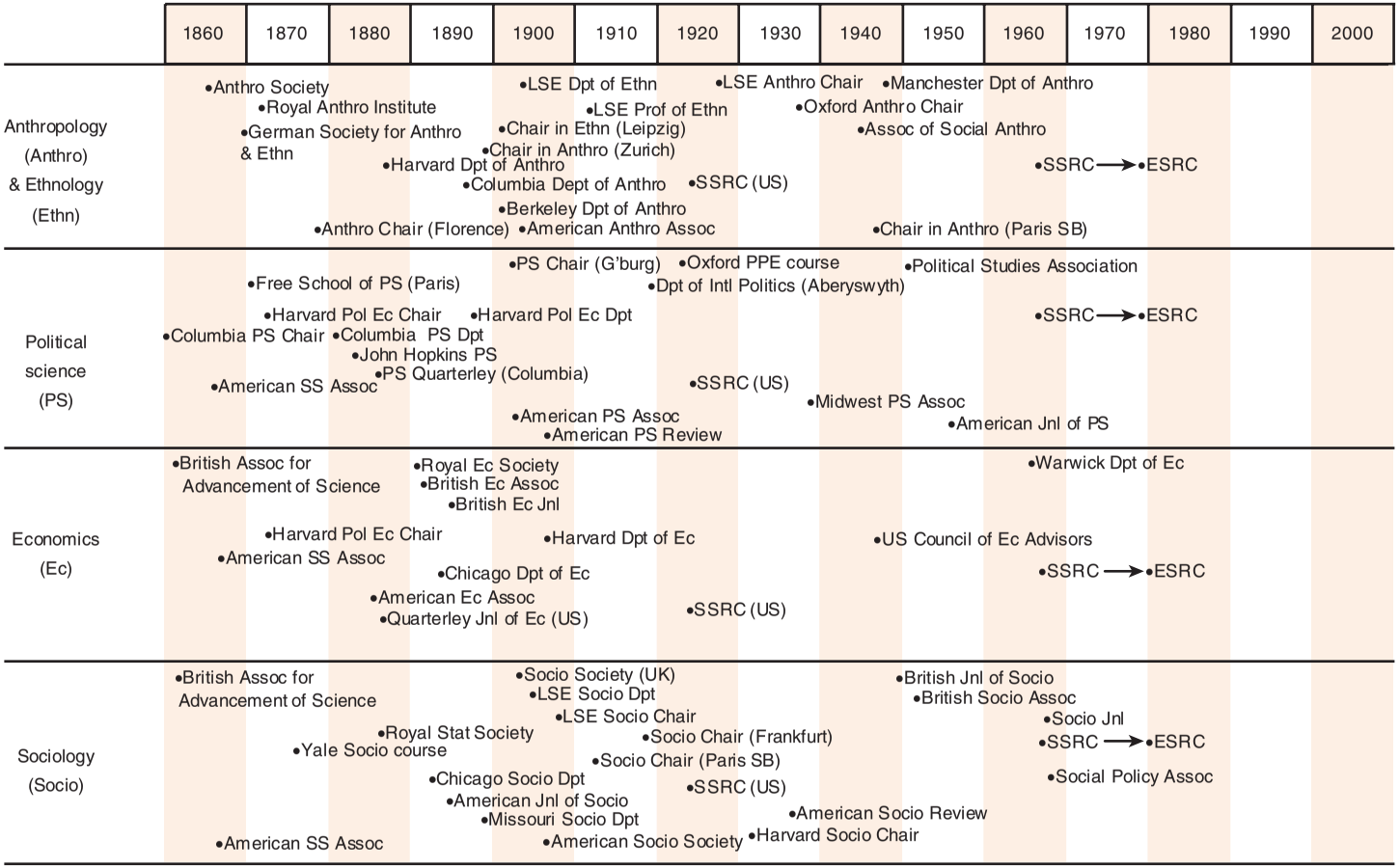
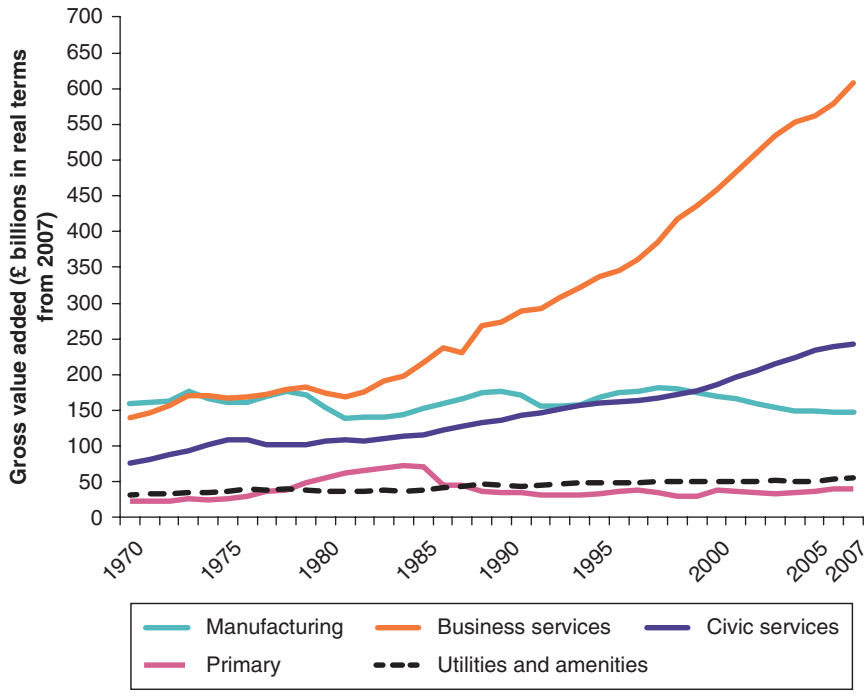


Figure 1.11 The changing balance of the UK's economy, 1970 to 2007



Source: Our analysis of EU Klems data, 2009.

literature or independent authors, and from the 1960s onwards towards media-intellectuals (see also Reul, 2003).

Only from the 1970s did formalized peer review really lock down across the social sciences, with the explosive growth of academic journals and sub-fields within disciplines made possible by staff expansions and more generous government research funding support. Here too was the heyday of 'physics envy', as western mainstream economists and psychologists especially, pursued a 'normal science' model of disciplinary endeavour, aspiring to the 'rapid advance, high consensus' model of early physical sciences (Collins, 1994). This period also saw the beginning of a wider sequence of intellectual 'fashions' in methods approaches across the social sciences inspired by STEM changes such as evolutionary theory development, systems theory, chaos theory, advances in genetics and most recently emulation of science and engineering 'big data' approaches. The differentiation of the social sciences from each other, and from the STEM subjects in particular, was matched by the wider and wider gulf opened at many points between the operating approaches of the core social sciences and the older, unformalized or thematic/literary humanities disciplines.

A fundamental post-1945 shift in advanced industrial economies also particularly affected the inter-relationships of the social and STEM sciences. Figure 1.11 shows that in the UK, business and civic services were far and away the most strongly growing economic sectors, and these were inherently sectors far closer to many social sciences. Services are not easily defined and most attempts made have limitations. For

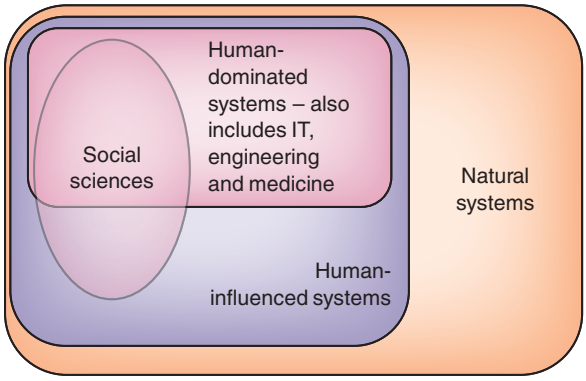
instance, the popular *Economist* definition, that services are 'anything sold in trade that cannot be dropped on your foot', fails to take account of public sector services. And by overstressing the intangible aspect of services it omits the strong modern trend for services to be 'productized' and 'commoditized' (Cusumano, 2010), especially using zero touch technologies where human interactions are minimized in favour of nearly complete digital transaction processes. Yet this trend also has a counterpart, for products to be servitized for instance, leasing fully operational aero engines to airlines instead of selling the physical product and later maintenance kits.

Many modern services (such as mobile or cell phones and data) equally centre on hard technology and specific products, pulling in complex technologies, and highly skilled engineers, IT and technical staff from many STEM disciplines. Yet these are the minority of private service sector employees, with greater numbers for marketing, administration, pricing and business organization specialists. The relevance of business schools and disciplines in modern business services is stronger than for older economic sectors. And in the public sector, the welfare state and state health care provision virtually created new social science disciplines across Europe, such as public administration and management, social policy, social work, housing and urban studies. State health services absorb many psychologists and health discipline researchers with a social science orientation. Government patronage of professional services like law, planning, or infrastructure remains huge, despite years of privatization waves in advanced industrial economies. We shall see below that an orientation towards government and public policy issues spread widely and deeply across the social sciences for this reason. Meanwhile Figure 1.11 shows that three other sectors traditionally linked in very integral ways to the STEM disciplines (manufacturing, utilities and primary industries) have at best oscillated or gradually declined as sources of gross value added over the last four decades in the UK.

So both current economic and technological trends essentially call into question the woefully inadequate contrasting of 'natural' or 'physical' or 'hard' sciences with human-focused or 'soft' social sciences inherited from earlier periods. Instead Figure 1.12 makes a three-fold distinction as follows:

- *Natural systems* are aspects of the physical environment that do not involve or are not significantly affected by human interventions and actions. We would argue that in this sense there are increasingly few systems that are completely 'natural' – and consequently that it is only in fields like astrophysics and pure maths that scientific disciplines exist with a genuinely or fully 'natural' focus.
- *Human-influenced systems* are basically erstwhile 'physical' systems on Earth that remain mostly or essentially autonomous in their mode of operation, but where there are nonetheless significant human interventions or efforts at control. The development of knowledge here is often focused on warning or prediction systems and on formulating human responses – as with climate and weather predictions, or efforts to monitor and anticipate earthquake pressures and to formulate engineering responses.
- *Human-dominated systems* encompass all the numerous artefacts of human civilization (cities, markets, organizations, firms, government

Figure 1.12 How the social sciences focus on human-dominated and human-influenced systems



> institutions, agriculture, transport and infrastructure systems, IT, communications and data systems); all aspects of the social and economic organizations and issues thus created; and the human physiology and medical/health sciences interventions.

In these terms, the social sciences are primarily centred in the study of human-dominated systems, but their coverage also spans extensively across into human-influenced systems. It follows that there is no sharp contrast between the social sciences and many STEM subjects – especially medicine and health sciences, IT and information analysis, and engineering and risk management in all their forms (Wittrock, 2010). As Kenneth Boulding (1966: 7) noted: 'The case for the social sciences is simply the case for specialized, organized knowledge-producing industries at the level of complex systems'.

Increasingly, a recognition of this argument underlies the ways in which social science approaches of many kinds interpenetrate and inform STEM disciplines, creating knowledge of organizational arrangements, organizational cultures, 'soft' technologies, citizen or consumer demands, social behaviour in complex systems, critical self-awareness of potential biases, collective action and co-ordination problems, behavioural science and 'nudge' insights, and so on.

Equally the social sciences themselves incorporate many toolkits and approaches inherited from or first developed in STEM disciplines, including a now distinct tradition of mathematical and formal theory expression, and the rigorous quantification and assessment of evidence, plus some version of the 'normal science' apparatus of critical evidence accumulation and peer review. Fifty years ago, at a point of great optimism for the social sciences, Boulding (1966: 22) observed that:

> Every great advance in science seems to have been associated with a twofold movement ... One is the development of a new theoretical insight or point of view, a restructuring of the image of the world, which creates, as it were, evolutionary potential for the increase of knowledge. The second condition is an improvement in instrumentation, that is, in the methods by which information coming from the outside world can be detected, sampled, and processed.

Today the onset of digital convergence in the social sciences is especially highlighted by shifts towards 'big data' approaches:

> In the last half-century, the information base of social science research has primarily come from three sources: survey research, end of period government statistics, and one-off studies of particular people, places, or events. In the next half-century, these sources will still be used and improved, but the number and diversity of other sources of information are increasing exponentially, and are already many orders of magnitude more informative than ever before. (King, 2013: 3)

As a result new areas of cooperation in the handling and analysis of massive data sets have already developed, and the kind of people working in key social sciences has begun to shift:

> A ... pattern [of knowledge transfer] is now beginning to emerge between several traditional social science disciplines and computer science. Graduate students in economics, political science, and sociology now regularly learn computer languages, and are starting to do formal training in computer science as part of their graduate degrees. Associated with this development is computer scientists doing research in what is effectively social science. Indeed, this activity is being formalized in some new departments at some universities, often under the banners 'computational social science' or 'applied computational science'. (King, 2013: 5)

Other developments pulling the social sciences towards their partner disciplines focusing on human-dominated systems include the spread of randomized control trials, systematic review and meta-studies from medicine and health sciences into many different social sciences; and the rapid generalization of 'public understanding of science' approaches into increasingly similar and increasingly digital knowledge exchange efforts in the social sciences also, on which we have much to say below.

1.3 Perceptions of 'impact' from the social sciences

> For better or for worse, individuals really do share their thoughts and they do to some extent harmonise their preferences, and they have no other way to make the big decisions except within the scope of the institutions they build.
>
> *Mary Douglas*[6]

> We did the thing that social science does best, right? Which is not to answer a particular question, but to change the way in which people think about what the questions are.
>
> *Research executive in a major US hi-tech firm*

Tracking the impacts of the STEM sciences and especially medicine has become a huge industry. Governments and philanthropic foundations pump billions of dollars or pounds annually into these disciplines, and are naturally keen to monitor closely what

[6] Douglas (1986: 128).

economic benefits they secure in return. Modern theories of economic development assign huge significance to scientific innovations, as measured by indices such as the numbers of scientific patents registered; the frequency of launching new products with a high university value-added embedded in them; or the numbers of 'spin out' companies for science, technology, bio-genetics, or medical research that are linked to the university sector.

None of these measures work when applied to the social sciences, and so the impression has been created a long time ago, and consolidated by waves of superficial commentaries and 'evaluations' since, that the social sciences lack external impacts, especially in business and the private economy. Writing in 1963, Leeds and Smith commented:

> Industry consistently utilizes the findings from the physical scientists who work in universities and laboratories. Units and departments that specialise in determining the practical uses of the research of a physical scientist are established in industrial organizations. But there is no counterpart of this in the social sciences; there is virtually no similar machinery for developing and testing the application of social ideas. (p. 50)

Asked to explain their impacts, social scientists in earlier times themselves often took refuge either in very specific case studies of particular disciplines, mapped across long historical eras, or in 'hand-waving' generalities. A frequent theme was that social science ideas were imperceptibly changing how society operated, but on a very long time-scale analogous to that of the long historical lags involved in many scientific innovations really being industrialized and generalized for extensive use. Thus Kenneth Boulding argued:

> I suspect that the story of the impact of the social sciences will not be written for five hundred years. It will take at least that long for the implications of present knowledge to work themselves out. (1966: 19)

None of this elicited much confidence from treasuries, finance ministries or politicians, and unsurprisingly the social sciences repeatedly lost out in competitions for funding with STEM subjects, creating the historical patterns charted earlier in Section 1.1. In the digital era this disadvantage has only worsened, as the rate of adoption of new technologies speeded up, and the 'scalability' of tech changes meant that IT or genetics companies with breakthrough products could become major global players inside five to ten years. Set against this time scale, Boulding's extreme pessimism seems almost comical, and social scientists have increasingly struggled to come up with different and better answers. Yet even when trying to be more effective, serious scholars in elite universities can still be found convening conferences or publishing leaflets with a kind of zero-based assumption built into them, asking: 'What Use are the Social Sciences?'.[7]

The problems and disadvantages for the social sciences in demonstrating impact are in fact multi-layered, and they cannot be explained in only one way, or in the same ways across different disciplines. This is terrain that we cover in depth over

[7] This was the title of a large public seminar convened at Kings College, London in May 2013.

the remainder of this book, but it is worthwhile taking a brief aerial look or advanced reconnaissance of some of the key factors:

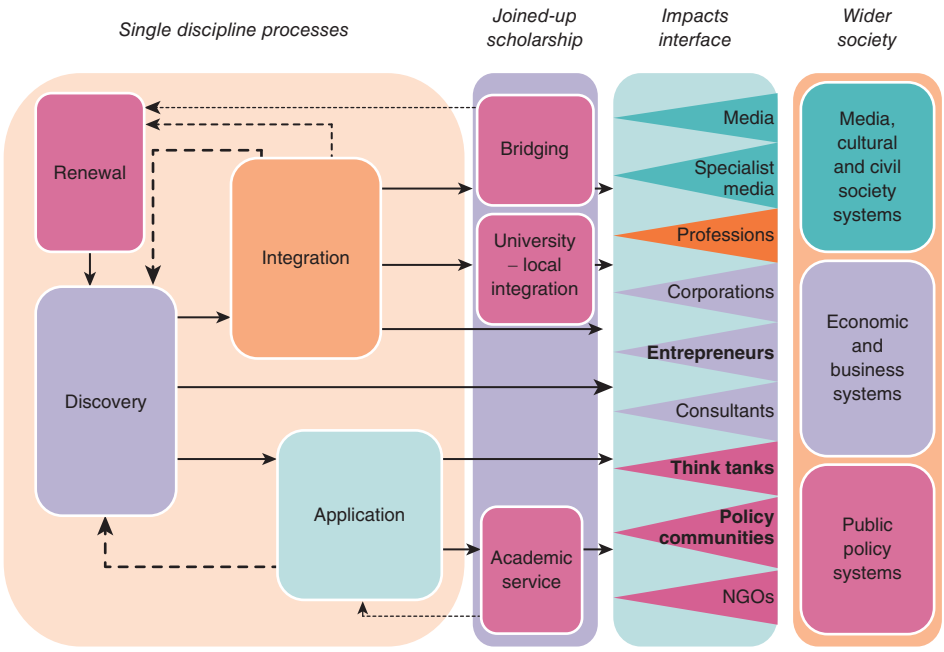
1 *Social science research is generally 'collective' in character – it does not lend itself to the 'unique discovery' image of research closely associated (by outsiders) with STEM subjects*. Figure 1.13 shows Boyer's famous four-way categorization of scholarship with 'discovery' research – finding new and unknown empirical or theoretical phenomena – as only one of four types of scholarship (Boyer, 1997). The other three types of scholarship are: 'integration', sifting and making sense of new discoveries and creating systematic theories to accommodate them; 'application', using integrative theories and discoveries to tackle practically useful problems; and 'renewal' of the scholarly or scientific profession itself via teaching and socialization.

   Discovery research accounts for a relatively small part of overall scholarship activities, and only a tiny fraction of work genuinely uncovers new findings, but especially for STEM subjects this activity is often seen by disciplines themselves and the wider world as the core part of or even the 'be all and end all' of the scientific mission. Discovery work also lends itself well to the populist 'lone wolf' narrative of scientific genius, with its characteristic stress on mavericks and isolated nerds battling against the odds or a conventional wisdom to achieve breakthrough results.

   In fact, almost all scientific work is replicating or incremental, and cannot be patented. But the exceptions that can, and the industrial implications of the most successful patents, still dominate professional, government, and university thinking. By contrast, almost all social scientific work is either incremental or integrative, either extending, consolidating, refining or reinterpreting known phenomena, or seeking to integrate it within complex causal models and theoretical frameworks. The only exceptions focus on mapping genuinely new social behaviours (e.g., how people use brand new social media), or accounting for unexpected or unparalleled developments (e.g., perhaps an 'out of the blue' crisis of state or economic stability). All social science work clearly depends on and feeds into the collective knowledge of its disciplines and professions, rendering the non-applicability of the unrealistic 'discovery' archetype particularly visible.

2 *Social science research has also not been capital intensive, nor have its key results been patentable* (which essentially requires embodying innovations into physical products). Especially since the spread of PCs, the cheapening of computing power following Moore's Law, and the diffusion of cheap analytic software into firms and governments, social science departments cannot fence around their knowledge with the protective apparatus of equipment or unique skill sets found in STEM departments, nor embody it in a physical product. Their products are ideas and information that cannot even be copyrighted. So, taken together with the collective nature of research advances, the social sciences have received little or no support from the dominant intellectual property (IP) regimes of western countries in internalizing a flow of benefits from their work. The apparatus of patents and trademark protections has offered little or no opportunities for social scientists to create any IP returns beyond author fees for books and copying fees for articles or book chapters.

Figure 1.13 Visualizing the flow and potential impacts of social science research in the academic, mediating and wider societal domains



Source: Dunleavy and Tinkler (2014).

3 Consequently, *social science research rarely generates any strong or distinctive 'first mover advantages' for firms or governments that adopt its insights*, especially no quickly cashable comparative advantage of the kind that profit-maximizing businesses must seek. There are some exceptions. Some social science mathematicians and econometricians produce formulae that (if kept secret) can generate specific and calculable profitable margins over competitors for hedge-funds or finance market speculators. Similarly some forms of survey sampling, psychological testing, human relations approaches, talent management policies and organizational culture specialisms can generate cashable advantages for companies in more diffuse ways. But the more general picture is that social science advances are quickly apparent to or known by competitors, because of their collective character.

4 All the above features also mean that *the social sciences are more exposed to competition from the full range of intermediaries shown in Figure 1.13 than are their STEM counterparts*. Intermediary institutions include management consultants, think tanks, specialist consultants, survey companies, professions and media companies. These organisations can more easily keep up to date with social science scholarship, and re-express it cheaply without offering or needing to support the infrastructure costs of social science research than in STEM disciplines. They can often strip out ('cream off') the most commercially valuable or standardizable tasks to specialize in. And by focusing more directly on lobbying and tendering for contracts, and public relations marketing, these intermediary

bodies are also often able to commoditize the benefits of scholarly work essentially undertaken in universities, and claim credit for ideas and innovations conceived elsewhere. All the intermediary bodies shown also combine social science knowledge advances and ideas with their own proprietary procedures, 'ordinary knowledge', or applied modes of working so as to create amalgam products that cater more directly to the needs of companies or government agencies. The biggest companies, such as management consultancies like McKinsey or the 'big four' accounting firms in the UK, use huge amounts of legal expertise to create relatively strong IP rights protections for their systematically developed 'expertise' – in ways that universities could never hope to manage. Overall, the social sciences are strongly exposed to competition from (and exploitation by) a wide range of intermediaries in ways that STEM counterparts, with highly esoteric expertise and strong capital equipment advantages, are not.

5 *The value of social science expertise in external realms* is *also less linked to specific projects or pieces of research* than in the physical or STEM sciences. When employed by corporations or public sector agencies:

> Researchers bring not so much discrete findings as their whole theoretical, conceptual, and empirical fund of knowledge into the decision-making process ... The 'use' of social science research in this mode is part of a complicated set of interchanges that also uses practical knowledge, political insight, social technologies, and judgement. (Weiss and Bucuvalas, 1980: 12)

Critics of the Research Excellence Framework's (REF) way of assessing external impacts via case studies have pointed out that its focus on discrete research projects or publications having specific impacts is STEM-centric and misses the importance of the 'wise counsel' aspects of academic service by social scientists (Tinkler, 2012). Social scientists' work for government advisory committees or as consultants to companies often draws on their cumulative, lifetime experience of a research field, and not on any one single (and necessarily incremental) research output or discovery.

6 A great deal of external influence of the social sciences is concentrated in the public policy realm, as we show below. Yet here social scientists themselves have often suggested naïve or overstated views of what should count as 'impact', *creating an 'impossibilist' image or benchmark of what real influence would consist of*, implying a level or style of power that inherently cannot be attained.

This problem has several component parts, beginning with an over-claiming of what a fully developed social science could do. At the start of the 1980s, Weiss and Bucuvalas (1980: 14) noted that a:

> tendency to inflate the real contributions of the social sciences into eternal truths, good for all seasons, places a burden on them that they are not yet prepared to meet. And since each advance in research seems to uncover unsuspected complexities and new sources of variability, the quest for elegant and parsimonious laws of social behaviour, on the model of the laws of the physical sciences, may never be successful.

Charles Lindblom and David Cohen mounted a strong critique of a kind of 'hyper rationalist' approach to 'professional social inquiry' (PSI, a term they used to represent

not just the social sciences but also the work of many social science educated professionals outside the higher education sector itself). They critiqued the tendency of professionals to over-claim authoritativeness, and under-estimate their dependence on the 'ordinary knowledge' with which we all navigate the social world. At any one point in time, Lindblom and Cohen argued, the contributions of PSI knowledge are inherently likely to always constitute isolated pinpricks of superior knowledge, located within a wider landscape of causation. The implications and salience of these islands of PSI knowledge can only be understood using ordinary knowledge and this situation will never change – there is never going to be a complete algorithm or a fully-PSI-tested body of knowledge to rival the STEM sciences.

> As a result of inattention to the limited contribution of [PSI] to social problem solving so far, [practitioners of] PSI often succumb to the belief that, given enough PSI, all social problems can be significantly ameliorated by it. [...] Much of the world's work of problem solving is accomplished not through PSI but through ordinary knowledge, through social learning, and through interactive problem solving. (Lindblom and Cohen, 1979: 91)

Similarly Wagenaar (1982: 25) emphasized that:

> Research is only one of the various ways of human learning, but one which, amidst other forms of obtaining knowledge, occupies a special position because of its objectivity, its susceptibility of control, its dependence and reliability.

7 Finally applying social science and wider PSI knowledge that is limited in all the above ways within the public sector and government has created particular difficulties as bodies of knowledge seem to be 'politicized' or 'subjective'. The first problem here is the danger that we overlook the intrinsically political nature of public policy. 'Unless there is total consensus about the ends to be achieved, the knowledge component is only part of the solution. In fact, the knowledge itself is often mired in value and interest assumptions' (Weiss and Bucuvalas, 1980: 15).

Getting to a realistic conception of what is possible here has not been helped by the highly over-simplified (and automatically pessimism-inducing) ideas of what effective public policy influence should look like, stressing some kind of Platonic guardian role for social scientists advising public officials devoid of knowledge or competences:

> The implicit image is decision maker as fresh blotter: the decision maker is expected to soak up all the relevant research. An even better metaphor might be decision maker as fresh stencil. Social science research imprints its message, and the decision maker is expected to transfer it to the stack of blank pages awaiting his [or her] action. If pressed to examine their assumptions, presumably no social scientist would make such extravagant claims. Yet much of the [academic] chorus of disillusion about the state of research use seems to rest on premises almost this farfetched. (Weiss and Bucuvalas, 1980: 15)

Again Lindblom and Cohen took a far more robustly pluralist line, arguing that in any liberal democracy policy making will and must always be subject to 'adversary

politics' influences, where decision-making responds to a contest of rival advocacy coalitions:

> [P]olicy is actually made not by a policy maker but by interaction among a plurality of partisans. Each participant in the interaction … needs information specialised to his [or her] partisan role in it. …
>
> It would not follow that a [practitioner of professional social inquiry] should bias his [or her] results to suit an audience, but it would seem to follow that in performing any given research he [or she] could usefully work for one of a variety of possible audiences and take [an] orientation not from an implicitly postulated 'the' public interest, as is common, but from one of the various explicitly recognized partisan interests each playing its role in the resolution of the policy conflict. (Lindblom and Cohen, 1979: 64–5)

At the same time, the authors clearly were not just arguing for the minimal impact of the social sciences, stressing instead the often key role of PSI compared with any other knowledge framework. PSI will normally succeed in displacing less adequate 'ordinary knowledge', without necessarily having the capacity to replace it in a way that rivals the prestige or frequent high levels of control-effectiveness achieved by many STEM disciplines:

> [E]ven if policy makers do not turn to PSI in many of the ordinarily expected ways – for specific data, hypotheses, evidence, or policy evaluation – they may take the whole organizing framework or perspective for their work from academic social science. It may be decisive though not authoritative. (Lindblom and Cohen, 1979: 79)

These realism views undoubtedly gained a lot of traction during the 1980s and '90s when neutralist social science research conceptions (emphasizing long-run, longitudinal studies and 'pilot before implementation' advice) were overwhelmed and displaced by a wave of 'best practice' research in liberal democracies swinging to the political right, with many authors promising not just to describe the world but to change it. The strongly ideological advance of Thatcherism, Reaganism and later the 'Washington consensus' in international development were all driven by eclectic collations of multiple possible prescriptions, all derived from first principles economics (or market-analogy or public choice thinking). They were then speedily applied in joined-up ways where solutions that worked in very different contexts were appropriated and pooled into complete handbooks for economic or public sector change. This contrasted with the long-time horizons and siloed nature of academic work, about which Ansoff (1986: 20–21) remarked:

> In today's world of 'big science', research is costly and no longer has a uniformly beneficial impact. The ethic of basic research for the sake of research is being challenged on the basis of both economic and social relevance. On the level of applied research there is the additional challenge of the utility of projects which consume large amounts of money but produce no visible benefits for society … Perhaps the most dramatic example of the gap between researchers' choices and

society's needs is in the fact that most research is being done from the vantage point of single disciplines, whereas the key social problems are multi-disciplinary.

The characteristic form of 'best practice research' united a quasi-paradigm of top-level guiding themes and ideas, allied with swarms of flexibly developed, and constantly evolving detailed practices that could be quickly deployed in specific situations (Dunleavy and Margetts, 2013). For the new public management (NPM) credo that dominated western democracies' public administration for a quarter of a century, the top themes were disaggregation (splitting up large hierarchies into smaller organizations), competition (removing monopoly rights to production for in-house producers) and incentivization (creating specific pecuniary incentives for staff to meet public interest objectives) (Dunleavy et al., 2006a and 2006b). Dozens of different specific strategies (such as privatization, outsourcing, quasi-markets, purchaser–provider separation, introducing private finance and performance-related pay) were then linked to a rolling programme of change that jumped across national and even continental boundaries to achieve a cumulative, global impact.

In turn the failure and crises of these ambitious reformist programmes, especially new public management in the government sector (Dunleavy et al., 2006a and 2006b), cast a cloud over best practice research. Their vulnerability was in turn exploited by a new drive from social science 'imperialists' to push a strengthened model of professional social inquiry, now founded on randomized control trials (RCTs), using medical research templates and approaches. For instance, in 2013 the UK government solemnly established new 'What Works' centres in various aspects of welfare state policy, founded in part on the model of the National Institute for Health and Care Excellence (NICE).

It seems likely that for the foreseeable future there will be permanent oscillations in western liberal democracies around a three-pole dialectic of:

- conventional social science expansionism ('evidence-base everything, use universal RCTs, emulate STEM discipline claims') versus
- best practice research ('do quick and dirty research strongly influenced by theories/ideologies, implement fast, and learn by doing') versus
- pluralist 'realism' accounts of policy processes ('do limited partial research to help one advocacy coalition or another', and 'speak truth to power', remaining aware of the permanent and inherent limits of professional social inquiry).

Conclusions

Between a third and two fifths of all the university research (and much of the wider professional, government and business research) being undertaken in advanced industrial societies takes place in social science subjects. In addition to those working directly in the social sciences, many professional people are working in jobs where they either produce social science research themselves, or else 'translate' it back to business, government departments and public sector agencies, and a wide range of

civil society organizations. (We look in more detail at the role of translation later on in Chapter 9.) The scale of this knowledge-intensive industry is substantial.

In this chapter we have established the boundaries of the social sciences as a discipline group and defined the subjects that are wholly included and the key overlap areas with the STEM and humanities subject groupings. We have also argued that the old oppositions or contrasts between the 'physical' or 'natural' sciences and the 'social' sciences have little or no contemporary relevance. The social sciences are concentrated in the fields of human-dominated and human-influenced systems, but so too are many of the most salient modern STEM disciplines, such as medicine, engineering, and information and computer sciences – in all of which it is crucial to understand in depth how human behaviour conditions the operations and risks of physical science interventions and strategies. A huge range of methods and approaches, ranging from randomized control trials, through systematic review, most core statistical methods, key types of algorithms, big data analytics, and systematic qualitative or text-based research are appropriately deployed across both STEM disciplines and the social sciences. Neither in terms of their subject matter, nor in terms of their methods, are the social sciences necessarily any less quantitative or 'scientific' than STEM counterparts. There have been many key historic limitations of the social sciences, especially the past paucity of data, restriction to survey-based methods, long time periods for research, highly siloed discipline structures and exceptionally poor communication to lay audiences. But as we explore later in the book many of these problems are now being rapidly addressed and eroded by shifts to a digital social science where research is 'shorter, better, faster, free' (Dunleavy and Tinkler, 2014).

Yet a negative or impoverished impression of the external impacts of the social sciences has been created over many decades by misleading efforts to read across what normal science looks like from STEM-specific archetypes, and by crudely formulated notions of what real influence would entail. Some of the worst false standards of influence have also been propagated by hyper rationalist social scientists themselves telling 'fairy tales of influence' to governments or funders in efforts to secure more research support. And some of the most pessimistic estimates of influence have been made by observers who seem to believe in 'imperialist' visions of a caste of Platonic social science guardians guiding 'blank slate' decision-makers in simplistic ways on what they ought to do.

The rest of this volume undertakes the difficult work of redressing this imbalanced and badly-awry view of the social sciences, seeking to replace it with an integrated but also detailed and articulated view of how the whole discipline grouping operates. We set out the role that university research already plays, and yet might play, in the co-operative guidance of complex multi-causal social systems. The role of academic scholarship and science will necessarily be only a small component in the way that economic, social and political developments evolve – but it has already been of immense significance, and can be more so for the future. We begin in Part I by etching a quick pen portrait of how the modern social sciences function as academic professions, and how the work of individual researchers and scholars gets to be known and picked up outside higher education itself.