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Social models as dynamic theories: how to improve the impact of social and political sciences

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This paper explores the hypothesis that institutions are "dynamic social theories" that embody accumulated knowledge from everyday social experiments about how to do things in society. Institutions that are replicated, imitated or adapted act as social models and can be seen as the social science equivalent to theories in the natural sciences. In open societies they also benefit from a form of peer review by citizens in what can be seen as the "democratic method." This hypothesis is testable and could improve the impact of social and political sciences by working with citizens, practitioners and policymakers to embed research methods into social models. Why does this matter? Humanity's biggest and most difficult problems are social and political, yet funding and support for academic social science is a low priority while large scale social research is conducted for commercial or political purposes in ways that may not be in the public interest. By working on institutions as social experiments and models ("dynamic theories"), scholars can help improve humanity's ability to solve social problems. The concluding discussion and Supplementary material explores practical implications and how it can be tested, starting with models of social research, higher education and democracy.

KEYWORDS

democracy, impact, institutions, innovation, knowledge dissemination, political science, social science, higher education

1 Introduction

The ultimate test of any science is its ability to improve the human condition. The scientific method has made immense contributions to peoples' health, longevity and material conditions, but it also enabled existential risks such as global heating, loss of biodiversity and nuclear annihilation. These problems cannot be dealt with by natural science but require political solutions. Political and social sciences could help people solve problems better, but most academic research is detached from practical problem solving. This paper aims to address the question of how social and political sciences can become more effective by exploring the hypothesis that all institutions are everyday social experiments, embodying collective experience and knowledge about how to do things in society. As such, institutions can be seen as "dynamic theories" and social models, which people replicate to achieve similar results, adapt when their aims or circumstances change, or invent new institutions. Institutions are also subject to various forms of review, through markets, politics, the arts, commentators and scholarship. This influences the development of institutions, particularly in open societies. Treating institutions as "dynamic theories" and the social science equivalent to theories in the natural sciences could help people improve social conditions more effectively.

Part one summarises problems this hypothesis seeks to address, observing that most social inquiry takes place outside academic settings and institutions act as social models which people copy. Part two explores the hypothesis in more detail. It outlines dimensions of knowledge wrapped up in each real-time social model, the range of social models from personal patterns of behaviour to global governance and the importance of scrutiny, challenge, pluralism and other mechanisms for institutional innovation and improvement, in what might be called the "democratic method." The concluding discussion considers implications for social and political science and testable propositions arising from the hypothesis. Supplementary material include endnotes to illustrate the argument, a guide to practical applications, and suggestions of how to test the hypothesis in our models of higher education and academic social inquiry.

The ability to learn, communicate and organise has given *Homo sapiens* enormous advantages over other species. But our capacity for self-deception and hubris have also brought down institutions, companies and civilizations. The scientific method amplified our ability to unlock the power of nature, but our abilities to improve the social world are lagging. Treating institutions as social experiments and dynamic embodiments of collective knowledge about how to solve problems could enhance humanity's ability to flourish.

1.1 Social science, we have a problem

Humanity's biggest and most difficult problems are social and political, yet government spending on social research is typically 10–25% of the natural sciences (OECD, 2024; Statista, 2024; Guerini, 2024; Xu et al., 2015). This reflects the relatively low status of academic social research and low confidence in its results. Many distinguished scholars have drawn attention to problems with the output of social science (Endnote 1 in Supplementary material). Max Grossman observed in *How Social Science Got Better*, "Academia in general and social science in particular have lost public esteem and come under criticism for failing to live up to their promise" (2021: xxiv). Grossman concluded optimistically that "social science will play an important part in the human future" (250) though it "can make no claim from its own studies that its insights will be usefully incorporated into public opinion or governance" (251).

This is the critical issue. Although social research produces useful insights, as outlined by America's Consortium of Social Science Associations (COSSA) series on *Why Social Science?*, John Brewer's essay on *The Public Value of the Social Sciences* (2013), the UK's Academy of Social Sciences and UK Research and Innovation, many robust findings are not used by policy-makers or practitioners to solve problems. This is reflected in the lack of progress in many policy areas. Bastow et al. (2014: 269) remind us that "Not undertaking or ignoring [social] research can also lead to disastrous consequences, so that the opportunity costs of "unresearch" are substantial."

To "play an important part in the human future" social sciences need models of research more closely aligned with the ways people create and use knowledge of society.

1.2 Everyday social science

Most social research is done outside universities. Businesses, governments and political parties conduct large scale research on the public. In *The Ant Trap*: *Rebuilding the Foundations of the Social Sciences*, Brian Epstein observed that today's "economic activity turns on collecting and mobilizing information about people. Industries built for this purpose now dwarf the traditional academic departments and think tanks that once dominated the social sciences. … It is only a slight exaggeration to say that the world economy is transforming into a massive system for doing social science" (2015: 2). Companies such as Amazon, McDonald's, Meta (Facebook), supermarkets and finance collect, analyse and use vast quantities of data about people to inform business models that, together with artificial intelligence, are reshaping society at scale. Powerful institutions use algorithms, indexes, marketing, modelling, polling, forecasting, and other social science methods to create what has been called surveillance capitalism (Zuboff, 2019) and the surveillance state (Norris et al., 2017; Chin and Lin, 2022) as well as more benign public services. Governments have collected data about people for millennia, mainly for tax and military purposes (the word statistics reflects its origins as the science of statehood). Modern governments also collect and analyse data about society at scale, aiming to learn lessons, inform policy, and allocate resources better. The US Foundations for Evidence-Based Policymaking, established by Congress in 2018, is a governmentwide project to make data accessible and useful for decision-making. Evaluation.gov is an official dashboard to "help the Nation come together to solve problems for the American people" (emphasis in the original). On the other hand, political parties use social research to understand voters and target messages to gain power rather than to formulate solutions, as revealed by the Cambridge Analytica Scandal (Rehman, 2019). In *Lie Machines* Philip Howard described how "ruling elites, lobbyists, and shady politicians … use new information technology for political redlining or astroturf movements" and "produce, distribute, and market untruths that serve ideology"(2020: xi).

Over 40 years ago Lindblom and Cohen pointed out that "Much of the world's work of problem solving is accomplished not through PSI [Professional Social Inquiry] but through ordinary knowledge, through social learning, and through interactive problem solving" (Lindblom and Cohen, 1979b: 91). Everyone uses knowledge of society to make their way in the world, testing and refining their understanding through trial and error as well as learning from others. Sociologist Charles Lemert called this "sociological competence … the remarkable fact that people are able, with very little instruction, to figure out how to practice their lives with others. This life is, after all, composed out of a series of habits and practices whereby, when we repeat and repeat, we often get it right" (2012: xvii). In his view everyone is an amateur social scientist and social theory is a basic survival skill, developed from infancy.

While most academic research is barely read or used outside academia, everyone uses some form of social science to navigate society and, where possible, influence it to meet their needs and aspirations. Concepts from professional social sciences enter everyday knowledge in what Anthony Giddens called the "double hermeneutic". The "concepts of the social sciences are not produced about an independently constituted subject-matter, which continues regardless of what these concepts are. The findings of the social sciences very often enter constitutively into the world they describe" (1984: 20; 1987: 20). People learn about society from the behaviours and institutions with which they interact, particularly their family, community, school, work and the professions. People imitate others, follow existing social patterns, and also innovate, "through social learning, and through interactive problem solving" as Lindblom and Cohen observed.

Behaviour and institutions embody knowledge about how to do things in society, which they transmit across generations. Some forms of organisation, like a place of worship, farm, army or kingdom are recognisable social models across millennia. They vary widely because people experiment, adapting institutions in response to experience or changes in belief. Sometimes a new way of doing things becomes a model that is imitated, replicated and developed by others. For example, inns are ancient institutions, found along trade routes since the dawn of civilizations and mentioned in the bible. In fourteenth-century Bruges, a grand inn owned by the Van der Beurse ("purse") family, was a place where merchants met, raised money or traded shares in their ventures. This became institutionalised in 1409 as the "Brugse Beurse." It rapidly became a model for the world's first stock exchanges and a core institution of the emerging capitalist economic system (Murray, 2005). The Belgian traders used their everyday knowledge to transform an inn into a new institution, which is still called a bourse in much of Europe and may still use behaviours from that time. This shows how an institution can be both a social experimentation and model others copy.

In *Making Social Science Matter*, Flyvbjerg highlights the power of example in social science and the "irreducible quality of good case narratives" (2001: 66–87). He concludes that social science should use Aristotle's concept of *phronesis*, practical rationality to "contribute to the revitalization of democratized public decision-making. The future is open to connecting research to policy-making … not in some grandiose vision of the abstract modellers … but in more contextually sensitive ways, case by case, here and now, as citizens and publics allow—and researchers respond." (Flyvbjerg et al., 2012: 296).

The power of example is a tried and tested way for ideas to break through to policymakers and the public. When people see something working that appears to solve a problem or meet a need, it cuts through faster than any published research. Social scientists can learn from this by identifying and developing demonstration models that show social problems being solved in reality.

2 Social models as experiments and "dynamic theories"

The following subsections provide an overview of institutions as social models, making a case for social scientists to recognise them as experiments and forms of knowledge (dynamic theories), equivalent to theories in the natural sciences. The analysis also considers the many layers or dimensions of knowledge embodied in real-time social models, the role of human agency, and the "democratic method" for testing social models.

2.1 What is a social model?

At its simplest, a social model is a pattern of behaviour, organisation or institution that is replicated, imitated or adapted by others. Models range from gestures, such as saluting a commanding officer, bowing to authority or taking the knee to support Black Lives Matter, to business models and forms of government. Throughout history people have adopted new ways of doing things by example from elsewhere, spreading agriculture, monasteries, fashions and online shopping. People use social models to shape society, most explicitly in companies that work on their business model to achieve specific outcomes. A business is a complex institution, in which staff work on their real-time model to improve outcomes. The main focus of this paper are the real-time models people use to reproduce and shape society, not the conceptual theories or abstract models about them.

An institution is any regular pattern of behaviour among people that continues over time. This is a simpler definition than most, closer to that of new institutionalism (Lowndes and Roberts, 2013; Peters, 2019). It is closest to Samuel Huntington's definition of institutions as "stable, valued, recurring patterns of behaviour" (1973: 9) and consistent with Hodgson's "systems of rules that structure social interactions" where "rules include norms of behaviour and social conventions" (Hodgson, 2015: 501). It covers the wide range of recurring patterns of behaviour instituted by people to meet perceived needs, from social norms to global governance. Large institutions are made up of countless smaller units, each of which is a mini-institution. These in turn contain micro-institutions—the rituals, routines, rules, and norms that make it work, outlined in 2.5.

Throughout this paper the terms institution, organisation, agency, social model and "dynamic theory" are used to refer to the same phenomena—patterns of behaviour that continue over time. The term "social model" tends to be used for generic models, so this paper refers to a "real-time social model" to mean a unique, particular institution. The term "dynamic theory" conveys the idea that social models are not static but embody collective knowledge and experiment how to do things. It might be appropriate to use the Greek word *thesmós* (Θεσμός) for an institution, custom or practice, to tell it apart from *theo*ría, a conceptual theory or system of ideas to explain something. For most purposes, the term "social model" is good enough.

2.2 Institutions as experiments and forms of knowledge

Every institution (social model) embodies a great deal of knowledge about how to do things, as well as beliefs about the world. Most of this is tacit, everyday knowledge, embedded in its physical infrastructure, power structures, norms, rituals, codes of conduct, procedures, organisational beliefs, theories, symbols and stories. Institutional knowledge is largely context dependent practical rationality, which Aristotle called *phronesis* and Flyvbjerg described in detail (2001). Each institution is also a rough and ready experiment in how to achieve a range of objectives, adapting to shifting power relations, social conditions, ideas and aspirations. The social researcher Donald Campbell saw government reforms as societal experiments to which rules of evidence can be applied. He envisaged "The Social Scientist as Servant of the Experimenting Society" (Dunn, 1998: 44). In *Organizations*: *Social Systems Conducting Experiments* (2010), Achterbergh and Vriens provide a detailed case for experimentation as a key feature of organisations and their survival. They analyse conditions for these experiments and propose principles for improving organisational design, which are beyond the scope of this paper.

The key point is that institutions both transmit and develop knowledge of how to achieve multiple objectives. They can be seen as "theoretical cumulations" of collective knowledge sought by Turner (2001): 105. Many patterns of behaviour, such as reciprocity, play,

hunting and child rearing, originate in pre-human species and persist because they meet basic needs. Turner shows how our ancestors evolved distinctive emotional, psychological, behavioural, cognitive, and community-building behaviours to create larger societies within which *Homo sapiens* developed the use of tools, language and conceptual thinking sought by Turner (2021: 105). For over two million years prehistoric peoples invented new forms of behaviour and social organisation together with dwellings, agriculture, states and religions. Patterns of behaviour that stood the test of experience were transmitted to successive generations, becoming established in customs, norms, and social systems. Modern governments continue many ancient elements, including armies, assemblies, codes of law, courts, plebiscites, prisons, and taxes. Governments learn from experience, from each other, and from other sectors (Endnote 2 in Supplementary material). This paper argues that social scientists can either continue to conduct and publish research hardly anyone reads, or apply their skills and knowledge to help people improve their everyday experiments to create better real-time social models and dynamic theories to meet their needs.

There are no "true" or "best" models, since there are always alternative possibilities, depending on people's aspirations, beliefs and circumstances. People create new institutions all the time, often taking advantage of new technologies. Or they repurpose ancient institutions, like the transformation of universities from theological colleges into business schools and research centres. Societies are too complex for any one person or agency to understand everything that is happening or to prescribe universal solutions. But people can use inquiry, experiment, enterprise, politics or social action to develop better ways of solving problems at any level.

Social sciences can do more than analyse what's happening and propose theoretical models of how the world works or could be improved. They can help people reimagine institutions or create new ones to make life better. This approach to social science aims to enable people to increase their potential for self-determination, not to prescribe an ideal model of how to do things. For this we need to understand the complexity and dynamics of social models.

2.3 Social models as dynamic theories

In the natural sciences theories provide reliable models of reality that enable people to unlock the power of nature and transform the world. Social sciences cannot develop lasting theoretical models as in physics because societies are reflexive. Theories can influence people to change behaviour, so that they cease to be relevant over time, like old organisational charts. Conceptual theories can be insightful, but they are only one of many kinds of knowledge people used to understand and influence society, as outlined in 2.5 below.

The nearest thing to a reliable model in society is an institution, a pattern of behaviour repeated over time and replicated in different contexts to achieve roughly similar outcomes. Institutional behaviours and structures are more persistent than the beliefs which guide them. Thus continuities of form and function can be traced from ancient temples through synagogues, churches and mosques to the secular Sunday Assembly (Endnote 3 in Supplementary material). Because people have agency and are not autonoma, they incorporate new knowledge and technologies to meet changing circumstances or new purposes. Institutions are social models that can be replicated, refined or scaled up, to provide similar functions in many different societies or adapted to achieve different outcomes. They are, in other words, like proto scientific theories.

The knowledge embodied in every institution is tested daily by social reality—a process that is rarely rigorous or scientific but nevertheless a rough and ready empiricism. Over thousands of years our ancestors experimented with many forms of social organisation. People who ran the earliest states learnt how to deal with epidemics, fluctuating harvests, water, rival states, trade and other issues (Scott, 2017). Over the centuries people developed countless methods to collect data and improve the performance of their institutions, creating forms of detachment and verification as an intuitive scientific method. Rulers developed accounting, writing and record keeping thousands of years ago to keep track of taxes and population. Merchants kept records of credit and transactions. Today businesses are even more rigorous in collecting data, testing and developing their model in competition with others. Aspiring entrepreneurs study business models and case studies because they provide a template—like a theory—of how to achieve their objectives.

Businesses like McDonald's are real time experiments that collect and analyse vast amounts of data to refine their model and achieve consistent outcomes for their stakeholders—returns on investment, satisfied customers, celebrations, employment, identity, status, etc. Like a theory in the natural sciences, McDonald's is a replicable model of an aspect of reality that produces reliable outcomes. The model is widely taught and used by countless businesses. But the more important lesson is that the leaders of McDonald's use research to continuously improve their model and achieve its objectives. The model has changed significantly since 1952, because it is reflexive, using feedback and new knowledge to improve outcomes sought by its leaders (Alexander, 2023). The model ensures consistency across continents. Just as space travel depends on the laws of physics being the same everywhere, McDonald's relies on consistency across many regimes. Lindblom and Cohen (1979a: 77) suggested that policy frameworks which make this stability possible are equivalent to Thomas Kuhn's paradigms in natural science.

Like theories in the natural sciences, institutions are cumulative bodies of knowledge, changing in response to experience and experiment. They can even be predictive, in the sense that experienced leaders replicate their model to achieve largely predictable outcomes in different contexts. But they also differ from theories in the natural sciences, as Lindblom and Cohen, Giddens, Flyvbjerg, Schram and many others have argued, because "the people being studied always have the potential to include the social scientists' interpretations in theirs, creating an ever-changing subject matter and requiring a dialogic relationship between the people doing the studying and the people being studied" (Schram, 2012: 17).

2.4 Dynamic theories in the philosophy of science

The idea that institutions (social models) embody theories recalls Karl Popper's observation that "organic structures are theory-incorporating as well as problem-solving structures." He wrote "practical problems arise because something has gone wrong, because of some unexpected event. But this means that the organism, whether man or amoeba, has previously adjusted itself (perhaps ineptly) to its environment, by evolving some expectation, or some other structure (say, an organ). Yet such an adjustment is the preconscious form of

developing a theory; and since any practical problem arises relative to some adjustment of this kind, practical problems are, essentially, imbued with theories" (1976: 133).

Institutions are natural experiments, informed by everyday knowledge, methods, thinking and preconscious theories accumulated over generations in response to problems, opportunities and ideas. They are also purposeful, striving to survive, multiply and flourish. An institution may not be the best "theory" (most aren't), but it can be improved or superseded if people do things differently or want different outcomes—tasks in which social sciences can help.

2.5 Layers of analysis in social models (dimensions of knowledge)

People use many forms of knowledge to understand, influence and run institutions (social models). For simplicity, they can be separated into between five and nine dimensions or layers of a real-time model (see Figure 1). Professional social inquiry contributes to mental models (layer four) and organisational processes (layer two) alongside everyday knowledge, expertise and folklore.

Social science theories are largely irrelevant unless they inform practice, but can be transformative when they do. Frederick Taylor's scientific management (1911), eugenics (Nature Editorial 1904; Galton, 1904; Bashford and Levine, 2012), behaviourism (Watson, 1914; Skinner, 1938, 1948), Keynes (1936) and countless theories have had a huge impact. Some have been disastrous and are now considered flawed or dangerously wrong, which is why the democratic method of citizens' peer review and scrutiny are important (see 2.8 and Supplementary material). By understanding how people integrate different forms of knowledge within a particular real-time model, social scientists can enhance everyday knowledge to improve social problem solving, as advocated by Argyris, Lindblom and Cohen, Flyvbjerg, Turner, and many others.

Real-time models are the institutions we use and experience. Some have been around for millennia, transmitting patterns of behaviour and knowledge across generations. While institutional structures may persist for centuries, the experiences, emotions, aspirations and beliefs of people in the present, as well as their relationships with wider society and nature, are what matter in the present. Consciously and unconsciously, people involved with each real-time model integrate complex strands of knowledge from many sources to achieve their objectives, building on foundations about which they may know little. People reproduce, reinterpret or reorientate their institutional legacy of dynamic theories to meet current needs. The complex relationships between and within these layers are outside the scope of this paper, but they are studied by leaders and practitioners as well as academic disciplines.

The everyday activities of each real-time model include complex relationships with four external layers:

The natural environment of geography, geology, climate, plants, water and food supplies are often taken for granted or dealt with by specialists. Ancient knowledge of the environment still informs many modern customs, such as food taboos, school holidays in the summer to allow children to help with the harvest, and celebrations of mid-winter and the equinox. Today soil degradation, global heating, and other natural factors affect most institutions, leading to extensive innovation in social models to regulate humanity's relationships with nature better.

Infrastructure of farms, roads, waterways, ports, supply chains, sources of energy, cities, health services, telecommunications, satellites and other facilities built into nature to meet people's needs and wants. The creation and management of every element of infrastructure is a real-time model and social experiment in its own right.

The institutional environment reaches deep into internal procedures of most social models. Regulators, funders, media, competitors, and other agencies have a direct influence on most institutions, which have knowledge and methods for engaging with

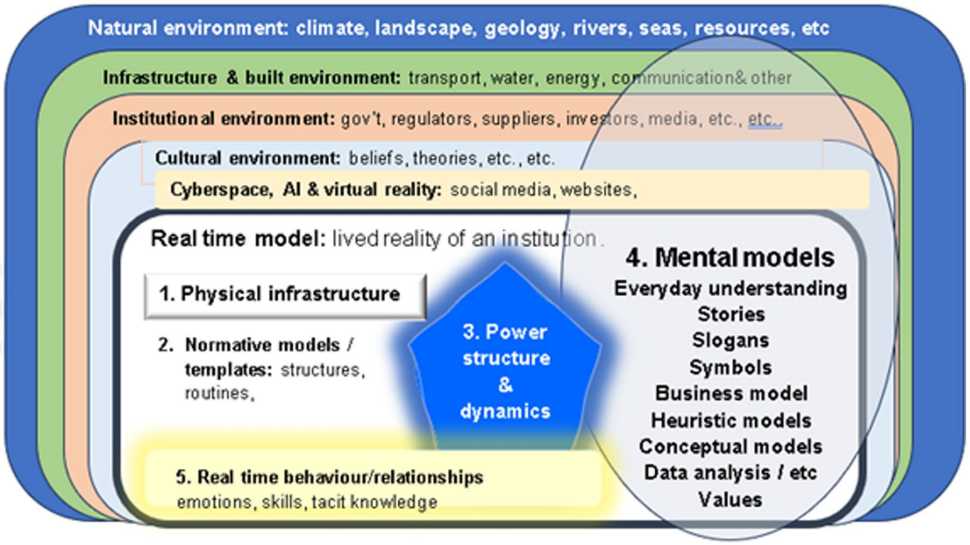

FIGURE 1
Layers of knowledge embedded in a real-time social model operating within culture, institutional environment, infrastructure and nature which blend into and influence each other to bring about outcomes (developed from Alexander, 2023).

them. Each external institution is also a real-time model and experiment.

Cultural environments include beliefs, theories, and ideologies that influence people's behaviour and institutions, with many different cultures coexisting, sustained by institutions of education, faith, enterprise, media and the arts.

Cyberspace, the internet, social media, artificial intelligence and virtual reality are creating powerful new environments that pervade most societies and institutions, creating platforms for myriad new forms of social model like Airbnb, chatbots, eBay, FutureLearn, or Twitter (now X).

Beliefs have a powerful influence on behaviour, leading our ancestors to build pyramids, sacrifice animals and people, create places of worship, wage wars, launch enterprises, produce art and develop political systems. The scientific method is a generic social model for systematically developing and testing beliefs about the natural world to discover better mental models to manipulate the material world. Many social sciences model themselves on the natural sciences, but this does not take into account reflexivity and the double hermeneutic inherent in social life. Understanding and working on institutions as real-time dynamic theories could give social sciences a more effective model of inquiry.

The following sections outline several dimensions or layers of knowledge embedded within each real-time model:

1 Physical infrastructure shapes behaviour and perceptions. Buildings like the Whitehouse, 10 Downing Street, Tiananmen Square and the Kremlin, play significant roles in politics. A town hall, law court, state border, prison, park and school embody beliefs and knowledge about what a state does. When people with power change their ideas about an institution, they may change its physical embodiments, replacing castles and palaces with parliaments and government offices. But physical infrastructure often survives changes in rhetoric as leaders dress old norms and power structures in new clothes so that, for example, presidents of the French Republic occupy the royal Élysée Palace, named after the place of the blessed dead in Greek mythology. Physical infrastructures are a resilient substrata of every social model.
2 Normative models are the templates, formulae, methods, mantras, checklists, rituals, evaluation methods, career structures, training programmes, strategic plans and algorithms used to guide real-time models. In politics they include written constitutions, laws, ministerial codes, and informal rules of thumb used to inform everyday conduct and crisis management. Normative models may be based on an ideal or best practice from other real-time models, like the evocation of the Roman republic in the American Senate, but these are often unreliable. Stated norms may be out-of-date, inaccurate, or deliberately misleading, deflecting attention from where power is exercised or misdeeds committed. An institution may survive by bribing officials, cheating users, and other forbidden activities that do not appear in any handbook but are established norms difficult to eradicate. Normative models for recruitment, development, training, and progression of people have a significant role in replicating and refining outcomes of real-time models. Changing a procedure, developing new norms, creating a checklist, or introducing regulations can have large-scale, long-term impact on outcomes, which social research can help to identify and improve.
3 Power structures affect who can do what, when and how in an institution. Power dynamics determine how decisions are made, work is shared, resources allocated, and outcomes produced. They affect every aspect of a social model, which in turn influence the exercise of power. As with other elements of real-time models, reality of power often does not match institutional norms. Thus liberal democracies create many norms, checks and balances to regulate the use of power, which may nevertheless be abused by individuals, groups or agencies. Careful observation or even participation are therefore necessary to really understand actual power dynamics at any moment. See 2.6 for the role of human agency and power.
4 Mental models are the assumptions, beliefs and concepts through which people understand and shape the world. There is extensive research and debate about their nature, beyond the scope of this paper (Jones et al., 2011), but they have a powerful influence on the actions of individuals, institutions and society. The development, propagation and use of mental models is a major area of human activity, through religions, education, advertising, the arts, journalism, social media, consultancy, policy analysis and science. Social sciences compete for attention with other forms of knowledge, their insights often eclipsed by illusions, prejudice and noise. They are most influential when they work with other agencies, particularly business, government, media or civil society, which communicate, use and test their findings in practice. Many applied social sciences do this, such as business studies, counselling, law, operational management, planning, public administration and policy. However, "academic drift" tends to divert applied disciplines from real-world practice to the more abstract "values, norms, symbols and practices" of universities (Christensen and Newberry, 2015; Harwood, 2010).

   Academic drift has a powerful influence on the production of knowledge, driven by incentives and status of universities. It has been shown to explain why organisations that combine vocational education and research tend to "accede to ideals supported by traditional academic organizations with higher status" (Kaiserfeld, 2013: 171) and why even a practical discipline like dentistry can move "away from research that serves dental healthcare" (van der Wouden et al., 2022). This makes it particularly important for scholars to understand and test knowledge in context, as conscious parts of real-time social models.

Mental models include:

a Values, the "know why" of societies, institutions and individuals, expressing their purpose and aspirations. Values are closely related to norms, but organisational purpose and values have a distinctive role that deserves special attention. Values are powerful drivers of behaviour, leading people to achieve extraordinary feats or commit terrible deeds. Like norms, actual values may be very different from those professed (Schein and Schein, 2016), so it is important to observe what happens in reality. People have inconsistent and unconscious values, so values within societies and institutions are even more

diverse. When the values of individuals and institutions are aligned they can achieve remarkable things. Differences in values among people within organisations are often drivers of change, leading to new norms. Studies of values (e.g., Maierhofer et al., 2002; Fedorenko and Kyrylenko, 2021) provide insights but need to be applied and tested in practice.

b Heuristic models are exploratory methods used by leaders and practitioners for discovery and problem solving, to understand the present and plan for the future. They include projections, feasibility studies, scenario planning, strategic foresight, games, simulations and many other methods, combining data and experience with metaphors, stories or drawings to find underlying patterns, meanings, and possibilities.

c Generic models are a distillation of lessons from real-time models, widely used in business by aspiring entrepreneurs and corporate leaders. Examples of generic models in politics include the "Scandinavian model of political economy", the Soviet model, Mrs. Thatcher's model of privatisation, the "public health approach to reducing violence" or "Portuguese model for decriminalising drugs". Good generic models increase people's ability to shape society. For a discussion of models in the public sector, see Lane (2000) or Osborne et al. (2014). Nonprofits develop Theories of Change, social marketing, community organising, or *ad hoc* models (Brest, 2010; Wendt, 2021; Brennan et al., 2014). Comparative studies such as *Why Nations Fail*: *The Origins of Power*, *Prosperity*, *and Poverty* (Acemoglu and Robinson, 2012) by Daron Acemoglu and James Robinson provide a compelling argument for the benefits of certain generic models for good governance.

d Paradigms or worldviews are basic beliefs and assumptions that guide people's thinking, including research (Guba and Lincoln, 2005; Kuhn, 1962). Powerful paradigms are reinforced by physical features such as an altar, throne, hammer and sickle, etc., as well as institutional norms, rituals, symbols, slogans, stories and other features of real-time models.

e Conceptual models (theories): People draw on many theoretical models to work with, in and on real-time social models. Most institutions draw on theoretical models from within specific traditions—religious, political, organisational, cultural, professional and preferred scholarly disciplines. Some leaders develop their own theories, such as fund manager George Soros, who credits his success to his theory of reflexivity, drawing on Karl Popper (Soros, 2008), or Ruhollah Khomeini, whose *Lessons on Jurisprudence* guide Iran's model of government (Khomeini, 1979). Business analysts, consultants, think tanks and many others produce and promote conceptual models as intellectual property and brands. Academics are not averse to making a name and income for themselves on the back of a book and idea (which is no bad thing). Theories are rarely adopted on the basis of academic rigour, peer review or professorial eminence, but on their appeal, credibility and utility to their adopters. To be useful, conceptual models must inform actions of practitioners, policymakers, investors, customers, or citizens. This is often achieved through one of the most powerful forms of representation of all, stories.

f Symbols and signs such as icons, relics, flags, badges, crowns, logos, kitemarks and accreditation have a significant role in social models, often used in ceremonies and rituals to reinforce the sense of belonging. In politics placards, raised fists, occupations and sit-ins are traditional symbols of protest, joined by the pride flag, taking the knee, and #MetToo. Rituals are symbolic actions that connect people across time and place to create bonds within and between institutions (Norton, 2024). More recently campaigners have developed the use of awards, certification and kite marks as instruments of social change. In academia, degree classification, mortar board, graduation gown, titles, and citation scores are used to maintain the status of universities as the apex of education.

g Mathematics is an ancient mental tool for recording evidence and modelling patterns in the natural and social worlds, which enabled the development of agriculture, commerce and science.

h Data analysis is increasingly used by businesses and governments to provide real-time feedback on institutional performance. This has an influential role in social models as experiments, but their reliability depends on judgement, the assumptions on which they are based, and knowledge of context. Social research can contribute to more rigorous tests and analysis of metrics used.

i Artificial intelligence is the latest powerful extension of humanity's mental capacity, building cognitive abilities into computers that are already being used to create new institutions.

j Stories distil knowledge into memorable narratives. Advertisers, campaigners, politicians and leaders communicate through stories to tap into people's emotion and convey notions of identity, agency, and belonging. Scientific discoveries enter wider society through stories (Endnote 4 in Supplementary material). Social scientists have long studied and understood the nature of stories. They can tell better stories to help people improve their social models or create better ones (Czarniawska, 2004; ElShafie, 2018; Green et al., 2018; Gabriel, 2004; Gelman and Basbøll, 2014). Organisations with effective champions and good stories can spread more widely than those which lack champions and stories.

5 Real time relationships within institutions contain complex knowledge that also influences outcomes. People's emotions, motives, skills, tacit understanding and relationships do not appear on organisational charts, but informal patterns of behaviour have a powerful effect. In *Who Really Matters*: *The Core Group Theory of Power*, *Privilege and Success*, Art Kleiner (2003) shows how hidden relationships can create informal micro-institutions at the heart of power dynamics. Membership of a faith or secret society, guanxi (connections) in China (Yanjie, 2018), and systematic discrimination on grounds of age, gender, or race perpetuate privilege through connections and patronage. Institutional abuses in sections of the Catholic church (Jenkins, 2001; Ranan, 2007) are examples of their harmful effects, while the upside-down management style of Timpson's high street chain (Timpson, 2010; Ladds and Pereira, 2017) offer an explicit model of how relationships based on trust can improve outcomes.

Institutions can persist even if they are empty of people because their buildings, procedures, heuristics, narratives, symbols, stories and external institutions can replenish the vacant real-time institution. For example when parliament is suspended, or there are no supreme court justices in post, or all members of a club resign.

Each of these five dimensions can also be observed in the simplest of behaviour patterns, such as a tea ceremony, wearing a hijab, or raising a flag. Behaviours often embody complex layers of meaning.

This summary of how humanity uses mental models and embedded knowledge aims to put the conceptual theories of social science into context. However insightful, theories are worth little unless connected with other forms of knowledge that people use to perceive, understand and shape the world. Scholarship can miss or even obscure significant features of reality. Worse, theories can trap people into believing that particular social forms, such as class, hierarchy, male dominance, nation states or other widespread social structures, are intrinsic features of human societies. In *The Dawn of Everything*: *A New History of Humanity* anthropologist David Graeber and archaeologist David Wengrow (2021) showed how people have conducted social experiments for millennia, developing and testing many forms of settlement, government and civilization that demonstrate countless possible ways of living. The dominance and longevity of particular models proves something, but not that they are inevitable. The flourishing of ancient Egyptian civilizations for 3,500 years does not prove that divine kingship, slavery and mummification are models to follow, although these civilizations have bequeathed practices still used today (Kemp, 2018).

Each real-time model is a unique "dynamic theory" embodying extensive knowledge of how to do things in context. Apparent similarities are deceptive, which is why observation matters. For example, two schools serving the same community, built, funded and governed under the same rules, may have very different outcomes as a result of differences in ethos, teaching, leadership and relationships with parents. Close examination may show many subtle but significant differences in each layer, from their design of outdoor space, classrooms and other physical infrastructure, to their use of stories and symbols. Education policy-makers, campaigners and the public often champion different generic models of schooling, whether comprehensive, community, cooperative, Charter, Academy, democratic, grammar, private, selective, Steiner/Waldorf, Summerhill, or Finland's child-centred system. While studies may show benefits or disadvantages of each ideal type, some schools of any type can fail a proportion of children, or fail to evolve, as in Finland (Helakorpi et al., 2023; Vanttinen, 2023). The point is that every school and school system is a permanent experiment as well as a model (OECD, 2018). Each has the potential to improve outcomes by building reflective practice, social research, and systematic feedback into its real-time model, as explored in part 3 and Supplementary material. The choice of which model, or combination of models, to adopt is political.

2.6 Institutions amplify and constrain human agency

The missing dimension from this outline is human agency—"an individual's capacity to determine and make meaning from their environment through purposive consciousness and reflective and creative action" (Parsell et al., 2017; Houston, 2010). Institutions mediate action, by constraining or amplifying people's power to do things. Modern institutions enable billions of people to exercise power in ways that were barely imaginable 150 years ago, such as access to heat and light at the touch of a switch, water from a tap, rapid travel, healthcare, telecommunication, knowledge through the internet, and much more. Power is still highly unequal, so that many people suffer from bullying, crime, exploitation, war and other actions by people more powerful than themselves. Collectively humanity has created immense power through institutions that benefit large numbers of people or can oppress or kill people at scale. Analysis of power is outside the scope of this paper, but it cannot be ignored when working with real-time social models, so it is worth summarising a few key features. Alexander proposed that social power has three elements:

1 Agency: people's ability to act.
2 Organisation: social entities that amplify (or dampen) their actions.
3 Context: circumstances that make it possible for individuals and organisations to act.

For example, the ability to drive (agency) and a car (organisation) are insufficient without roads (context). Organisations amplify people's power both internally and externally, but outcomes also depend on their abilities, the organisation's internal processes and its wider context (Alexander, 2017: 119). Factors such as leadership, governance, culture, values, skill, knowledge, relationships, technology and chance all play a role. People use whatever knowledge, abilities and power they have to adapt institutions or create new ones to meet their needs and aspirations. Power is exercised through different means—coercion (force or hard power), compensatory (reward, incentives, pay or sticky power), conditioned (persuasion, consent or soft power), system or structural power, challenge (speaking up, countervailing power), and cooperative or consensual power (free will), which can be described as a power spectrum (see Figure 2).

Power has many different sources—personality (confidence, initiative, leadership, celebrity, reputation, stubbornness, etc.), property (money, tools, assets, revenue, technology), organisational (hierarchy, position, rights, status, affiliation, networks), intelligence (expertise, information, ideas, beliefs, stories and values). It may

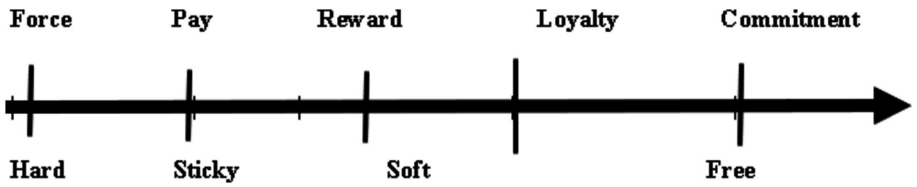

FIGURE 2
Power spectrum from force to freedom, which can be seen as a scale to measure social progress (from Alexander, 2017: 124).

be overt, visible, hidden or invisible (Alexander, 2017: 121–132; Galbraith, 1983; Nye, 2004; Gaventa and McGee, 2011).

Institutions amplify or constrain people's social power. They are like sophisticated technologies to achieve personal and collective aims. People can change institutions in unpredictable ways, such as transforming an inn into a stock exchange or a Communist Party into stewards of the world's largest capitalist economy in China. Black Lives Matter and #MeToo movements triggered organisational change worldwide by sharing stories and symbols, made possible by social media and receptive contexts. A starring role in The Apprentice television series, social media, and personal wealth enabled Donald Trump to disrupt and potentially destroy America's democratic system. Meanwhile artificial intelligence, big data, bioscience and other innovations enable some people to transform familiar social models.

Power relationships are intrinsic to every real-time model. Humanity has accumulated experience of how to handle power over millennia, embedded in states, companies, families, schools and other agencies. Liberal democracies are a relatively recent experiment in how to amplify and channel people's power, creating frameworks of accountability and peer review by citizens, outlined in 2.8.

Social sciences contribute to a wide range of powerful decisions in society, such as interest rates and monetary policy by central banks, the payment of state benefits to citizens, large areas of public policy and marketing campaigns by private companies. Although these decisions are ultimately taken by politicians, officials, entrepreneurs or citizens, institutions of social science provide many of the theories, methods, data and professionals that inform them. This gives social science practitioners a particular responsibility to design their institutions to be ethical, open to the diversity of knowledge about the world, and conscious of their impacts on society (see 3.2 Ethics).

2.7 Snapshots in time

Another missing dimension from Figure 1 is time. All social sciences study the world from a period in time: archaeologists, classicists and historians unravel the past; economists, psychologists, political scientists, and sociologists seek patterns in the present; while policy analysts and futurologists peer into the hereafter. However rigorous their methods, scholars are subject to Miles's "law" for social science, which is that "where you stand depends on where you sit" (Grossman, 2021: xi). This refers to bias from our position in society. We all "sit" in an extended present that includes recollections of the past and expectations of the future. Scholars are inevitably influenced by their life experiences and present reality, including current methods of their discipline and its institutions as well as wider social and political conditions.

All real-time models build on the past to shape the future. Education, faith communities, law, and social sciences each have their own methods, some claiming to follow *the* truth while others seek it. Their inconsistent or conflicting perspectives are part of humanity's unsystematic experiments in how to create a good life. The humanities and social sciences contribute to our collective understanding, together with everyday experience, big data and other sources, but every individual and organisation assembles their own mental models of progression through time for their particular time, place and purposes. Figure 3 shows an explicit "analytics ladder" of methods used by the UK Policy Lab at different stages in time, with a few disciplines added by this author.

The Policy Lab is a "dynamic theory" of how to bridge disciplines and organisational boundaries to "improve policy making through design, innovation and people-centred approaches" (Policy Lab, 2024). Political parties, governments and most large organisations have many teams working on analysis, strategy and policy, integrating knowledge from the past with current trends and research to help shape the future. Most have some real-world impact, ranging from next year's fashion and consumer products to big social changes, power stations, or missions to the moon.

Academics are only one of many sources of knowledge informing the policies and decisions shaping action, as shown in Figure 4 from the Policy Lab. What is striking is that all but one of the contributors shown are university-educated professionals. "Citizens" are the exception, and a good proportion of them are also likely to be professionals.

This shows how social sciences and professions are built into institutions that shape the future while citizens are often neglected, except as consumers, at election times or when they protest. This underlines the role of citizens and democratic systems in the development of real world models and dynamic theories.

2.8 Social science and the democratic method

People have a critical role in social experiments, which scholars can assist. People are subjects of social research as well as users and producers of knowledge about society. At a profound level, they are co-producers of social science, shaping and creating institutions to meet their objectives.

Rogers Smith uses the term "peoplehood" for a wide range of human groupings, "from religious bodies to social movements to racial and ethnic communities … to nation states" and more, which share stories in common (Smith, 2015: 2; Smith, 2020a). Peoplehood is a broad term which recognises the importance of people's sense of affiliation and identity, as well as their ability to reformulate inherited conceptions and institutions. "Peoplehood" is a more fluid concept than group identity and can help us understand human development over millennia as well as in contemporary societies. Smith observes that "Politics not only shapes many identities commonly seen as political, such as party ID and nationality. Its reach also extends to aspects of identity that can appear purely social, such as people's names and hobbies" (Smith, 2001; Smith, 2020b: 20), in other words, micro patterns of behaviour (see 2.9).

This paper uses the term "people" for humanity in all our diversity and individuality, and "citizens" as participants in public politics at any level, while recognising the global hierarchy of citizenship based on national affiliation (Alexander, 1996: 178). For much of history most people were not citizens but subjects, serfs or slaves. People created citizenship as legally defined privileges, which today may be bought or acquired by various means under different jurisdictions. It has different meanings, rights and obligations in different parts of the world, from gendered kin contracts of the Middle East (Joseph, 2005; Meijer et al., 2023) to pan-national citizenship in the African and European Unions. Citizenship is therefore an important institution with wide ranging economic, political and social implications. In this

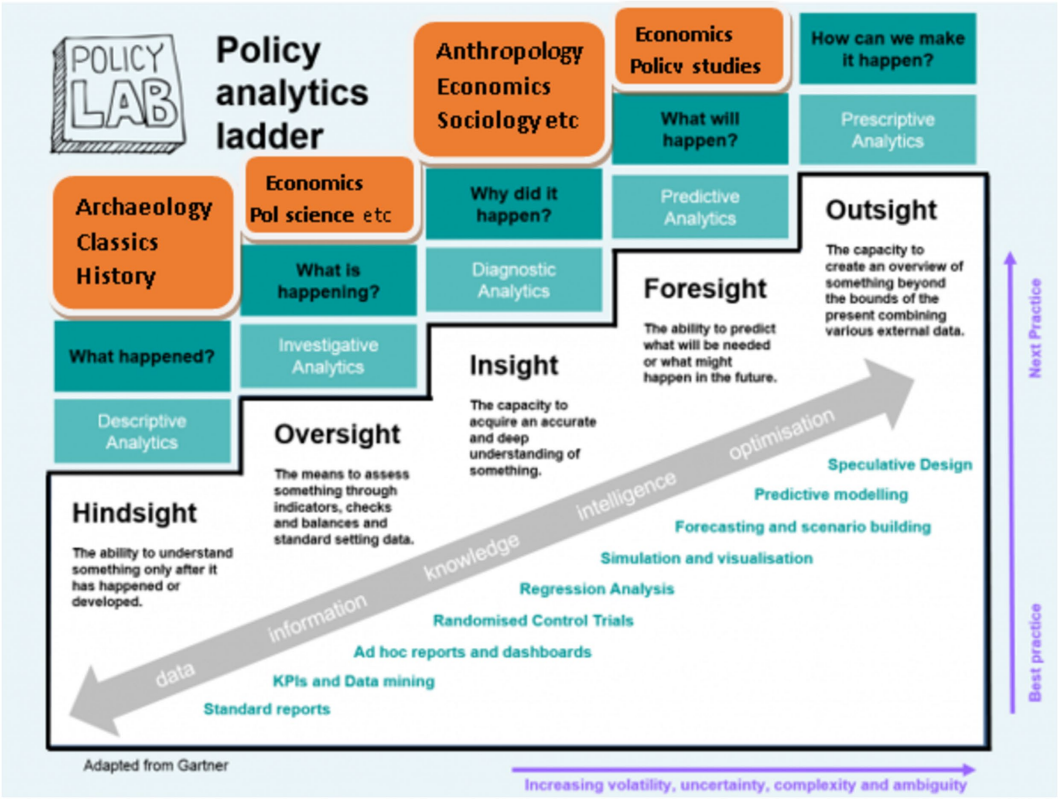

FIGURE 3
A mental model of policy tools & insights for stages in time (source: Siodmok, 2017), disciplines in brown added by this author.

paper the term "citizen" is used to recognise people as agents who can influence social and political decisions—such as decisions by a small group of American subjects of the British crown to declare independence and then form a hybrid republican democracy in 1787. It was a conscious political experiment, with a carefully designed constitution, which people used over the following centuries to expand the privileges of citizenship and democratic practices.

American democracy is a fractious laboratory of experiments that has unlocked immense social power and shaped the world. All governments conduct experiments with the public. They do not call their policies experiments, but that's what they are, as Donald Campbell recognised. The creation of states, citizenship, income tax, central banks, welfare states, eugenics, apartheid, financial deregulation, privatisation of public services, the European Union, Brexit, minimum wages, maternity leave, etc., are all experiments, evaluated by officials, parliaments, the press and voters. Most involved expert advisors and advocates, which was often helpful but sometimes disastrous.

Treating institutions as living experiments and social models subject to review by citizens calls on social researchers to

- Provide impartial evidence to support public participation in policy development.
- Evaluate the impact of policy in practice.
- Do comparative studies of institutions and political systems.
- Support and engage citizens in research on their priorities.
- Make knowledge on social issues easily accessible, useable and testable by the public.
- Strengthen and deepen democratic systems for scrutiny, deliberation and decision-making.

Many universities contribute something in these areas, but arguably not enough, since citizens of liberal democracies do not feel their system works well: in October 2024 a New York Times/Siena College poll reported that 59% of voters thought "the political system needs major changes." 11% believed it "needs to be torn down entirely." Only 2% said it does not need changes. It was not an isolated poll (NYT, 2024).

One important task of liberal democracies is to choose elected representatives to set the direction and ground rules of society through elected assemblies, which allocate resources, mandate institutions, create rules and scrutinise their implementation. This has a significant role in collective experiments about how to meet people's needs and aspirations. (Interestingly, the term forensic, the use of scientific methods of investigation, particularly in relation to a crime, comes from the Latin word *forensis*, meaning "in open court" or in public). Over centuries, citizens have developed civil liberties, economic freedoms, impartial rule of law, representative democracy, regulatory bodies, principles of good governance, and countless measures to make institutions more responsive, consistent and reliable. Everyday experiments in democratic systems include many forms of review, by elected assemblies, investigative journalists, regulators, law courts, public inquiries, commissions, and other procedures. Democratic processes can therefore be seen as methods of social science, as Alexander argued in *Political Science and the Democratic Method* (2021).

Comparative politics can help to understand how different systems work and the impact of different institutional arrangements (e.g., Boix and Stokes, 2007; Ishiyama, 2012; LeDuc and Norris, 2014; Lijphart, 1999). But what matters is that citizens—including commentators, lobbyists, politicians and scholars—use diverse sources of knowledge to shape and create institutions.

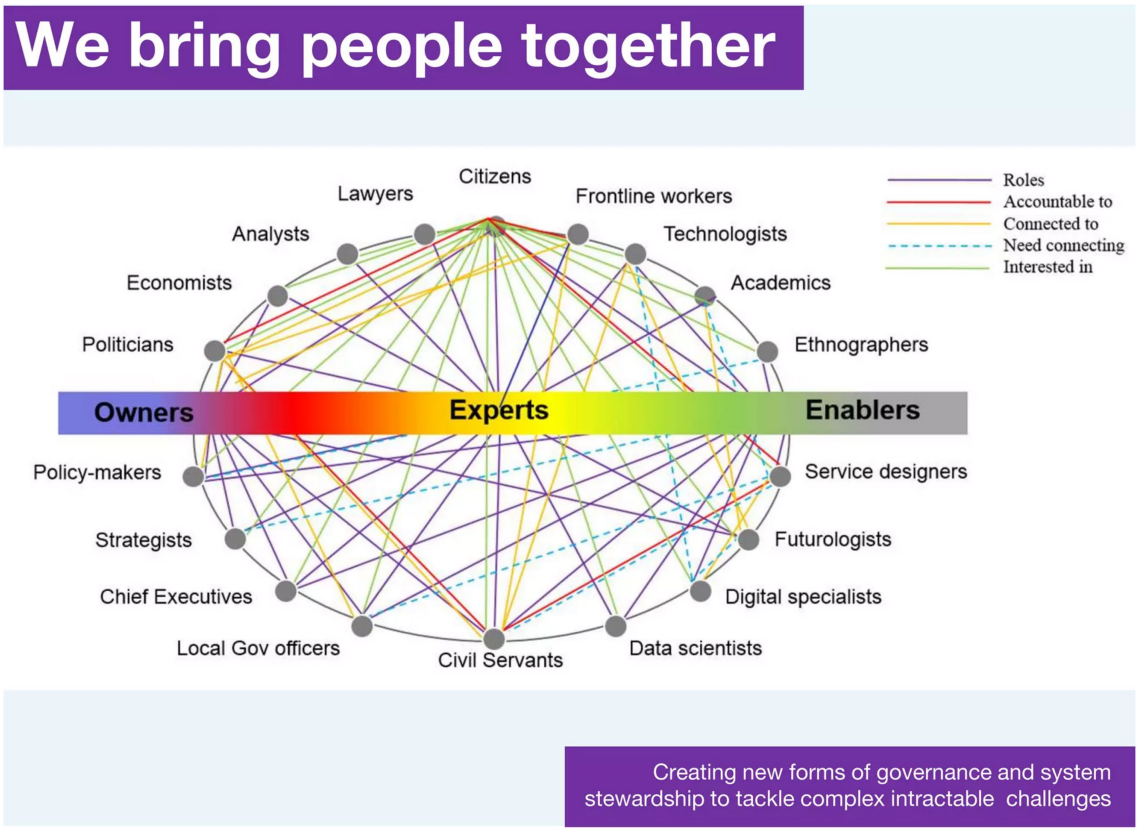

FIGURE 4
Contributors to the UK Policy Lab (source: Policy Lab, 2014). Note that only two are "lay" (citizens and frontline workers), although they have expertise and also include professionals who tend to be heavily over-represented in policy-making and institutional design.

In theory, liberal democracies give citizens a say over the priorities, content and conduct of research through funding regimes and legislation decided by their elected representatives. Academics in the United States, for example, have been dismissed for espousing evolution in 1870, for "subversion" during World War I and "un-American" views during the cold war (Riley and Stern, 2000; Schrecker, 1980). Today social media make it even easier for small groups to demand the resignation of scholars or termination of research. Teaching and research operate under social licence, implicit agreements that can be withdrawn if vocal citizens gain sufficient support to stop it. In commercial terms, social licence is an intangible asset (Raufflet et al., 2013: 2223–2230). Public funding as well as media, pressure groups and election cycles give citizens and their politicians power over teaching and research. More critically, elected politicians can reject or downplay evidence when influential interests lobby against it, as over tobacco, fossil fuels, sugar and countless other issues (Michaels, 2008; Oreskes and Conway, 2010).

Liberal democracies have many flaws, beyond the scope of this paper. Avowedly democratic societies have been slow to improve the ability of institutions to serve the common good. Many political scientists contribute useful evidence on democratic innovations, civic engagement and education for democracy, but there is a danger that our detached model of political science will chronicle the demise of liberal democracy rather than enable citizens to improve it (Endnote 5 in Supplementary material).

China has shown that an authoritarian model can accelerate economic development faster than liberal democracies and even increase citizen satisfaction with their government (Cunningham et al., 2020; Mahbubani, 2020: 154). As a result many leaders are attracted to authoritarian models of government. Flawed, disputatious, messy models of democratic government are in danger of being replaced by illiberal, fake or managed democracies that reduce freedoms and stifle innovation. Better democracies ought to foster better social science, but not necessarily. Authoritarian governments can use social science to develop sophisticated models to control society like a corporation, without the costs and turbulence of democracy. This model is currently being tested. The results may be seen in measures of life satisfaction, healthy lifespan, ecological sustainability, crime, violence and social wellbeing. But the ultimate test is simply which regimes survive.

It may be too late to stop authoritarian regimes from entrenching a global alliance of illiberal states through the UN system and BRICS alliance. This is speculation. But the end of Athenian democracy, the Roman republic, Weimar Germany, and most civilizations, shows that all political systems end (see Peter Turchin, *End of Times*, 2023). We can learn better models of statecraft from history and comparative studies (Eder et al., 2014; Keane, 2020; Levitsky and Ziblatt 2019; Norris 2011; Norris and Inglehart 2018). But the best defence of democracy is "exposure to democracies with successful performance in terms of economic growth, control of corruption, peace and political stability, and public goods provision" (Aksoy et al., 2024).

All this suggests that social scientists have both a civic and professional interest in helping fellow citizens improve the integrity and responsiveness of democratic systems.

2.9 Levels of social models (scale)

Social models exist at all levels, from handshakes and tea ceremonies to transnational corporations and global governance. Smaller institutions are nested within larger ones with varying degrees of autonomy and influence on other levels, while states and non-governmental associations have set up over 75,000 international organisations, over half of which are active and to which about 1,200 are added each year (UIA, 2024).

Table 1 is a rough sketch of different levels, which are studied by different disciplines. It requires revision but offers a big picture overview. The study of levels and types of organisation is outside the scope of this paper: see note for a discussion and more examples (Endnote 6 in Supplementary material).

The main purpose of this table is to show the range of social models, from the very small to planet-wide. Disciplines studying each level contribute evidence, like pixels to a bigger picture, but they lag real-time models in which people integrate knowledge from experience, observation, conversation, intuition, beliefs and other sources. People can transform reality and disrupt expectations, like the #MeToo movement, fall of the Berlin Wall or attack on the World Trade Centre. The most valuable knowledge combines accumulated research evidence from many disciplines with in-depth experience and live data in real time. This is available to

TABLE 1 Levels of social model—rough distinctions between patterns of behaviour (social models) that integrate collective knowledge about how to achieve outcomes at different scales.

	Level	Description	Examples: formal	Informal	Physical
1	Nano	Behavioural norms & customs, memes	Handshake, bow, etiquette, wearing a headscarf, hijab or clerical collar	Queue, deference, toast,	Badge, clerical collar, wedding ring
2	Micro	Rituals, routines, checklists, organisational methods	Hippocratic oath, Marriage, dowry, burial, job interview processes, election procedures, pedagogic methods	Play, games, yoga, dieting, counting calories	Medal, ring, game kit or board
3	Mini	Organisational units (also within entities)	Course, conference, project, department	Team, crowd, nuclear family, Household	Home, office
4	Midi	Entities	Business, school, hospital, university	Social movements, village	Buildings, paths, roads
5	Network, meta	Reciprocal or mutual relationship connecting entities	Research network, umbrella body, business or professional association, franchise, supply chains	Extended family, community of practice, old school tie, alumni, organised crime	Internet; path-, road-or rail network
6	Meso	Intermediate institution	Regulatory body, ofsted, big business, local government, public service	Town, city, region	Sewage system, hub airport, power grid
7	Macro	Large scale, national institutions	State/national government, NHS, army	Mafia, ramblers association	State frontier
8	Supra	Global governance, transnational corporations	UN, World Bank, NATO, catholic church, transnational company, Airbnb, Uber, meta	Faith community, Facebook, Twitter	Nuclear arsenals belt & road infrastructure
9	Regime	Rules governing an institutional environment	Varieties of capitalism, communism, apartheid, financial system, criminal justice systems	Illegal markets ruled by criminal cartels and alliances	
10	Systemic	Underlying causal relationship between entities	Market economy, nation states, science	Caste, class, corruption	
11	Deep	Fundamental	Gender roles, markets, money, hierarchy, patriarchy, property	Gender relations, class	Notes & coins, uniforms, crowns
12	Physical	Infrastructure of institutions at each level	Stonehenge, field, farm, roads, harbour, pier, cathedrals, dwellings, water/ sewage system	Trails, paths, internet	All the above

big businesses, finance and governments but not citizens, creating an acute social imbalance.

Understanding different levels is important because changing a real-time model at one level can improve or impair outcomes at other levels. For example, a subtle change in the model for freight transport, the shipping container, transformed the global economy (Levinson, 2006). A good course programme could enhance a university, which improves its local economy, so is copied by others who replicate its benefits, which leads to industry clusters like Silicon Valley (Paytas et al., 2004). But establishing universities as a driver of innovation and economic development may not be appropriate in every context and could be counter-productive. Similarly, a government can introduce a small policy change affecting personal behaviour—such a ban on smoking indoors—that reduces demand on health services and increases productivity. But in other circumstances prohibition may encourage crime, such as the Eighteenth Amendment to the US constitution, which made the manufacture, transport and sale of alcohol illegal from 1920 until repealed in 1933.

Large institutions, regimes, regulators and networks are also "meta models" that manage unitary institutions at different levels. Boundaries between levels are often fuzzy, as is the distinction between formal and informal models, which vary according to context—what may be formal in one context is informal in another. There are significant phase transitions or qualitative changes between some levels, such as the transitions from sole trader to a company with employees, then to branch structure, franchise or transnational corporation, but the process varies between companies or regimes. There are also significant differences between types of social organisation, particularly those based on family ties, loyalty, markets or hierarchies (e.g., Ferguson, 2017; Williamson, 1975).

Real-time models at each level have varying abilities to achieve their purpose, which could be improved through behaviour change, evaluation, organisational development, training, regulation, research or other interventions, as outlined in the Supplementary material. Research can improve understanding at any level, but the reliability of findings or conceptual theory can only be tested when applied over time, refined, revised or transformed through real-time experiments. Macroeconomic theories of mercantilism, laissez-faire, Marxism, Keynesianism and neoliberalism have all been used at scale, integrated into the thinking and practices of existing institutions in different contexts. What matters for social science is careful observation of reality and evaluation of real-world experiments from different points of view to reduce confirmation bias.

Research findings are only a small part of the mosaic of knowledge and skills people use to shape the world. Understanding this is key to unlocking the potential of social and political science.

3 Discussion: implications for social and political science

This paper outlines the hypothesis that all institutions are social experiments and "dynamic theories" (real time social models) of how to deal with different aspects of society. Every institution includes knowledge embedded in its physical structures, procedures, symbols and stories as well as conscious and unconscious assumptions, beliefs and philosophies that guide the people involved. Democratic processes are methods for reviewing the ability of institutions to meet people's needs, but they can be distorted by powerful interests, unequal access to knowledge, and the erosion of democratic norms. Social and political sciences produce research that could make a difference, but much of their findings are inaccessible to people who could use them and therefore wasted, like innovative patents that are never used.

Lindblom and Cohen observed that academic social science continues "as though … making a contribution to the solution. The effect is often to introduce distraction or noise into problem solving—a positive obstruction to social problem solving" (1979a: 88). They pointed out that most social inquiry takes place outside academia, through people's everyday problem-solving. Big businesses and governments conduct large-scale social experiments, enabled by immense computer power, the internet and artificial intelligence.

The main implication of this hypothesis is that the most valuable advances in social science are likely to come from work on real-time social models ("dynamic theories") which improve the human condition. While businesses and governments run the biggest experiments on society, academic freedom and Polanyi's "republic of science" (Polanyi, 1962) provide a framework for scholars to make an independent contribution by working with citizens to improve their everyday experiments and social models to meet their needs and aspirations better.

This implies that scholars need to assess the real-world impact of their own institution as a "dynamic theory" and social model—who do they benefit, in what ways, and what is the impact of their teaching and research? Most university evaluation is linked to criteria in league tables, used for marketing and public relations rather than systematic, routine assessment of their entire output to inform performance.

To increase their capacity for civically engaged teaching and research, higher education institutions need to identify and prioritise problems they are best placed to solve; develop appropriate models of collaboration with the public, practitioners and policy makers; embed more systematic reflection, measurement and evaluation of impact; and above all shift research incentives to reward contributions to society above publication and citation, as outlined in the Supplementary material.

Another implication is that researchers need to work in larger teams together with practitioners and other stakeholders in a concerted effort to tackle social problems. Some of this is already happening, as outlined in the Supplementary material. Research at scale does not mean McDonaldization, conformity nor corporatism, since there are many other models of social organisation (Endnote 7 in Supplementary material).

Nor does it mean that scholars should become political activists for one side or other. On the contrary, researchers and teachers need to act as devil's advocates, facilitating debate and scrutiny from opposing perspectives to test evidence and analysis. But it also means teams of researchers working scrupulously on evidence about critical issues, such as the relationship between smoking and cancer or between greenhouse gases and global heating in the natural sciences, and engaging honestly with the public about the implications for society. This is even more difficult in social sciences, but there is a public interest in better communication of evidence and controversies in research, as well as potential implications. To protect the integrity of science this means maintaining clear distinctions within a continuum of roles, from conducting research, communicating findings and their implications, promoting public understanding of science (Bauer, 2009; Rekker, 2021), advising policy makers, to being an advocate and citizen, including standing for office.

Nor does it mean putting social scientists in charge. It implies co-creation, collaboration and active contribution to everyday knowledge ultimately accountable to citizens through democratic processes. This means recognising the social and political implications of research, and ensuring that citizens are able to develop skills and knowledge for democratic politics, as outlined in the Supplementary material following this paper.

However, it does raise questions about whether dynamic social science is most effective within university settings, independent agencies or hybrid institutions with practitioners and researchers working together. The answer to this is likely to be empirical, depending on how universities respond to changes in technology, the economy, demand from students and the public, and funding sources.

3.1 Dangers of arrogance

There are risks that encouraging social scientists to take a more engaged role in society will increase arrogance and intellectual orthodoxy, as has been seen in medicine (Berger, 2002; Ritterman, 2017; Sackett, 2002), economics (Bhaduri, 2017; Rogoff, 2009), management theory, sociology (Tittle, 2004) and other disciplines. As Elinor Ostrom observed in *Governing the Commons*,

> "… in relying entirely on models to provide the foundation for policy analysis scholars then presume that they are omniscient observers able to comprehend the essentials of how complex, dynamic systems work by creating stylized descriptions of some aspects of those systems. With the false confidence of presumed omniscience, scholars feel perfectly comfortable in addressing proposals to governments that are conceived in their models as omnicompetent powers able to rectify the imperfections that exist in all field settings" (Ostrom, 1990: 215).

To prevent this, scholars and those who work with them need to be humble, have clear ethical guidelines, and actively seek alternative views.

Humility comes from recognising that the world is complex and constantly changing. This hypothesis aims to shift the focus of inquiry to real-time patterns of behaviour and institutions. Conceptual theories and mental models are only part of any "dynamic theory." Experienced practitioners and scholars will observe what's happening and draw on practical wisdom and knowledge of other real-time models to guide action, not any presumed omniscience or abstract model. Working with citizens and practitioners should also keep scholars' feet on the ground and open to the complexities of everyday realities.

3.2 Ethics and pluralism

Robust ethical frameworks are essential for social research by businesses, governments, civil society and scholars. Not all science is constructive and its impact can be deeply damaging. The now discredited science of eugenics led to unjust and often cruel social policies, such as coerced sterilisation of indigenous people in the United States and British dominions, as well as death camps in Nazi Germany, where scientists participated in mass murder. More recently social science informed the practice of torture (d'Ambruoso, 2021; Maguire and Costa, 2018), while mass data collection and artificial intelligence raise concerns about manipulation of the public. Education institutions and professional associations have a particular responsibility to ensure that ethical understanding and conduct are embedded into all learning. Every chapter in Rich and Brians' *Empirical Political Analysis*: *Quantitative and Qualitative Research Methods* (2018) provides detailed ethical guidelines. Using, reviewing and revising ethical standards is part of the normative features of a social model (level 2) (Endnote 8 in Supplementary material).

Finally, higher education and professional associations need to ensure that scholars engage with people from different or opposing views in a respectful and constructive way. The freedom of academic institutions to pursue research independent from religious, political or commercial authorities has enabled major contributions to the development of science, but in social science it is more difficult to conduct unbiased pursuit of knowledge since researchers are themselves citizens and part of the reality being studied, in which they may rightly want to make a difference. But institutions also tend to induce group think (Klein and Stern, 2009; Turner and Pratkanis, 1998), so education and research need to include challenge and debate as an integral part of the "republic of science." There will always be views that others consider abhorrent, flawed or simply false, but the spirit of inquiry should allow these to be tested on the basis of evidence and analysis. Ethical guidelines should restrain flawed or damaging ideas from being inflicted on others, but it is always possible that mainstream thinking itself is damaging, such as former orthodoxies of eugenics, scientific racism or Marxism-Leninism as applied in Moaist China. At the same time it is possible that flawed thinking contains insights that could make a constructive contribution to a current problem. What matters is that inquiry includes standards of behaviour and exploration that respect evidence, humanity and nature.

3.3 Testing this hypothesis

In a world society of over eight billion people, 200 nation states, numerous faith communities and billions of enterprises, civic associations and other agencies, there are many competing models of how to conduct social affairs. They are tested in reality. Particular models are falsified if they fail, but generic models may be continued or revived by other people, such is the power of belief. It is possible that the western model of liberal democracy, civil liberties, open markets and voluntary cooperation will be eclipsed by more authoritarian, communitarian or other models, or by mounting chaos as a result of global heating. We are all part of humanity's experiments in how to live.

This hypothesis is proposed as an approach to social science that can enable people to build continuous improvement into the social fabric at every level, from home, work and community to global governance, so that everyone can flourish.

Scholars can test this hypothesis in at least three ways:

1. Study the history of particular institutions to understand the extent to which they experiment, transmit knowledge and act as social models from which others learn.
2. Compare institutions with a similar purpose to identify better practices and share the lessons with practitioners, policy-makers and the public to see if it improves the ability of their real-time social models to achieve better outcomes over a period of time.

3 Enhance people's everyday knowledge and sociological competence in real-time models over several years, while developing a community of practice and sharing lessons, to see if this has a greater impact on real world outcomes than traditional academic institutions.

The first of these is a traditional academic approach, the second combines scholarship with experiment, while the third is largely empirical. These three approaches could be applied to any social model—recurring patterns of behaviour, small groups, schools, medical centres, democratic innovations, integration of migrants, traffic control, international agencies, universities, etc. But they are all experimental, tested in reality.

3.4 Limitations

This paper has the limited aim of exploring the hypothesis that institutions are real-time experiments and social models ("dynamic theories"), outlining layers of knowledge embedded in real-time models and a rough scale of social models, which needs to be tested over a decade or more. This conceptual outline aims to signpost the many forms of knowledge embodied in real-time models and does not attempt to summarise scholarship in these fields, as an introduction to be developed and tested in practice. The Supplementary material summarise ways in which models of social science, higher education and democratic governance could be developed to test the hypothesis and identify the most effective models for different purposes.

4 Conclusion

The world faces immense social and political challenges. Social and political sciences could help people deal with these better by recognising all institutions as social experiments and "dynamic theories" embodying collective knowledge of how to do things. This hypothesis questions the dominant model for the production of knowledge in higher education and makes a case for developing practical wisdom (Aristotle's phronesis) through teaching and research with citizens, practitioners and policy-makers to improve institutions as real-time social models. This requires a shift in the incentives from rewarding publication and citation to recognising outcomes from civically engaged research.

This paper is therefore an invitation for scholars to reflect on how the real-time social experiments in which they work (universities, research centres etc.) can make the most effective contributions to the communities they serve, through course programmes, partnerships, communities of practice, civic engagement, and research to help solve local, national or global problems. The Supplementary material presents a 'Manifesto for Social Science' which outlines some of the many models on which to build.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

TA: Writing – original draft.

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The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpos.2024.1443388/full#supplementary-material. This includes Endnotes, Practitioner Notes and Guidance, and Avenues for Experiment: discussion and suggestions for how to develop and test this hypothesis.

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