Technological Forecasting & Social Change 169 (2021) 120856

Contents lists available at ScienceDirect

Technological Forecasting & Social Change

journal homepage: www.elsevier.com/locate/techfore

Are we living in a time of particularly rapid social change? And how might we know?

Donncha Kavanagh [a,*], Geoff Lightfoot [b], Simon Lilley [b,1]

[a] School of Business, University College Dublin, Dublin 4, Ireland
[b] School of Business, University of Leicester, University Road, Leicester LE1 7RH, United Kingdom

ARTICLE INFO

Keywords:
Social change
Speed
Kondratieff waves
Technological change
Measurement
Acceleration

ABSTRACT

In an editorial for this journal a decade ago, then-Editor-in-Chief Fred Phillips asserted that social change was proceeding at hyper-speed and, moreover, that it had consequently come to outpace technological change. This paper submits these claims to empirical assay. In so doing, we address the myriad problems attendant upon determining and interpreting the sort of data that might support us in our cause. Notwithstanding the innumerable caveats that this necessarily entails, and restricting ourselves to considering US data, we conclude that a wide range of indicators suggest that millennial Americans are not living in a time of *particularly* rapid *social* change, at least not when compared to the period 1900–1950. Furthermore, our analysis suggests that the data that we have considered does not easily support a contention that significant variation in social change occurs in long wave-like cycles. The evidence is more supportive of a punctuated equilibrium model of change.

1. Introduction

A vibrant (albeit contentious) research stream postulates that technological change is stagnating or at least has been slowing down in recent decades. That question is not our primary concern here, although we do on occasion touch on it out of contextual necessity. Rather, we are interested in the rate of *social change* and whether or not this is speeding up or slowing down. A string of best-selling books with titles such as *Future Shock* (Toffler, 1970), *Thriving on Chaos* (Peters, 1989), *Faster* (Gleick, 1999), *Business @ the Speed of Thought* (Gates, 2000), *The Singularity is Near* (Kurzweil, 2005), and *The Great Acceleration* (Colvile, 2017) would suggest that we do, in fact, live in a period of rapid social change. However, these books tend to gloss over a host of epistemological and methodological issues, not least of which is a fairly insistent technological determinism occluding rather than illuminating 'social' change, that would need to be addressed if this assertion is to be convincing. We discuss these issues in the first part of the paper. The issues are complex and perhaps intractable but, on their own, they should not preclude us from at least collecting and analyzing some longitudinal data that reflects, in some way, social change. Hence, in the second part of the paper we present a broad range of data that, at least partly, gives some indication of how the rate of social change in the United States has varied over the last century. From the data presented, our tentative conclusion is that the rate of social change appears to be lower in the period 1970–2020 than 1920–1970. Our analysis does not support the notion that significant variation in social change occurs in roughly fifty-year Kondratieff wave-like cycles. Instead, the evidence is more supportive of a punctuated equilibrium model of change.

2. Is technological change stagnating?

Notwithstanding much popular talk highlighting the 'fact' that we live in a period of tremendous and accelerating technological change, a more somber research stream suggests that technological change is actually stagnating. One example is Huebner's article (2005a), *A possible declining trend for worldwide innovation*, in which he concluded, based on an analysis of 7198 innovation events, that 'the rate of innovation peaked in the year 1873 and is now rapidly declining'.

Not surprisingly, Heubner's paper was promptly criticized by Smart (2005), Modis (2005) and Coates (2005). Their critiques argued, *inter alia*, that it is practically impossible to objectively measure this sort of change, or indeed innovation or growth, while Heubner fundamentally

* Corresponding author.
E-mail addresses: donncha.kavanagh@ucd.ie (D. Kavanagh), gml9@leicester.ac.uk (G. Lightfoot), sdl11@leicester.ac.uk (S. Lilley).

[1] We are immensely grateful for some very insightful comments and specific suggestions for clarification from the reviewers of this article, all of which we have been keen to integrate. Infelicities that remain are, of course, all our own work.

https://doi.org/10.1016/j.techfore.2021.120856
Received 29 January 2021; Received in revised form 28 April 2021; Accepted 30 April 2021
Available online 18 May 2021

distorted the picture by adjusting for population size. The criticisms are not without merit – though see Heubner's (2005b; 2006) rebuttal and Coates's (2006) subsequent response – but we will refrain from engaging in the detail of the debate, save to point out that their argument is but one skirmish in a wider discussion where others have suggested that innovation, contrary to popular perception, is actually slowing down.

In 1925 the Soviet economist Nikolai Kondratieff hypothesized the existence of long waves, each lasting roughly fifty years, with alternating intervals of high and low economic growth. The Austrian political economist, Joseph Schumpeter, elaborated on the idea of long waves – which he said should be named 'Kondratieff waves' – focusing attention on the role of innovation in generating the cycles that Kondratieff had observed. Schumpeter was a friend of Peter Drucker's father and a frequent visitor to the young Drucker's Vienna home, and so it is unsurprising that the notion of long waves is evident in Drucker's writing about technological change. For instance in *The Age of Discontinuity*, he observed that 'the fifty years that came to an end with World War I produced most of the inventions that underlie our modern industrial civilization' and that, in contrast, the period from 1918 to 1968 was one of 'relative stability in technologies and industries' (Drucker, 1969: 7).

Ten years later, Mensch (1979) was saying something similar, arguing that basic innovations appear in clumps throughout history, emerging particularly during economic depressions and producing economic upswings a decade and a half later. Outside of these periodic bursts in basic innovations, there are long periods where technology has essentially stagnated with only pseudo innovations being developed (Haustein and Maier, 1980). This is in line with Schumpeter's evolutionary process of 'creative destruction' which involves a coming into existence, growth, decline, and elimination, and a constant interplay between stagnation and innovation, deadlock and process, and crisis and revival. For Mensch, the historical evidence suggests that the mid-1970s was a lull period, what he referred to as a 'stalemate in technology'. Metz (2006) provided more empirical support for the notion that growth cycles between periods of acceleration and deceleration, with 'the second half of the twentieth century … marked by a slowdown in growth rates'. This also accords with Gordon's (2000a; 2016) research which identified slow productivity growth in the late 19th century, then an accelerating growth, peaking in 1928–50, and then a deceleration to a slow rate after 1972 (though this is more a case of 'one big wave' rather than multiple fifty-year waves).

Others economists have come to similar conclusions, and a minor literature has developed around the idea that we are now living through a period of secular (or long-term) stagnation with low levels of economic growth, inflation, interest rates, productivity gains and overall income growth, while savings, asset prices and inequality increase significantly (Magdoff and Sweezy, 1987; Cowen, 2011; Teulings and Baldwin, 2014; Eichengreen, 2015; Gordon, 2015; Summers, 2015). More broadly, the reality of climate change has re-focused attention on the impossibility of endless exponential growth and the consequent need to envision and implement a post-growth or de-growth economy (Douthwaite, 1992; Latouche, 2009; Heinberg, 2011; Trainer, 2012; Jackson, 2019; Pansera and Fressoli, 2020).

3. From technological to social change

The perception that the economy is stagnating, that technology has stalemated, and that we now have relatively few basic innovations, tends to focus on *technological* rather than *social* change. The latter is of more interest to us. The distinction between the technological and the social is commonly made – see this journal's title – and routinely underpins theoretical and empirical contributions. For instance, Drucker observed that although *society* was radically altered during the period following the Victorian era, the core *technologies* on which our economy relies were not:

> The world of the 'New Left' and of the 'Hippies', of 'Op Art' and of Mao Tse Tung's 'Cultural Revolution', of H-bombs and moon rockets, seems further removed from the certainties and perceptions of the Victorians and Edwardians than they were from the Age of the Migration at the end of antiquity. But in the economy, in industrial geography, industrial structure, and industrial technology, we are still very much the heirs of the Victorians. (Drucker, 1969: 8)

The distinction between the technological and the social is also fundamental to Ogburn's (1922) classic study of social change, though he used the terms 'material' and 'non-material' culture instead of technological and social. Phillips and Linstone (2016: 164) suggest that 'The meaningful question… is whether technology changes faster than culture.' For Ogburn, material culture gives 'particular emphasis to the material features of culture. The word, culture, properly includes, as does the term, social heritage, both the material culture and such parts of culture as knowledge, belief, morals, law, and custom' (p. 4). Ogburn hypothesized that the various parts of modern culture do not change at the same rate and that some elements of culture are more likely to take the lead in initiating cultural change. His thesis has more than a whiff of technological determinism (1922: 76–77; 1938: 2; Ogburn and Nimkoff, 1940: 809–810), though he opined that some parts of the non-material culture were more adaptive to change in the material culture than others:

> The adaptive culture is therefore that portion of the non-material culture which is adjusted or adapted to the material conditions. Some parts of the non-material culture are thoroughly adaptive culture, such as certain rules involved in handling technical appliances, and some parts are only indirectly or partially so, as for instance, religion … The family, therefore, under the terminology used here is a part of the non-material culture that is only partly adaptive. (1922: 203).

This echoes Braudel's (1972/1996) distinction between the *longue durée*, which focuses on the longstanding and imperceptibly slowly changing relationships between people and their environment, the *moyenne durée* of economic and social trends, and the *courte durée* which is concerned with named individuals, events and politics.

Hence, there will be a 'cultural lag' between a change in the material culture (a technological invention) and differential changes in the non-material (social) culture (Ogburn, 1922: 200–283). At the same time, Ogburn recognized that social inventions, especially those of the behavioral and social sciences, can be important causes of change as well as key elements in a society's ability to adapt to change and reduce cultural lags.

Once we distinguish between the technological and the social, we are almost necessarily locked into hypothesizing that a change in one will cause a change in the other. Moreover, the presumed causality is typically from the technological to the social, as when we refer to the 'stone', 'iron', 'steam' and 'computer' ages and when we associate epochs and nations with a single technological artefact. The distinction also underpins the difference between the 'hard' and 'soft' sciences, with the former evoking the hardness of the material, technological world of artefacts and the latter evoking the softness of human flesh and flexibility. But the distinction is also routinely seen as problematic, because the technological and the social are mutually embedded in one another, because they are difficult to distinguish operationally, and because doing so is liable to lead to some form of (technological) determinism. Phillips seeks to deal with this issue through the notion of a 'circle of innovation' (Phillips, 2016; see also, Phillips, forthcoming).

To counter these issues, the idea of 'socio-technical systems', popularized by people like Emery and Trist, focused attention on the interaction between people and technology, even if the latter was more centered on the technical aspects of organizing rather than material technologies (Trist, 1978). Others, such as the actor-network theorists, have argued that the notion of the socio-technical is misleading, as there is no such thing as the purely social or the purely technical. Instead, the human and the non-human must be treated symmetrically. For the actor-network theorists, this means that the distinction between the social and the technical, and how the distinction came to be, is the thing to be explained, the *explanandum*, rather than an *a priori* and assumed

part of any explanation, the *ad explanans* (Shapiro, 1997). Hence, concepts like 'actants' take the place of humans and non-humans. More recently, we see a similar move in the literature on sociomateriality (Orlikowski and Scott, 2008) and in concepts like intra-action (Barad, 2003). But, while these positions are philosophically robust, the social-technological distinction is virtually impossible to avoid, much less obliterate, and it is difficult to see how the actor-network theorists could write anything comprehensible if they treated the human and non-human as truly symmetrical.

This brief review suggests that while the social and the technological are deeply implicated in one another, it still makes sense to (a) keep the distinction between the two, and (b) develop an understanding of what social change might mean and how it might be measured. It is to the latter that we now turn, in line with Fred Phillips' assertion that a 'journal with a title like *Technological Forecasting & Social Change* should, however, invite research on measuring the rate of social change' (Phillips, 2011:1077).

4. Measuring the rate of social change

One way of measuring the rate of social change is to record the number of social innovations over time, similar to Huebner's (2005a) chronological analysis of important technological developments. However, such a project would be impractical. Not only would it be subject to the same criticisms as Huebner's study, but there is also no ready dataset of social innovations and indeed it is difficult to see how such a dataset might be meaningfully constructed. What, for instance, might constitute a 'social innovation'? Drucker (1987) identifies five social innovations (the research lab; Eurodollar and commercial paper; mass movements; the farm agent; and management practices) but his point is not that there are more social innovations now than in the past – for him, the 19th century was 'a period of very great social innovation' (p. 34) – but that such innovations were now being initiated by actors other than governments and were now properly the domain of 'management'. Ogburn and Gilfillan (1933:163) identified 50 social inventions, but their eclectic list only highlights the impossibility of measuring the rate of change in social inventions or innovations over time (their list includes Armistice day, Basketball, Chain store, Day nursery, Esperanto, Federal Reserve system, Group insurance, Holding company, Indeterminate sentence, Junior college, Ku Klux Klan, League of Nations, Matrimonial bureau, National economic council, One-step, Passport, Recall, Seminar, Tag day, Universal suffrage, and Visiting Teacher). Hence, one has to conclude that, while social inventions/innovations are certainly worthy of study (Cajaiba-Santana, 2014; Edwards-Schachter and Wallace, 2017), they are not the most promising basis for measuring the rate of social change.

This suggests that any attempt at measuring social change is liable to end up in a similar cul-de-sac. We can, presumably, but not without difficulty, measure social *indicators,* and we can also track how these indicators change over time (again not without difficulty), but we cannot avoid the fact that these indicators are qualitatively incommensurable, are irreducible to a common quantitative denominator, and consequently cannot be aggregated to deduce the level of social change. We can no more add the divorce rate to life expectancy than we can add apples and oranges.

Moreover, even though we may be able to measure a social trend, such as the divorce rate, it is difficult to see how such a quantitative measure can shed light on the more qualitative aspects of the human condition. Numbers can hardly reveal the kind, content, style, form or values of the arts, while beliefs, tastes, mores, convictions, ideologies and philosophical systems are all likely to get glossed over in any attempt at quantification. In short, the inner aspects of culture are arguably irreducible to numbers and hence beyond the social scientist's quantitative toolkit.

In the face of these difficulties, what are we to make of claims, for instance, that we now live in a time of rapid social change? Is it sufficient to say that the concept of 'social change' is epistemologically incoherent and methodologically problematic? Furthermore, if we cannot measure social change, then how can we adjudicate on the relative merits of different models of social change, such as the transformation models that focus on the transition from traditional to modern forms of social organization (Tonnies, Durkheim), linear decline models (Spengler), cyclical models (Pareto, Sorokin), diffusion models (Rogers) or radical models of social change (Marx)? Similarly, how can one assess the merit of a theory like technological determinism if its core constructs (technological change and social change) cannot be meaningfully measured. (This may explain why the theory persists.) And what about scholarly journals that have 'social change' in their title, such as this one and eleven others?

These difficulties may be why the concept of social change has remained largely unexamined in this journal. For instance, the concept is noticeably absent in Singh et al. (2020) recent bibliometric study of the 4248 articles published in *TF&SC* between 1970 and 2018. They analyzed the articles using five basic keywords – 'technology, energy, climate, resources, and innovation' – none of which is clearly associated with social change. Their visual representation of the relative frequency of author keywords also shows that 'social change' has one of the lowest counts of some 87 keywords. Further, articles from the journal do not feature in wider scholarly conversations about social change: a ProQuest search of full text scholarly articles with 'social change' in the publication title or document title yielded 3383 journal articles, but only 3 of these cited articles in *TF&SC*.

The dilemma is clearly set out in Fred Phillips' (2011) editorial where he highlights the 'difficulty of measuring the rate of social change … stemming from complexity, from measuring the wrong things, from pressures to shade the reporting of measures, and from political and infrastructural breakdowns that disrupt the measurement process' (p. 1077). Notwithstanding these difficulties, he opines that social change 'proceeds at hyper-speed' and 'is now the hare and tech change the tortoise, relatively speaking' (p. 1073). Cajaiba-Santana (2014: 42) goes even further, noting 'the *fact* that social change has overtaken the speed of technological innovation' (emphasis added). This is a hypothesis worth inquiring into, but our focus is on the more basic question of how social change might be measured and whether or not we live in a period of rapid social change. Comparing the speed of social and technological change is not our concern here.

How to measure social change is something that has occupied social theorists for a long time, at least as far back as the 1920s when Ogburn (1922) published *Social change with respect to cultural and original nature* and when the Lynds studied how the white population of a typical American city had changed between 1885 and 1925 (Lynd and Lynd, 1929). However, measuring social change was only of marginal interest in the social sciences until the social indicators movement emerged in the late 1960s, sparked by Bauer's (1966) edited collection and Sheldon and Moore's (1968) *Indicators of Social Change.* The movement was bolstered in 1974 when the journal *Social Indicators Research* was launched, while in 1972 the National Opinion Research Center conducted its first General Social Survey of American attitudes on issues such as crime and punishment, confidence in institutions, national spending priorities, and intergroup relations. It was also around this time, specifically 1970, when this journal's title was amended to include "& Social Change".

Not surprisingly, this focus on social indicators led to a renewed interest in how and why these indicators had changed over time. In the main, studies of such social trends were limited to domains readily amenable to quantification, such as economic development, voting, and population (Caplow, 2002). At best, these trends provide only a limited understanding of the *rate* of social change, which is our particular concern. A more robust inquiry into the rate of social change should also examine trends in families, religion, consumption, leisure, health, education, social stratification, welfare, etc. and study how qualitative elements – such as beliefs, mores and values – have changed over time.

The complexity of the issue is compounded when we consider further methodological problems. For instance, since social reality is complex, respondents are likely to find a researcher's measures, terms and questions ambiguous, irrelevant or misleading (Einola and Alvesson, 2020). Another important consideration is that measuring social life depends on a socially organized way of knowing, which is itself subject to change. What a society wants or allows to be measured and how the measuring will be funded and executed, are all socially determined and may themselves change over time. Moreover, societies are reflexive phenomena in that individuals use the knowledge and insights gained from social science to change and interpret their own practices and beliefs. As Giddens (1984: 20) puts it, 'the "findings" of the social sciences very often enter constitutively into the world they describe'. At a more micro level, the understanding of a concept, how a concept is operationalized empirically, how 'data' is collected, analyzed and disseminated, are all vulnerable to change (Smith, 2020). For instance, the notion of a 'crime rate' is dependent on an organized effort to conceptualize, detect and measure crime, which problematizes any attempt to speak of the 'true' or 'real' rate of crime (Reiss, 1986).

In addition, there is a tendency to develop and use instruments that gather information from and about individuals rather than collective entities, organizations and populations of organizations, each of which might be both a cause and effect of social change. Similarly, concepts and measures more often refer to individual statuses rather than organizational positions. Added to the mix are the plethora of methodological issues that social scientists must routinely address in any empirical study. How can causes and effects be distinguished? How should the lag between an event, our measurement, interpretation, and analysis be dealt with? With what frequency should we collect data? How do we attend to post-hoc rationalization, willful misrepresentation, biases, fallacious reasoning, category errors, and the like?

The difficulties seem insuperable and one would be tempted to abandon any endeavor at measuring the rate of social change. However, to do so seems inappropriate, not least because the concept of social change is commonplace, common-sensical and basic to a range of social theories and understandings of the world. Hence our approach is to proceed with a mix of humility, caution, optimism, skepticism and pragmatism. Methodological difficulties are unavoidable and so the best we can do is collect and analyze as much data as we can, focusing on data that might provide a perspective on the rate of social change, all the time anchoring our inquiry around the question of whether or not we are living in a period of (relatively) rapid change.

In order to maximize our chances of saying something meaningful in the midst of the morass of potential measures, and the potential pitfalls associated with them, we have adopted three methodological principles. First, we have focused on US data only, because the US has been the trailblazer and leading world economy and because data is readily available, although an obvious downside of this choice is a necessarily restricted ability to examine the changing status of that country (and of course of other countries and regions) in the global economy. Second, we have focused on a relatively lengthy sway of time. Where possible, we compare data and trends from c. 1900 to 2020, choosing 1970 as our most frequent point of distinction, which is when Drucker enlivened the debate with his first major contribution to it. It is also of course the point of inauguration of this journal. Third, we have collected a wide range of data, drawing on various dimensions and probable causes of 'change'. Of necessity, given our interest in the *rate* of social change, we have collected and analyzed quantitative data, though we also draw on studies that have analyzed qualitative data, such as diaries, newspaper reports, letters and the like. In particular, the Middletown studies have been an important source. This research project began in 1924 when Robert and Helen Lynd conducted an in-depth, mixed-methods study of how the lives of the white residents of Muncie, Indiana – which they chose as representative of normal American life – had changed since 1885. They called the town Middletown and published their results in 1929 in a book that considered social change across six categories: working, home and family, youth and learning, leisure time, religion, government and community (Lynd and Lynd, 1929). Ten years later they returned to Muncie and that study led to another book, *Middletown in Transition* (Lynd and Lynd, 1937). During the 1970s, another team of sociologists, led by Caplow, Bahr and Chadwick, replicated and expanded on the original studies in a project they labelled Middletown III, which yielded two further books and numerous articles (Caplow, 1982; Caplow et al., 1983). Caplow and Bahr returned in the late 1990s, producing further publications on what they called Middletown IV (Caplow et al., 2001, 2004). While the studies can be criticized – for instance, the Lynns only studied white residents and they avoided some important issues, such as differences between urban and rural communities and intra-country migration – they are a unique and rich longitudinal study of social change in America.

Another way of addressing some of the methodological issues outlined above is to consider change as primarily a subjective phenomenon, drawing out the impact on the surface of our lives of what may be shifting beneath. For example, one could repurpose an object such as the Stress Scale developed by Holmes and Rahe (1967), which scores different life events in terms of the stress each event is likely to cause individuals, measured in 'life change units'. An event that changes one's life significantly seems an appropriate focus for any study of social change. The top eight 'life events' on Holmes and Rahe's scale are: (i) death of a spouse; (ii) divorce; (iii) marital separation; (iv) imprisonment; (v) death of a close family member; (vi) personal injury or illness; (vii) marriage; and (viii) dismissal from work. This has also helped guide our data collection.

5. Picturing social change

Previous studies seeking to depict social change typically organize social indicators into categories. For instance, Sheldon and Moore (1968) organize their *Indicators of Social Change* into thirteen categories, the Lynds (1929) had six, while Caplow et al. (2001) *The First Measured Century* is divided into fifteen chapters. We are not concerned with technological change and so we have organized our data into seven categories: Population; Health; Home, Education & Leisure; Religion; Work; Wealth; Law & Order.

5.1. Population

The rate of change of population is one potential and common indicator, since it is difficult to see how significant changes in population would not signal social change. Thus, Fig. 1 plots the annual change in US population and the rate of change of population since 1800. What that figure clearly shows is that while the US population has continued to increase inexorably over the last two centuries, more recently the *rate* of annual change in population has been progressively *decreasing*. Specifically, the standard deviation on the annual population change between 1901 and 1950 is over *three times* the standard deviation of the annual population change between 1951 and 2000.

Fig. 2 shows how the ethnic composition of the US population has changed since 1900. Between 1900 and 1950, the distribution remained quite consistent at 90% white and 10% black. Since 1950 there has been an appreciable growth in the Asian, Hispanic and Other populations, and now just over 70% of the population is white. However, the change in ethnic composition over recent decades has merely continued a trend that has been in place since the mid-twentieth century. These incremental changes will, perhaps, have tremendous repercussions in individual communities as they become 'white minority,' but the overall trend has not changed radically.

5.2. Health

Fig. 3 shows much bigger changes in both death rate and life expectancy in the first half of the 20th century compared to the second,

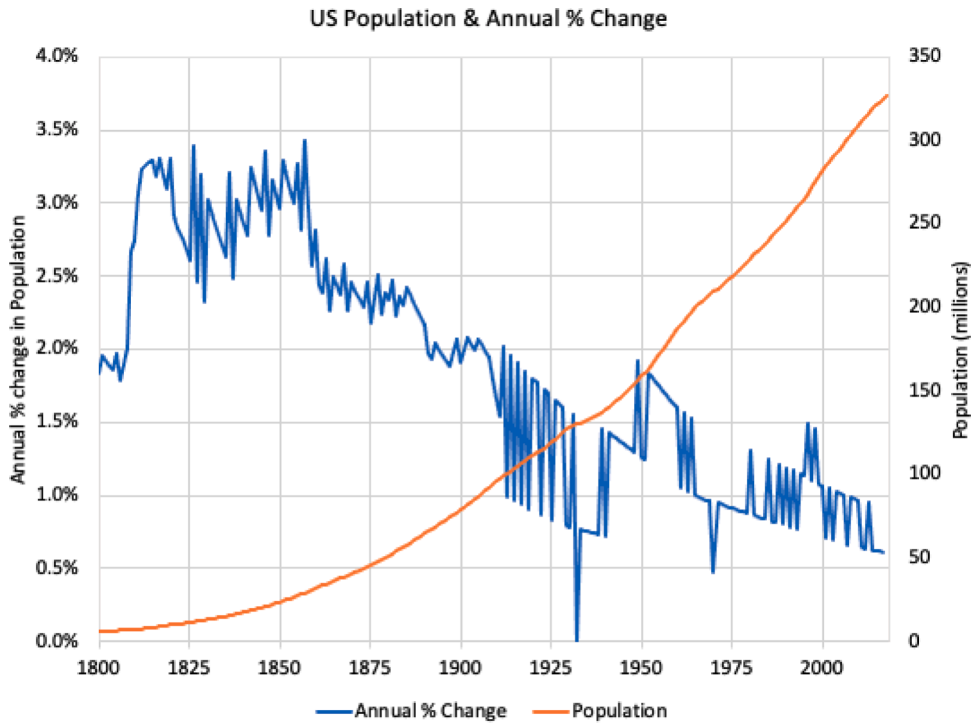

Fig. 1. US population and Annual Percentage Change in Population.

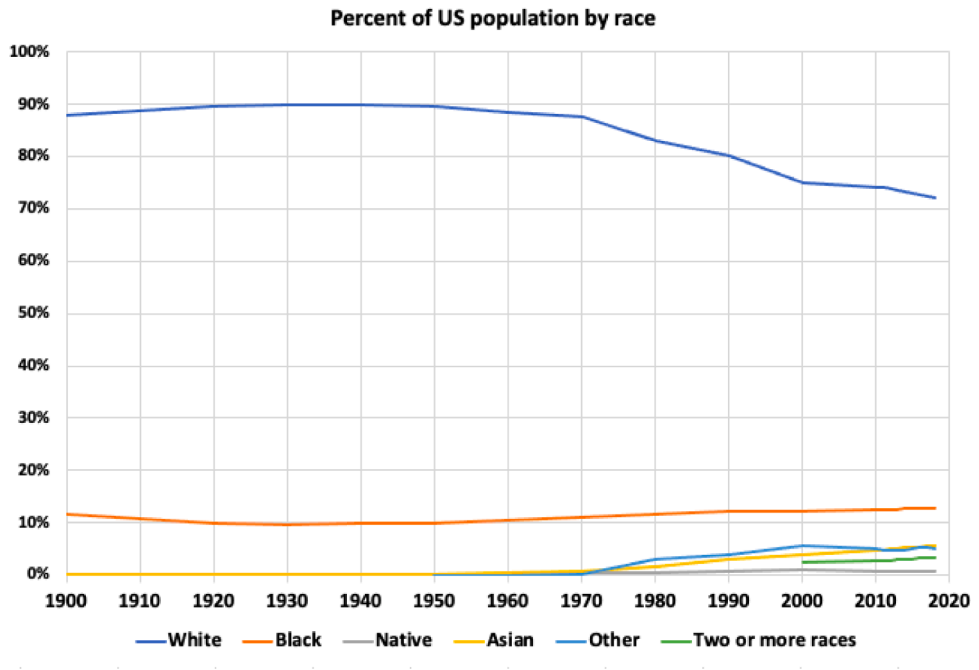

Fig. 2. Percent of US population by race.

and the rates have practically stabilized over the last decade or so. Deaths impact severely on the bereaved and thus signal stress inducing events that are likely associated with enhanced subjective experience of change. In particular, death of a spouse is the highest ranked 'life event' on Holmes and Rahe's stress scale, while death of a close family member is ranked fifth.

The death of a child is particularly traumatic. Fig. 4 shows that we have moved from a situation where the death of young children was commonplace, to one where it is now vanishingly rare. Maternal mortality showed a similar rapid decline, dropping from 582 deaths per 100,000 live births in 1935 to 40 in 1956 and 7.1 in 1998 (Guyer et al., 2000).

The annual number of people killed at work also declined consistently throughout the twentieth century. For instance, employee fatalities in the railroad industry dropped from 4534 in 1907 to 93 in 1997, while in the mining industry the number dropped from 3250 to just 32, with almost all of the decrease happening in the first half of the century (Caplow et al., 2001: 29)

Personal injury or illness is the sixth highest life event on the stress scale, which suggests that illness is a good indicator of the turbulence

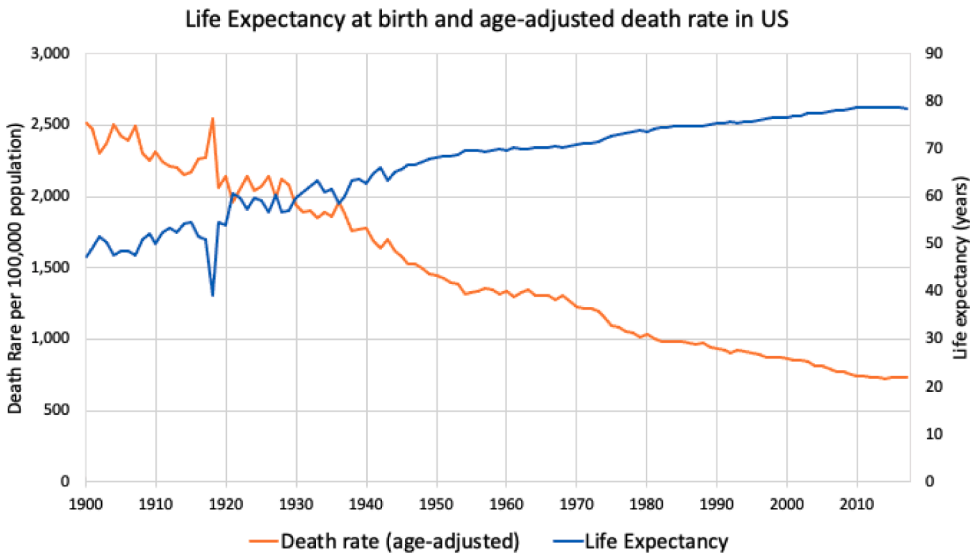

Fig. 3. Death rate and life expectancy.

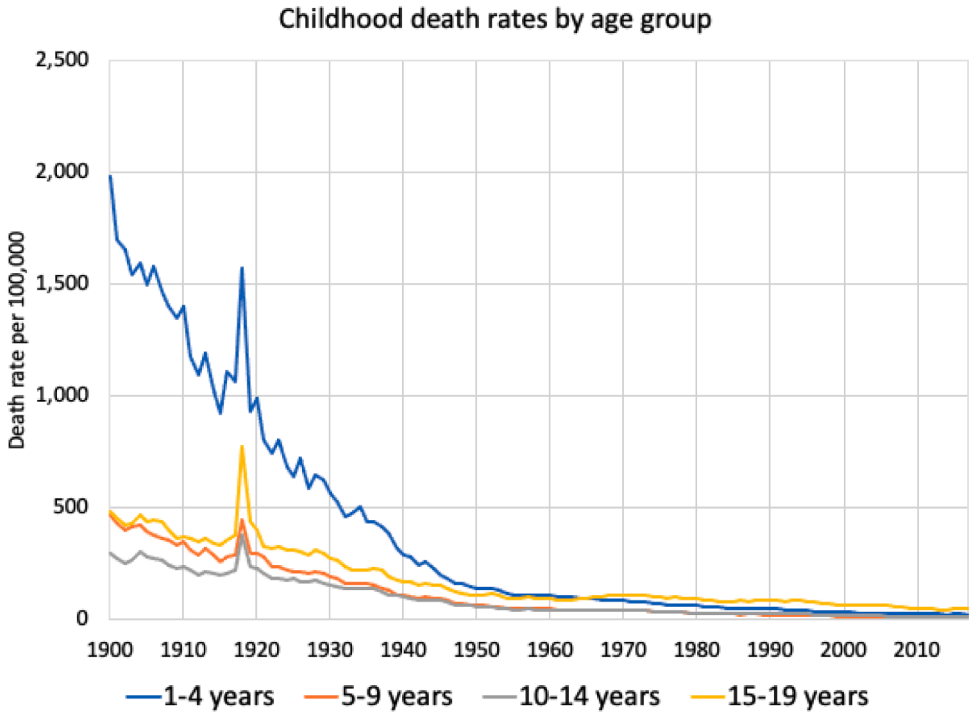

Fig. 4. Childhood death rates.

one might expect to be associated with increased subjective experience of change. Fig. 5 shows that the more serious notifiable diseases (health conditions that must be reported to public health authorities) were relatively common in the first half of the twentieth century but, with the exception of gonorrhea, their prevalence subsequently decreased dramatically. Since 1970, these serious diseases rarely occur in the US, with the present generation enjoying an extended period of good health. The graphs do not include data on Covid-19, which, while it is a notifiable disease, is not nearly as deadly as the diseases that were rampant in the first half of the twentieth century. For instance, in the late 19th century tuberculosis killed one out of every seven people living in the United States and Europe (https://www.cdc.gov/tb/worldtbday/history.htm) while smallpox killed more people than the Black Death and two World Wars combined but was declared eradicated in 1980.

The spectacular improvement in health can be mainly attributed to a range of public health measures implemented in the last decades of the nineteenth century and early decades of the twentieth when there were major initiatives on water treatment, food safety, organized waste disposal, and public education. Improvements in housing and decreased crowding in cities also reduced mortality from diseases caused by person-to-person airborne transmission. Medicine played a later but less important role, and its contribution was confined to what O'Mahony (2019) describes as medicine's 'golden age' from the mid-1930s to the mid-1980s. According to the virologist and Nobel Laureate Sir Macfarlane Burnet, that age had ended even earlier, as he noted in 1971 that '[*a*]lmost none of modern basic research in the medical sciences has any direct or indirect bearing on the prevention of disease or on the improvement of the medical care'(Burnet, 1971: 218).

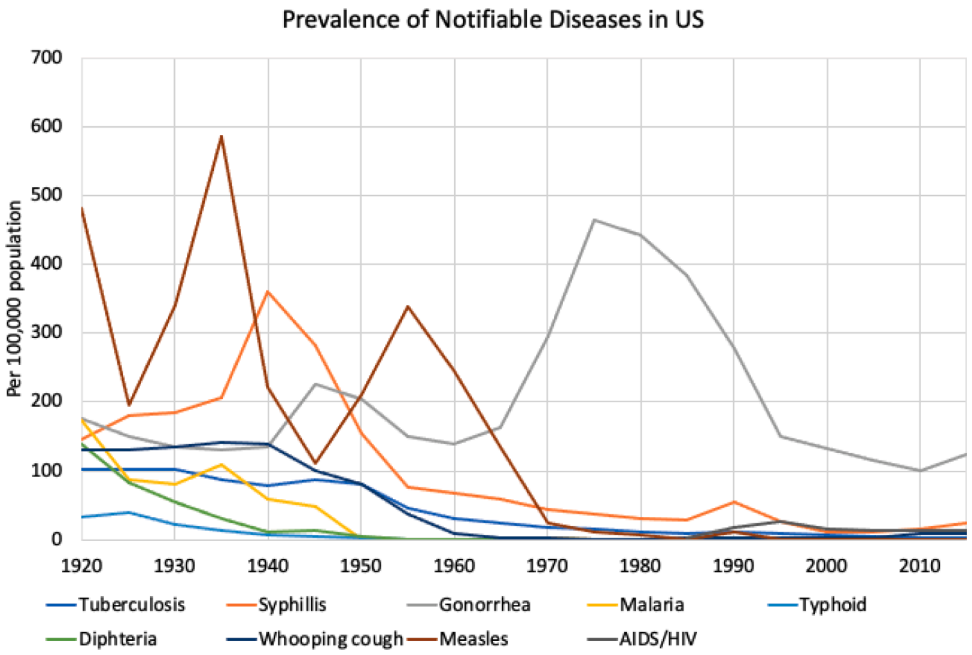

Fig. 5. Prevalence of Notifiable Diseases.

Suicide is a particularly disturbing life event and is presumably a surrogate measure of stress levels. Indeed for Durkheim (1897/1970), one of the founding fathers of modern sociology, it was a key indicator of the extent of 'anomie' members of a society were experiencing and thus an indirect measure of the health of the social body. And one can perhaps read 'health' in this context as a sign of society's capacity to cope with change and thus a potential marker of the extent of the subjective experience of the latter. The average suicide rate in the US dropped from 13.3 to 11.4 per 100,000 population between the first and second half of the twentieth century, but, perhaps more importantly, the standard deviation in the first half was 2.3 times the standard deviation in the second half, reflecting high peaks in suicide rates from 1910 to 1920 and from 1933 to 1940 (see Fig. 6). The suicide rate has increased since around 2000 – although the increase is marginal when considered against historical rates – reflecting a general increase in mental health issues over that period (Dwyer-Lindgren et al., 2016; Mojtabai et al., 2016).

Notwithstanding the increase in mental health issues, the level of happiness of the US population has, as Fig. 7 shows, remained remarkably stable over the last 50 years. Overall, the health data presented in Figs. 3 to 7 show that the last half-century has been a period of relative stasis and rude good health compared, in particular, to the first half of the twentieth century.

5.3. *Home, education & leisure*

Divorce and marital separation rank second and third, after the death of a spouse, on the Holmes and Rahe stress scale, while marriage is

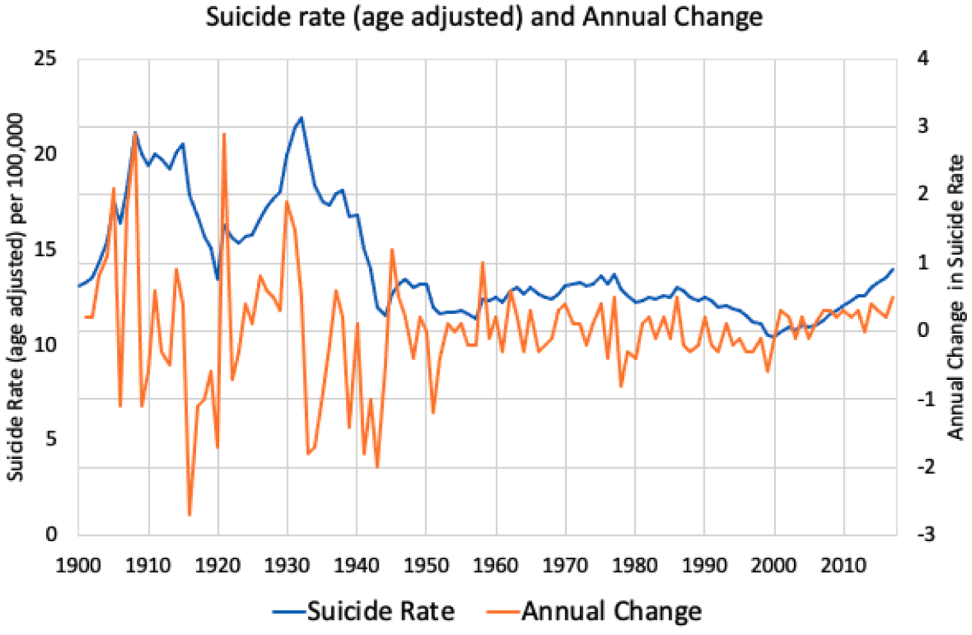

Fig. 6. Suicide Rate and Annual change in suicide rate.

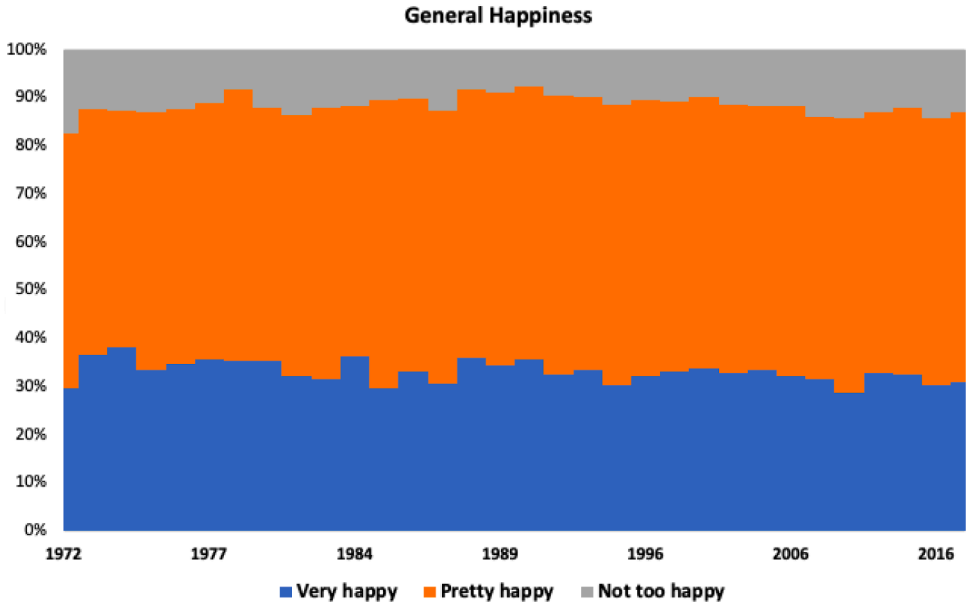

Fig. 7. General happiness.

ranked at seventh. Hence, one would expect an enhanced subjective experience of change when both marriage and divorce are taking place at a high rate. As Fig. 8 illustrates, what we seem to be seeing here over the *moyenne durée* is fewer marriages, as the product of more cohabiting and later tying of knots, leading to fewer divorces (Bumpass et al., 1991). However, there appears to be no evidence that divorces (or marriages) have been rising in relative incidence over the last 50 years. The median age of marriage and the proportion ever marrying is now about the same as it was in the late 1800s, and in this context it is the high marriage rates of the 1950s that seem anomalous (Popenoe, 1993).

Another anomaly is the 'baby boom' that occurred between 1946 and 1964 when the fertility rate *increased*, having decreased consistently since the eighteenth century. However, as Fig. 8 shows, there has been no significant change in the fertility rate over the last forty years.

One consistent trend, throughout the twentieth century, has been towards smaller household sizes, though again the significant changes were in the *first* half of the twentieth century rather than the *second*. Average household size decreased from 5.79 in 1790 to 4.99 in 1880 to 2.76 in 1980. However, average household size has practically stabilized over the last four decades and has actually risen in recent years – from 2.59 in 2010 to 2.63 in 2018 (Caplow et al., 2001: 93; Fry, 2019).

Home ownership has also increased inexorably throughout the twentieth century, from 37% in 1900 to 66% in 1998. The number of mortgaged homes as a percentage of all owner-occupied homes showed a similar pattern, slowly but consistently increasing from 32% in 1900 to 61% in 1997 (Caplow et al., 2001: 97).

The Middletown studies reveal a consistent and steady increase in mother-child and father-child contact throughout the twentieth century, though recent decades are in no way exceptional (Caplow et al., 2001: 89). The time prime-age women spend on 'home production' fell by around six hours from 1900 to 1965 and by another 12 h from 1965 to 2005, while the time spent by prime-age men *rose* by 13 h from 1900 to

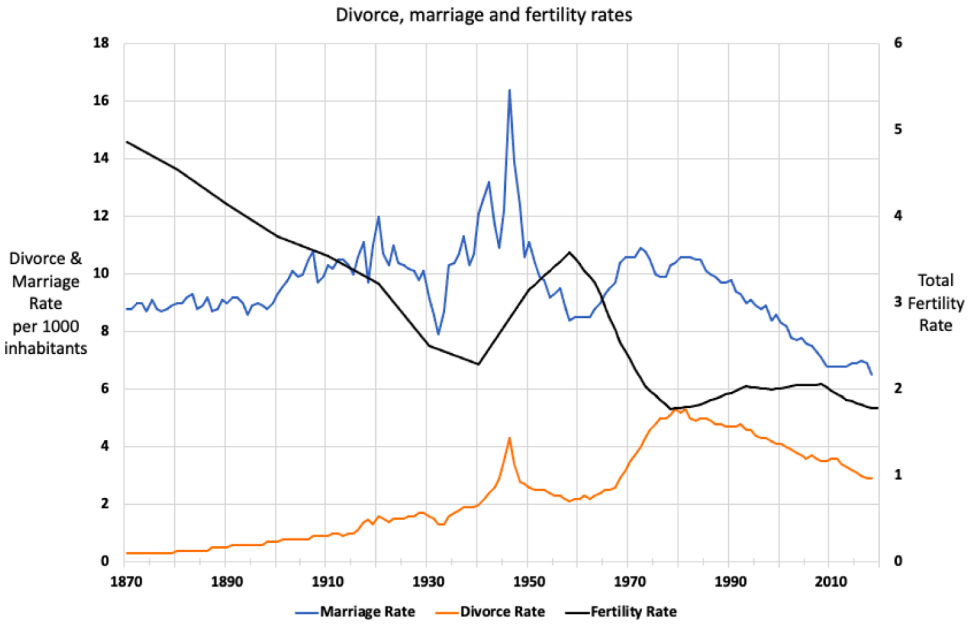

Fig. 8. Divorce, marriage and fertility rates.

2005 (Ramey, 2009).

Not only has the marriage rate declined consistently over the last fifty years, but people are also getting married later in life, which perhaps explains why Americans, over that period, have become more accepting of premarital sex and adolescent sex, but less accepting of extramarital sex (Caplow et al., 2001: 77; Twenge et al., 2015). Non-marital births have increased consistently since 1960 (Caplow et al., 2001: 87).

Comparing data in the 1992 *National Health and Social Life Survey* (Laumann et al., 1994; Michael et al., 1995) with the Kinsey studies (Kinsey et al., 1948; 1953) indicates that extramarital sexual activity was much more common in the mid-twentieth century than in the 1990s. This somewhat surprising result is probably because people, in the latter part of the century, could more easily leave unsatisfying marriages as divorce was more easily available. Acceptance of extramarital sex has remained consistently low, declining from 4% in 1973 to 1% in 2012 (Twenge et al., 2015). In contrast, there has been a noticeable increase in acceptance of sexual activity between adults of the same sex: acceptance was in the low teens until around 1993 when it rose to 22% and subsequently increased steadily to 44% in 2012 (Twenge et al., 2015).

Monto and Grey (2014) analyzed data in the General Social Survey and found that respondents from the 2004–2012 wave did *not* report more sexual partners since age 18, more frequent sex, or more partners during the past year than respondents from the 1988–1996 wave. They also found 'no evidence of substantial changes in sexual behavior that would indicate a new or pervasive pattern of non-relational sex among contemporary college students' (p. 605).

Education levels in the US increased consistently throughout the twentieth century – for instance, the percentage of the population with a college degree or higher increased from 3% in 1910 to 24% in 1998 – but again the trends are longstanding, with no noticeable change in the trend over recent decades. In particular, the gender balance of graduates has followed a long-term trend, with the percentage of bachelor degrees awarded to females increasing consistently from 19% in 1900 to 56% in 2000, only interrupted by the Second world war.

Leisure activities are continually changing and subject to fashion, but there is little evidence that the current period is in any way exceptional. Indeed, current trends in preferred leisure activities are relatively stable compared to the massive changes witnessed in the twentieth century as Americans embraced the new leisure technologies of movies, radio, the automobile, and television (Fischer, 1994). The Lynds, in their first Middletown study, noted how leisure activities had changed dramatically between 1885 and 1925, which they attributed to 'material developments such as the automobile and motion picture' (Lynd and Lynd, 1929: 497). And despite Putnam's (2000) assertion that social capital has been decreasing in the US since 1950, the stronger evidence presents a picture of stability rather than decline. For instance, Fischer (2011) inquired into the question of whether and how Americans' relationship with family and friends changed between 1970 and 2010. The short answer, based on a canvass of published research and available survey data, is: not much. Some of the ways in which Americans engaged with people in their immediate circles changed, but the intimacy and support of close family and friendship ties stays about the same. (p. 94)

More broadly, Ray's (2002) detailed study indicates that civil society has been relatively stable, though flexible and dynamic, over much of the 20th century.

Studies of internal migration are also revealing. For instance, in their historical study of internal migration in the United States, Molloy et al. (2011) conclude that, 'Having trended upwards for much of the twentieth century, "internal U.S. migration seems to have reached an inflection point around 1980…[as] migration rates have been falling in the past several decades' (Molloy et al., 2011 p. 173–4).

5.4. Religion

Many influential writers of the 19th century, such as Comte, Spencer, Durkheim, Weber, Marx, and Freud, predicted that religion would gradually fade in importance with the emergence of industrial society. This may have been what happened in Europe, but it was hardly the case in the US where membership of a religious organization increased from 41% of the population in 1906 to 70% in 1998. And while the hegemonic position of the Christian churches declined somewhat in the 20th century – see Fig. 9– de Tocqueville's comment, in 1835, that 'there is no country in the whole world in which the Christian religion retains a greater influence over the souls of men than in America' (Tocqueville, 1835/2002: 334) might still hold true today.

The Lynds, in their first Middletown study, concluded that, of the six dimensions they used to structure their inquiry, religious beliefs and practices changed the least between 1885 and 1925 (Lynd and Lynd, 1929: 497). They opined that the town 'values its religious beliefs in part because it is assured that they are unchanging' (p. 403) at a time when 'changes proceed at accelerating speed in other sections of the city's life' (p. 406). However, they did discern that religious beliefs were not as dominant in 1924 as they were in the 1890s and that the tide had turned in the 'direction of the "go-getter" rather than in that of "Blessed are the meek" of the church' (p. 406). In their second study in 1935, they observed that secularization trend continuing and were somewhat surprised that religion had not strengthened during the depression (Lynd and Lynd, 1937: 302). Instead, while religion continued to be an 'emotionally stabilizing agent', other institutions increasingly provided leadership in defining values (p. 318).

The 1977 Middletown study confirmed the long-term trend of secularization and also discerned a significant shift to religious relativism (Caplow et al., 2004). In 1924, 94% of high-school students agreed with the statement that 'Christianity is the one true religion and all peoples should be converted to it' but by 1977 that had dropped to 41% (by 1999 it had increased marginally to 42%). Despite this religious relativism, 'most students still affirmed the traditional Christian tenets of the divinity of Christ, the sacredness of the Bible, and the reality of life after death' (Caplow et al., 2004: 294).

This consistency of religious beliefs is also evident in Gallup polls. Between 1944 and 2011 over 90% of Gallup poll respondents said they believed in God, with the number only dropping slightly over the last decade to 87% in 2017 (see also Fig. 10). Similarly, the numbers praying to God outside of religious services did not change significantly between 1990 and 2020 (Fig. 11). The number of respondents in Gallup polls claiming 'No religion' has steadily increased from 2% in 1948 to 21% in 2019, but we are hardly seeing the sort of collapse in religious belief that might index a major change.

Membership of the mainstream Protestant religions – Methodist, Presbyterian, Lutheran, Episcopal, and the United Church of Christ – declined during the century (5.5% of the US population was Methodist in 1900, compared to 3.1% in 1998), but membership of the more evangelical and fundamentalist Protestant religions increased (2.2% of the US population was Southern Baptist in 1900 compared to 5.9% in 1998) showing that religious beliefs are perhaps becoming more polarized (Caplow et al., 2001: 109). Overall, however, the story of religion in the US over the last century is more about continuity than change (Carroll et al., 1979).

5.5. Work

Fig. 12 plots the inflation, unemployment and GDP annual growth rates, all of which are good indicators of economic turbulence and consequently social change ('dismissal from work' ranks eight on the Stress Scale). The graphs illustrate the profound economic turmoil of the first half of the twentieth century which saw two world wars, the stock market crash, a great depression, the Spanish flu as well as massive industrial change and restructuring. The first Middletown study shows

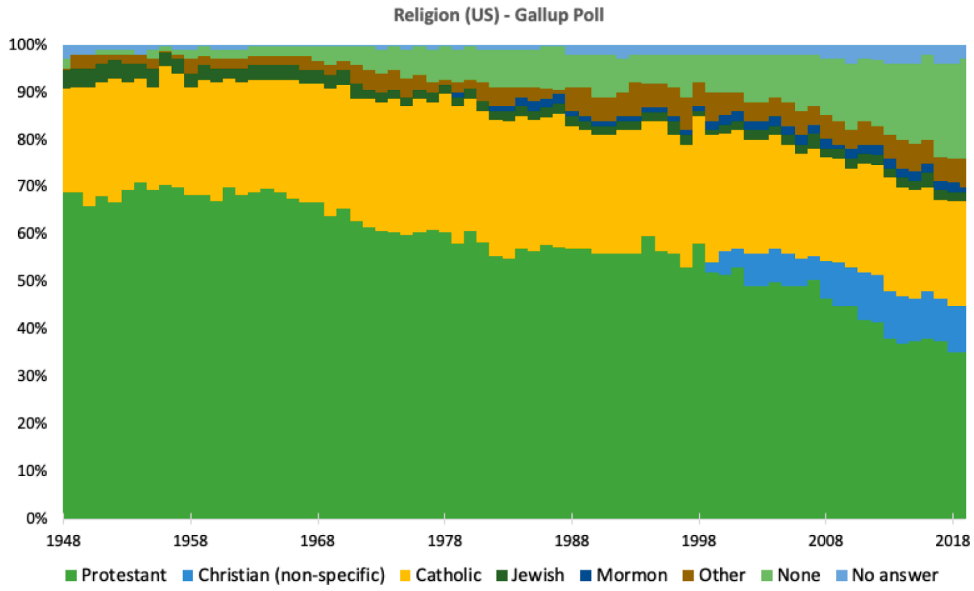

Fig. 9. Religious Preference.

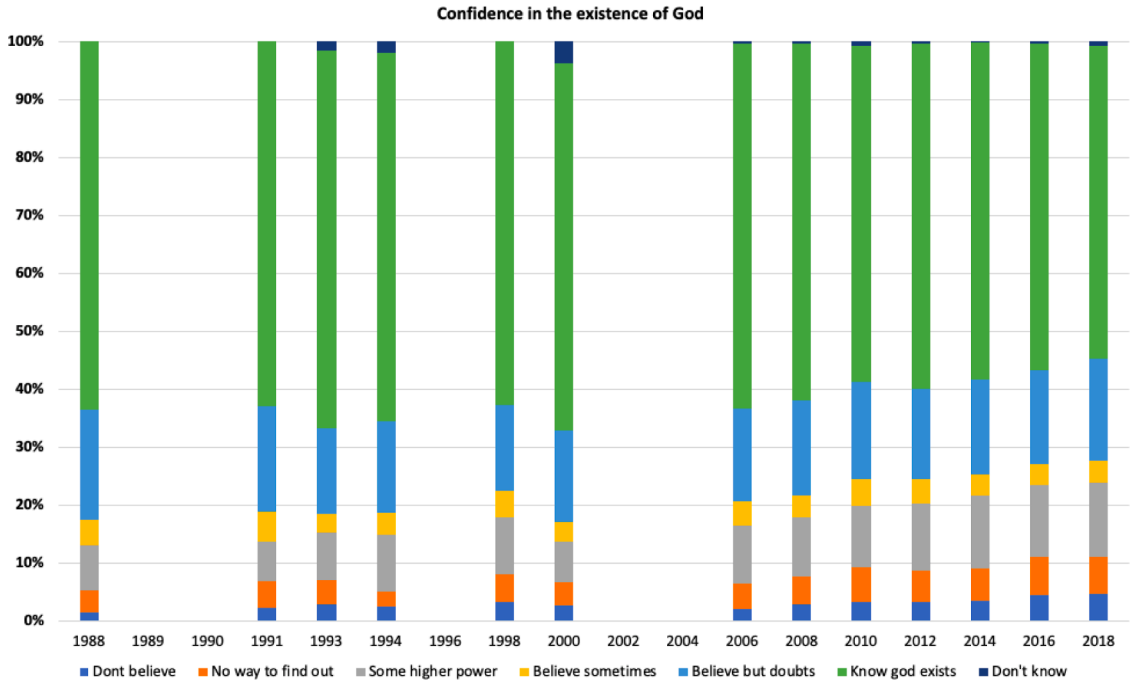

Fig. 10. Confidence in the existence of God.

that turmoil had been ongoing since the late 19th century. The Lynds, who conducted the research, structured their study around six major groups of activities of which 'getting a living' 'seemingly exhibits the most pervasive change, particularly in its technological and mechanical aspects' (Lynd and Lynd, 1929: 497). In contrast to the first half of the twentieth century, the second half was much less turbulent and indeed the data shows that the most recent four decades have been relatively pacific. For instance, Fig. 12 graphically illustrates how much more turbulent the Great Depression of the 1930s was compared to the financial crash of 2008.

A range of other macro-economic data indicates that the last five decades have been less turbulent that previous periods. For instance since the 1980s, there has been a consistent decline in job creation and destruction rates (Davis et al., 2012), the business startup rate (Decker et al., 2014), and job flows (Bjelland et al., 2011).

Fig. 13 shows that the structure of the economy and the composition of the labor force changed radically over the past two centuries. The graph shows that the shift away from agriculture continued inexorably through both centuries and that by 1950 the shift to a 'post-industrial' society was well underway with the information sector accounting for over 30% of the labor force.

Fig. 14 uses a different dataset and covers a different time period, but it presents a similar picture. The graph is taken from Elvery's (2019) study of changes in the occupational structure of the United States from 1860 to 2015 in which he concluded that 'After 100 years of dramatic change, the mix of occupations has been more stable since 1970′ (p. 1). His analysis shows that 'occupational mix has become increasingly stable since 1970, and the rate of change in occupational structure is now

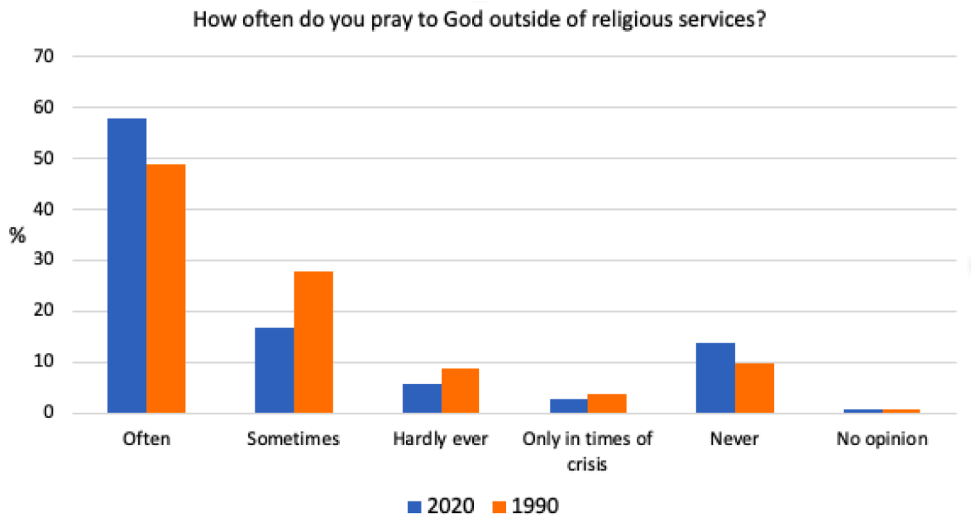

Fig. 11. How often do you pray to God outside of religious services?.

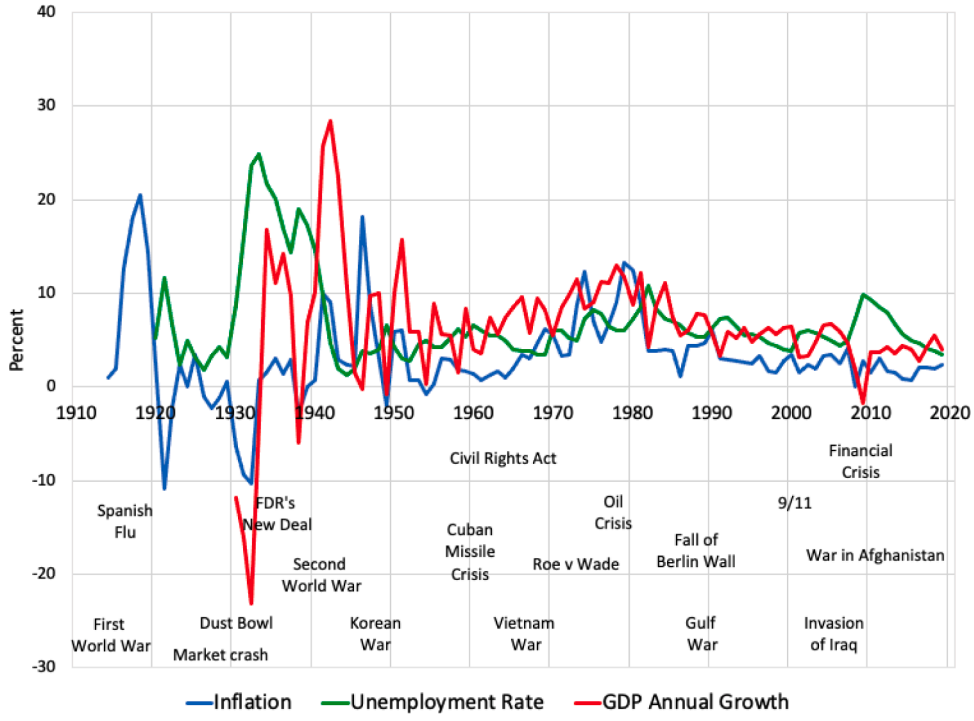

Fig. 12. Inflation rate, unemployment rate, GDP Annual Growth rate.

low relative to that of most past decades. In fact, the degree of change in the occupational mix in recent years is less than half that seen in the decades with the most change, the 1900s and the 1940s' (p. 1–2).

Attitudes to women in the workforce changed considerably during the twentieth century from strong disapproval (82% in 1936) to equally strong approval (83% in 1996). In 1900, only 6% of married women worked but by 1998 it had increased to 61%. In the first half of the century, women worked mainly in domestic service, farming, or factories, but this shifted throughout the century. Initially, women found more employment in clerical and sales jobs and then, post-1950, in professional occupations (Caplow et al., 2001: 41–43). In 1950, 30% of the labor force were women; by 1990 this had increased to 45% but it has only marginally increased since then.

5.6. *Wealth*

Data on wealth distribution and income inequality supplies another useful indicator of social change. As Fig. 15 shows, there has been considerable change, over the past 100 years, in the share of pre-tax national income secured by the top 1% compared to the bottom 50%. There has been a clear trend since 1980, with the top 1% consistently and inexorably increasing their share, which is almost certainly due to the liberalization of the economy initiated during the Reagan years. Fig. 15 also graphs inequality in the US over time using the Gini index. A Gini index of 0 represents perfect equality, while an index of 1 implies perfect inequality. As the graph clearly shows, by this measure inequality has been rising steadily over the last fifty years, suggesting that the gains from modest overall income growth have been concentrated within the wealthy.

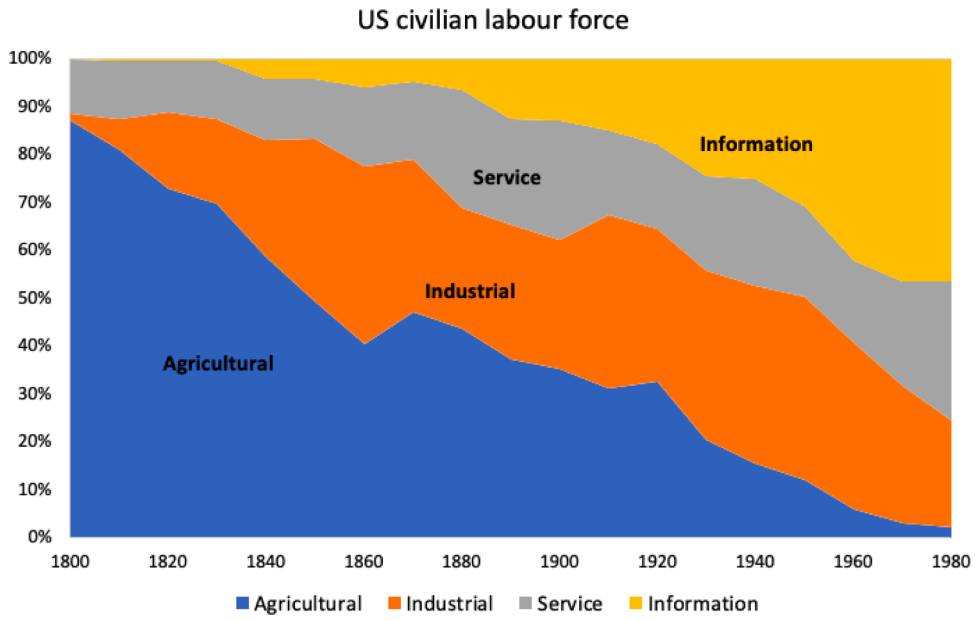

Fig. 13. US Civilian labor force .

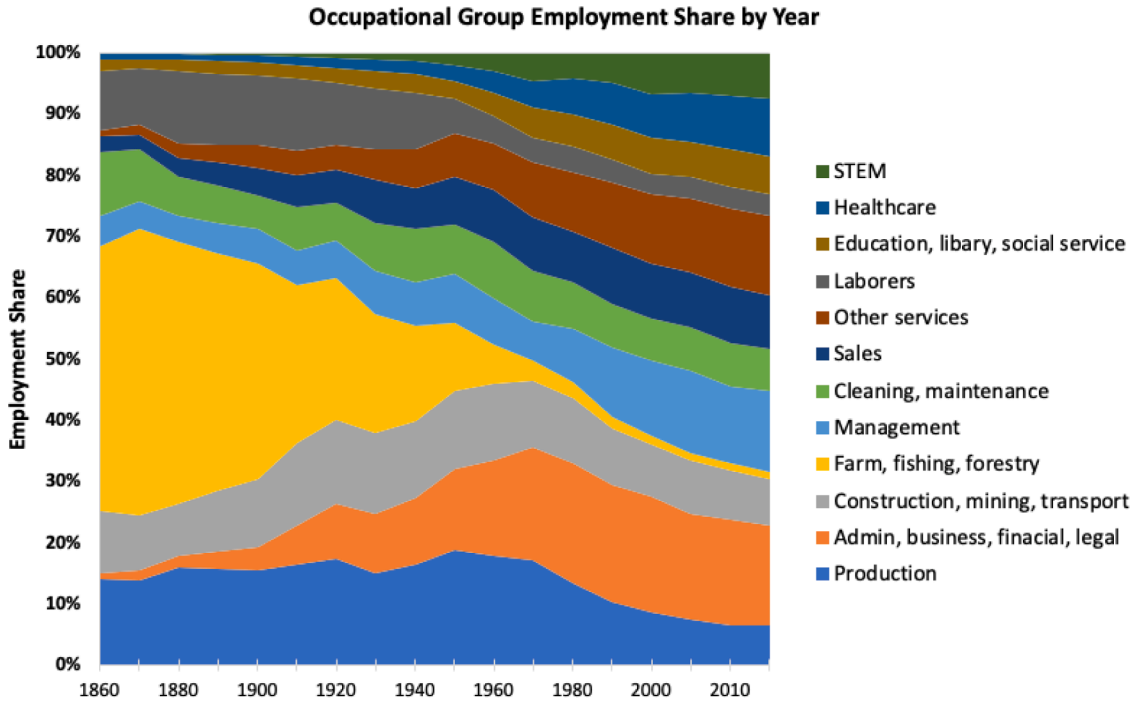

Fig. 14. Occupational Group Employment Share by Year.

Fig. 16 presents a picture of how earnings differ by race and how women's earnings compare with men's. In terms of race, the data shows that there has been no significant change over the last 40 years, with the improvement in the relative standing of 'Asian' labor market participants a notable exception. Women's earnings as a percentage of men's did increase between 1979 and 2005 but has flatlined since then.

Public opinion is broadly against the idea of government intervention to reduce income differentials and, as Fig. 17 shows, the public's view on this has remained remarkably consistent over the last 40 years.

The income differentials have not resulted in an increase in the membership or strength of labor unions. In the mid-1950s over 28% of the civilian labor force were in unions (up from 3% in 1900), but this number has steadily declined over the last 75 years. By 2000 only 13.5% of workers were in unions (and only 9% of workers in the private sector), while by 2019 the percentages had fallen to 10.3% and 6.2% (Caplow et al., 2001; US Bureau of Labor Statistics, 2020).

5.7. Law and order

Fig. 18 plots the rate of homicides and incarcerations in the US since 1900. The homicide rate rose rapidly from the mid-1960s but has dropped equally rapidly since 1990, though the US rate is still high compared to other countries in the Global North. In Gallup surveys, the number favoring the death penalty for murder mirrored the homicide

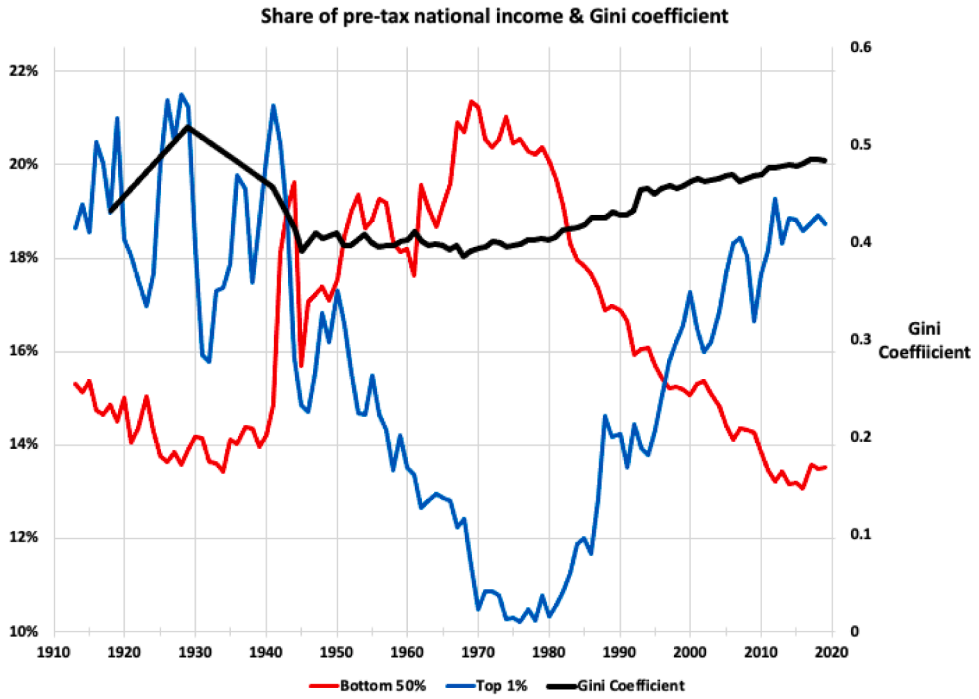

Fig. 15. Share of pre-tax national income & Gini Coefficient.

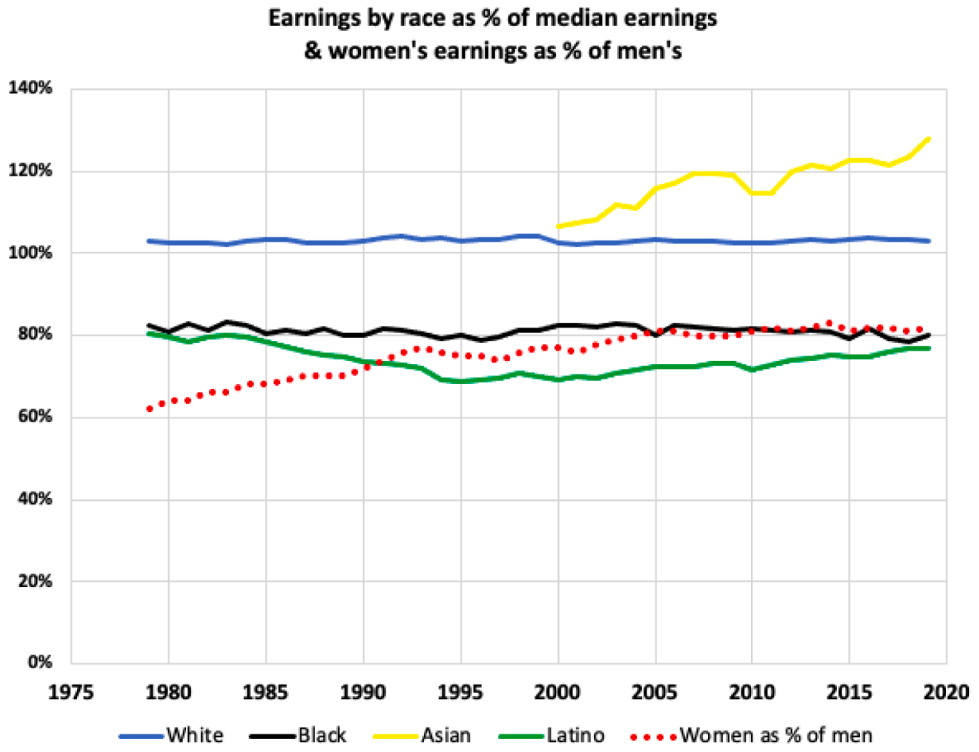

Fig. 16. Earnings by race as a percentage of median earnings and women's earnings as a percentage of men's.

rate, rising from 45% in 1965 to 80% in 1994, but since then it has consistently declined and by 2020 it was just 55% (https://news.gallup.com/poll/1606/Death-Penalty.aspx).

The US incarceration rate rose steeply after the mid-1970s but has been in decline since 2005 and is now at its lowest in two decades. One might expect the downward trend to continue as the US still has the highest incarceration rate in the world (World Prison Brief, 2020).

The reasons why incarceration and homicide rates fluctuate are complex, as is their relationship with social change, but the current rates show that recent decades are unexceptional and may even be a period of relative calm, compared to earlier eras.

The US political system has been a model of stability since the foundation of the state. The US constitution has been amended only 27 times since it came into force in 1789 and only 12 times in the last 150 years (the last amendment of real significance was the women's suffrage amendment of 1920). The traditional two-party structure has continued

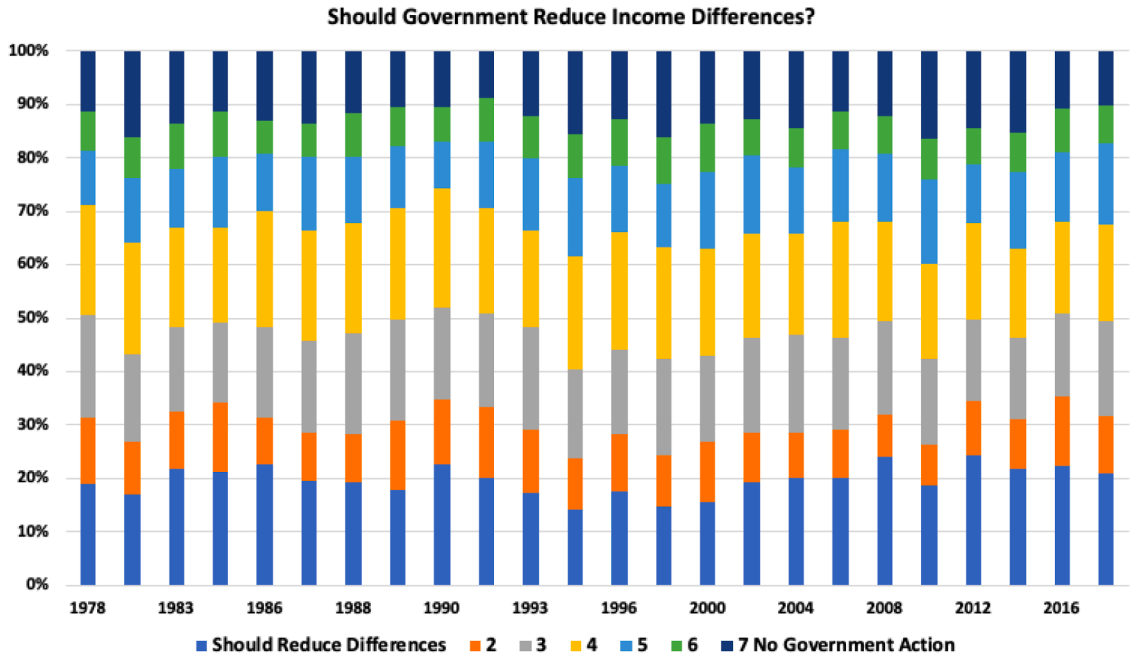

Fig. 17. Should Government Reduce Income Differences?.

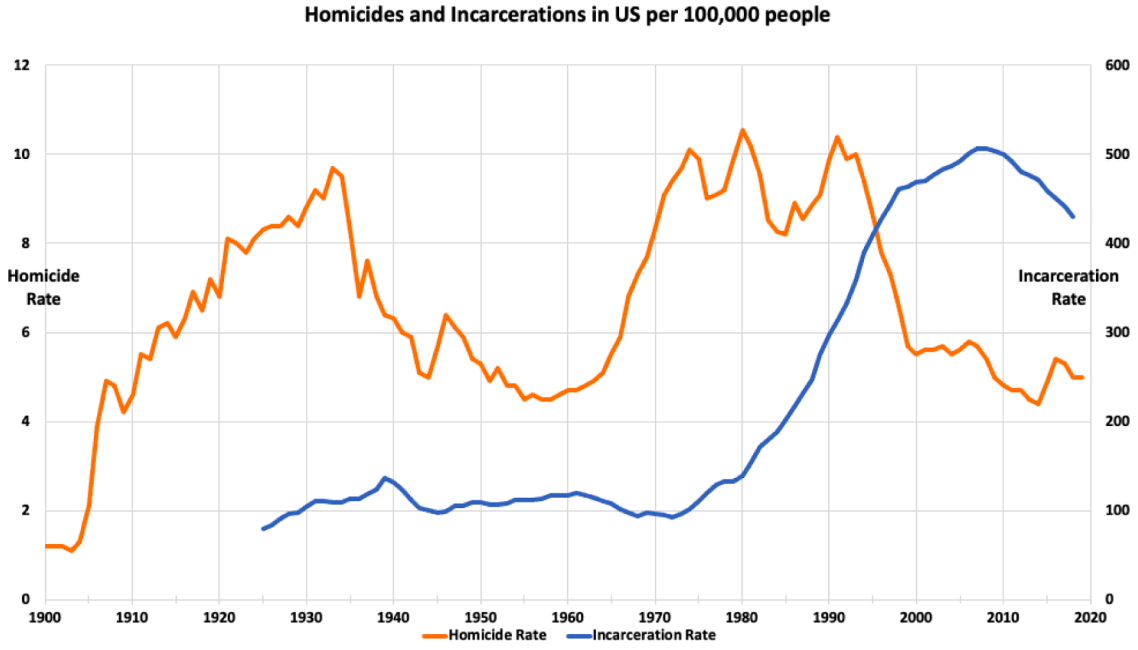

Fig. 18. Homicide and Incarceration rate in US per 100,000 people.

over the same period (see Fig. 19), despite geographic shifts in support and the vicissitudes of political discourse.

The US government has been getting bigger over the past 150 years. In 1831, President Jackson and 665 civilians ran the 3 branches of the US Federal Government, while 50 years later it had 13,000 civilian employees (Beniger, 1986:14). The trend continued up to the Second world war, but since then the size of the federal government, relative to population size, has declined slowly and has practically flatlined over the last two decades (Fig. 20). In contrast, the number of state and local government employees has continued to rise throughout the twentieth century, though the increase in recent decades has been small (Fig. 20). Once again, there is little evidence that the present period is exceptional.

Finally, Fig. 21 shows that trust in a non-governmental authority – specifically, the scientific community – is virtually unchanged since the 1970s.

6. Conclusion

This paper has inquired into the question, 'Are we living in a period of particularly rapid social change?' In summarizing our answer to this question, we make the following five points.

First, many of the words in the question – 'we', 'period', 'particularly', 'rapid', 'social change' – are problematic and raise difficult epistemological and methodological issues that are likely to frustrate any attempt at arriving at a definitive answer. How and why people might feel they are living in a period of particularly pronounced change

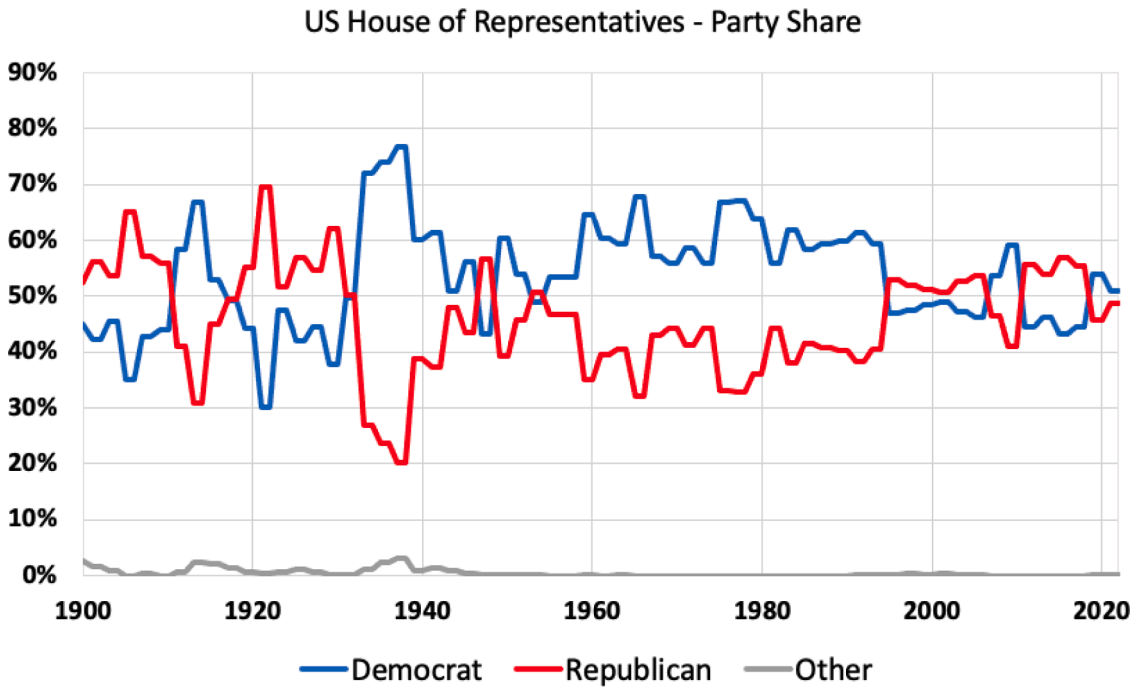

Fig. 19. Party share in the US House of Representatives.

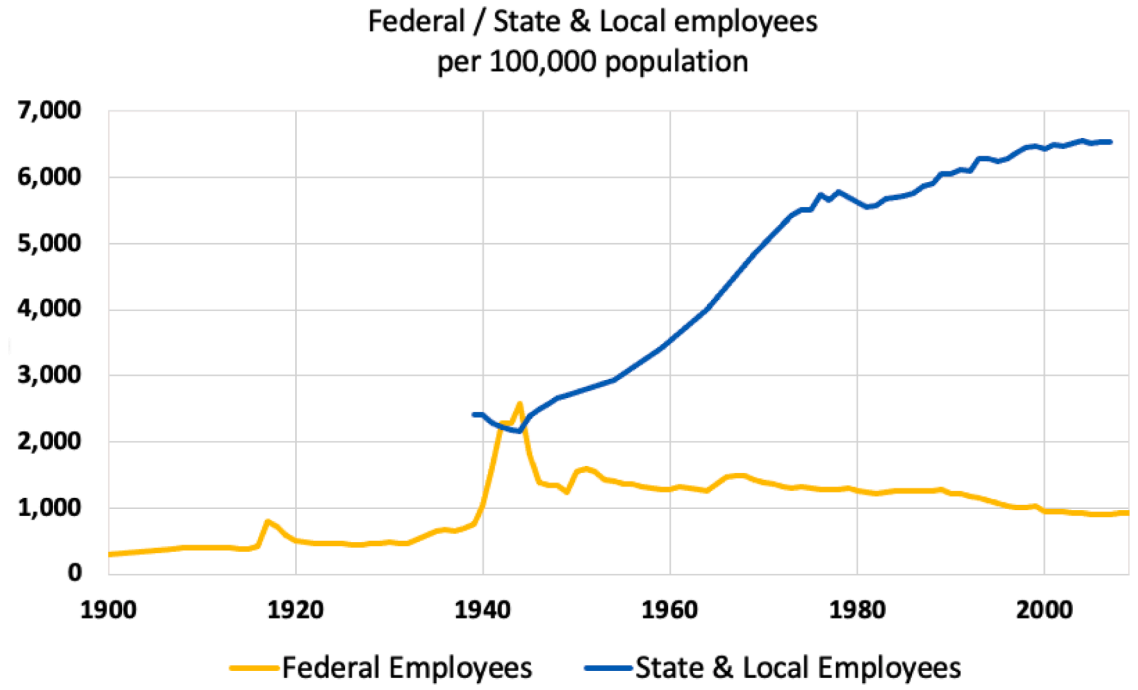

Fig. 20. Federal / State & Local Employees per 100,000 population.

could have as much to do with socio-psychological phenomena as any changes in material circumstances. However, as we argued in the first part of the paper, this does not mean we should ignore the question or dismiss attempts to measure social change.

Second, there is no doubt that we are living in a period of change, but so does every generation. For instance, Hout's (2020) analysis of the General Social Survey dataset highlighted 'the emergence of computers in American life and the coincident decline of newspaper reading, the growing acceptance of sexual diversity, a decline in some forms of racial prejudice against African Americans' (p. 2) as important changes between 1972 and 2018. However, he also found 'little change in support for collective action to undo racial disparities, the stalled gender revolution, and support for legalizing marijuana' (ibid). Continuity and change are to be expected in any analysis, and indeed the absence of change would be a bizarre finding. Moreover, superficially similar events, such as 'wars' may invoke very different reactions at different points in time due to radically different contexts in which they unfold. However, the data we have marshaled in this paper – despite issues around the use of statistical data (measurement issues, selection criteria, data consistency, etc.) – provide little evidence supporting the thesis that

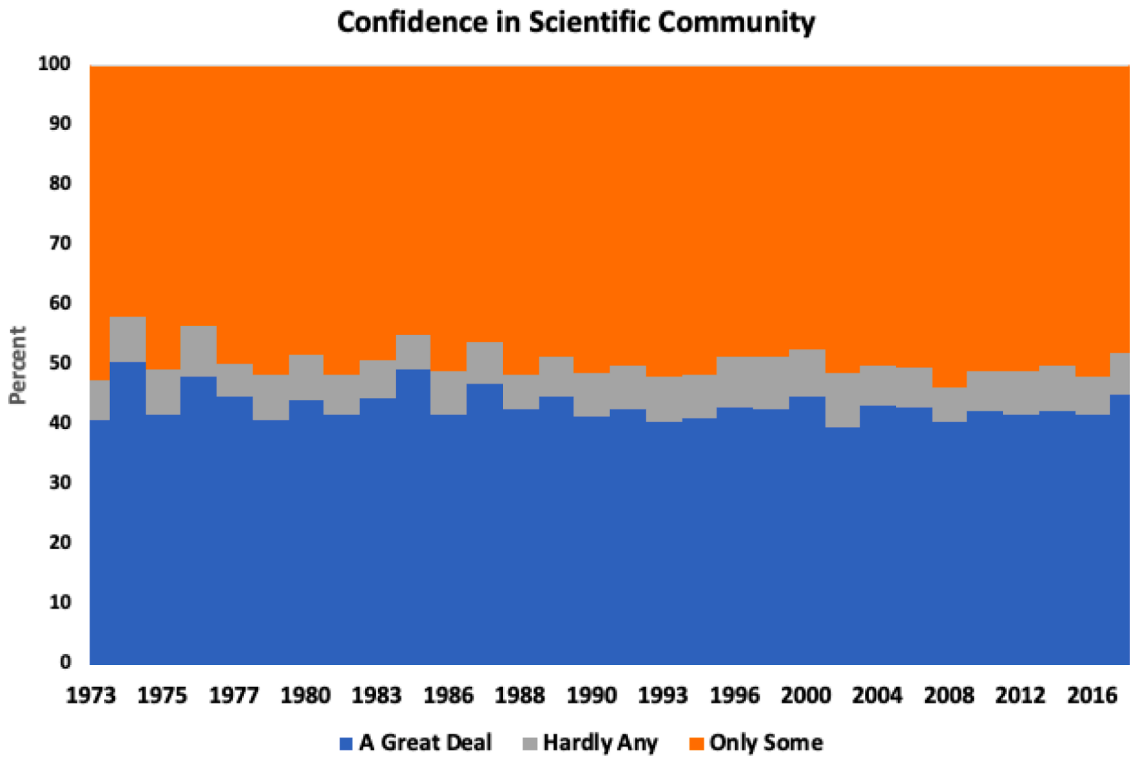

Fig. 21. Confidence in Scientific Community.

we are living in a period of exceptional or *rapid* social change relative to other historical periods. Many of the social changes we are now seeing are merely current manifestations of long-term trends stretching at least as far back as the mid-twentieth century. Moreover, if one was to reach any conclusion from the data it would be that there was more social change in the early and mid-twentieth century than between 1970 and 2020. This finding runs against a popular assumption and assertion that we live in a period of unprecedented change.

Third, we have deliberately avoided considering technological change in our analysis. We took this decision partly because an extensive literature on technological change already exists, and partly because to do so would raise methodological issues and necessarily appeal to some form of technological determinism. For instance, we can only speculate or engage in counterfactuals if we were to contrast the impact of the Internet with the range of breakthrough inventions that occurred during the period 1860–1900 (Gordon 2000b; Kavanagh et al., 2007).

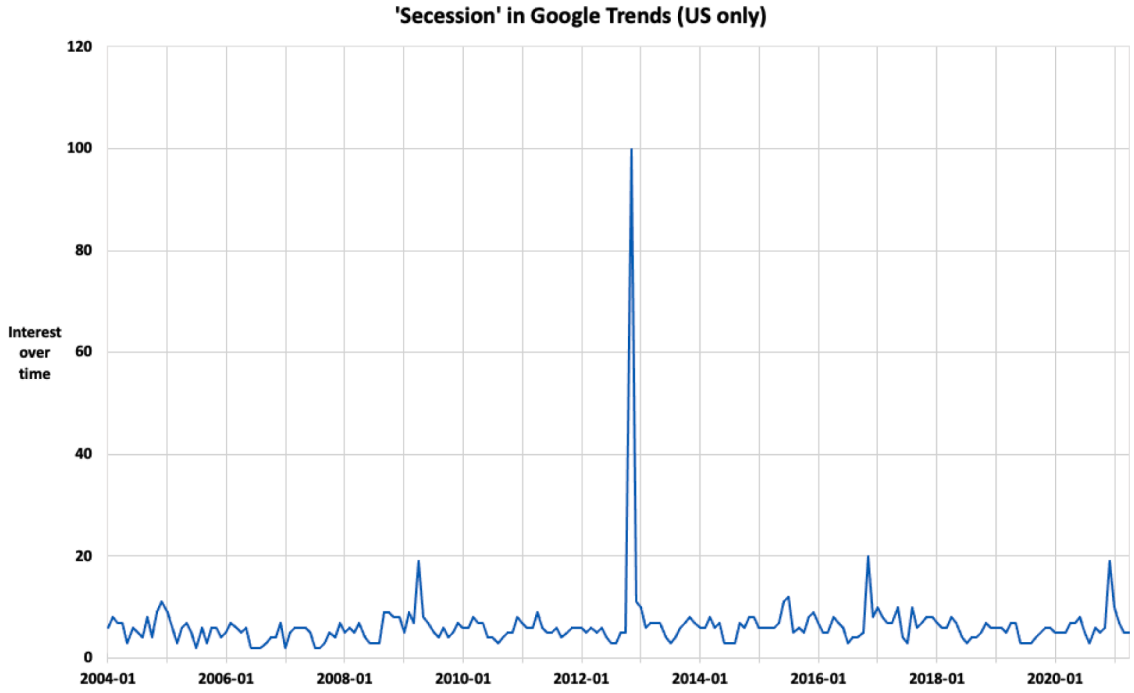

Fig. 22. The word 'secession' in Google Trends.

Fourth, while our focus is on measuring social change rather than developing a model that might explain the phenomenon, none of the data indicates that *social* change occurs in long waves. If anything, the data would lean one towards a radical or punctuated equilibrium model of change, where a long period of relative stability is followed by an unexpected short period of rapid and revolutionary change (Gersick, 1991; Gould, 2009). Revolutionary change is existential in nature and includes such events as insurrections, coups d'état, invasions by external actors, civil war, as well as profound constitutional changes such as moving from a monarchy to a republic, or from a democracy to a dictatorship, the break-up of a nation state, the merging of two nation states, etc. Examples include the collapse of communism, the break-up of the USSR, Brexit, and the reunification of Germany. While one can imagine and anticipate a revolutionary change, it is practically impossible to predict when such a 'black swan' event will occur or what the subsequent world might look like (Taleb, 2007). All we can say is that there is nothing in our data indicating that the US is currently in such a period of revolutionary change or in the midst of an existential crisis. For instance, Fig. 22 shows that the word 'secession' has not featured in US discourse since at least 2004, save for a single blip in November 2012 when, following Barack Obama's re-election as US President, a series of online petitions were launched seeking the secession of various states. (The low threshold of 25,000 signatures was reached in only nine of the fifty states, while the official response from the White House was that secession was impossible because the Constitution had established a 'perpetual Union' (Levinson, 2014).) Nonetheless, proponents of structural-demographic theory – whose models of human societies link political instability to fourteen attributes across three components (the general population, the elites and the state) – are pointing to evidence, such as the increase in anti-government demonstrations and riots, of growing instability in the United States (Turchin and Korotayev, 2020).

Fifth, there is much scope for future research. A meaningful way of bringing together the various strands of data in one overall summary would clearly be revelatory but we found no way of achieving this, without leaving ourselves open to charges of inappropriately summing apples and oranges. A wealth of quantitative historical data is available for mining and analysis, and other indicators of social change may reveal a different picture, interesting patterns or intriguing relationships between constructs. To take but a few examples, we have paid no attention to phenomena such as the shifting prevalence of (illegal) drug consumption, hours of work, linguistic competence and preference, etc. Moreover, there has also been an upsurge in recent years in new potential indicators of social change, including a variety of what might be termed 'social innovations', which others could usefully examine to build upon our tentative opening here. Similar studies might also be conducted over other time periods or in other countries or regions. A Middletown V study would be timely and valuable, continuing the series of previous studies in 1924, 1935, 1988 and 1999. There is also potential for more research on what might constitute *significant* social change in the US and other contexts, the links between social and technological change, as well as theories of social change. There is also scope to consider the issue of causality, which we have avoided doing in this study. Finally, it is worth asking why – and to whose benefit – there is so much talk of us living in a period of rapid and unprecedented change when perhaps the truth is that others have lived in more interesting and eventful times.

Data sources

Figure 1. US population and Annual Percentage Change in Population

1800–1970: *Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition* (Washington, D.C.: U.S. Census Bureau, 1975). Available at: https://www.census.gov/library/publications/1975/compendia/hist_stats_colonial-1970.html

1970–1990: (Gibson and Jung, 2002)

1971–2019: US Census Bureau

Figure 2. Percent of US population by race

1790–1990: (Gibson and Jung, 2002)

1991–2019: US Census Bureau

Note: Because of changes to the US census – "some other race" was added in 1950, and "two or more races" was added in 2000 – there are slight discrepancies.

Figure 3. Death rate and life expectancy

Centers for Disease Control and Prevention / National Center for Health Statistics

Bastian B, Tejada Vera B, Arias E, et al. (2020) *Mortality trends in the United States, 1900–2018.* National Center for Health Statistics.

Figure 4. Childhood death rates

Centers for Disease Control https://www.cdc.gov/nchs/data-visualization/mortality-trends/

Figure 5. Prevalence of Notifiable Diseases

1800–1970: Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition (Washington, D.C.: U.S. Census Bureau, 1975). Series B 291–304.

1971–2016: Centers for Disease Control and Prevention; Statistical Abstract of the United States (https://www.census.gov/library/publications/time-series/statistical_abstracts.html)

Figure 6. Suicide Rate and Annual change in suicide rate.

https://ourworldindata.org/suicide

Centers for Disease Control and Prevention (https://www.cdc.gov/nchs/nvss/mortality_historical_data.htm)

Figure 7. General happiness

General Social Survey (https://gssdataexplorer.norc.org/)

Figure 8. Divorce, marriage and fertility rates

Divorce and marriage data:

1900–1920: from https://www.infoplease.com/us/family-statistics/marriages-and-divorces-1900–2012.

1920–1995: from Carter et al. (2006)

1996–2004: from the US Census Bureau (2007), with 2005-present data drawn from the Centers for Disease Control.

Fertility Rates:

Haines, Michael R. (1989) 'American Fertility in Transition: New Estimates of Birth Rates in the United States, 1900–1910′, *Demography*, 26(1): 137–148.

Haines, Michael R. (2006) 'Marriage and divorce rates: 1920–1995′, in S. B. Carter, S. S. Gartner, M. R. Haines, A. L. Olmstead, R. Sutch and G. Wright (eds.) *Historical Statistics of the United States, Earliest Times to the Present: Millennial Edition.* New York: Cambridge University Press. pp. Table Ae507–513.

Haines, Michael (2008) 'Fertility and Mortality in the United States', *EH.Net Encyclopedia, edited by Robert Whaples.* March 19. Available at: http://eh.net/encyclopedia/fertility-and-mortality-in-the-united-states/ Accessed on 4 January 2021.

Figure 9 Religious Preference

https://news.gallup.com/poll/1690/religion.aspx, last consulted 11th November 2020

Figure 10. Confidence in the existence of God

General Social Survey Data Explorer at gssdataexplorer.norc.org.

Figure 11 How often do you pray to God outside of religious services?

Same source as Fig. 9.

Figure 12. Inflation rate, unemployment rate, GDP Annual Growth rate

Inflation Rate:

https://data.bls.gov/cgi-bin/surveymost?cu

"US City Average, All items"

Unemployment Rate:

Bureau of Labour Statistics: https://www.data.bls.gov/cgi-bin/surveymost?bls

"Top Picks," Select "Unemployment Rate," Retrieve Data, "Select 1929–2020," Select "Go." Accessed Jan. 11, 2020

1920 to 1929: from Stanley Lebergott, Manpower in Economic

Growth (New York, 1964). Lebergott's estimates are the bases for the unemployment statistics reported in Historical Statistics of the United States: Colonial Times to 1970 (Washington, D.C., 1976).

GDP Annual Growth Rate:

Bureau of Economic Analysis. "National Income and Product Accounts Tables: Table 1.1.1 GDP Growth." Accessed Jan. 11, 2020.

GDP historical data: https://www.bea.gov/data/gdp/gross-domestic-product accessed 10 September 2020

Figure 13. US Civilian labor force

Beniger (1986: 23). See also Wyatt and Hecker (2006).

Figure 14. Occupational Group Employment Share by Year

Reproduced from Elvery (2019), Fig. 1. Elvery's data came from the Integrated Public Use Microdata Series (IPUMS) which contains decennial census data from 1860 to 2000 and the American Community Surveys of 2005, 2010 and 2015 (Ruggles et al., 2020). We are grateful to Joel Elvery for providing us with this dataset. See Table 1 in his paper for more details on the occupation groupings.

Figure 15. Share of pre-tax national income and Gini Coefficient

https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-inequality.html, last accessed 11th November 2019)

https://ourworldindata.org/income-inequality

https://wid.world/data/#countrytimeseries/sptinc_p0p50_992_j;sptinc_p99p100_992_j/US/1913/2019/eu/k/p/yearly/s

https://wid.world/country/usa/

Gini coefficient:

1967–2019: Semega et al. (2020). See also https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-inequality.html

1918–1966: Atkinson et al. (2017) Their numbers from 1918 to 1966 have been increased by 6% to align their post-1967 data with Semega et al's dataset (they adjusted their data to align with a 1944 dataset and to account for measurement changes).

Figure 16. Earnings by race as a percentage of median earnings and women's earnings as a percentage of men's

Bureau of Labour Statistics. https://data.bls.gov/cgi-bin/srgate

Series: LEU0254466800, LEU0254898500, LEU0254468100, LEU0252881500, LEU0252883600, LEU0254468400, LEU0252885400

Figure 17. Should Government Reduce Income Differences source: General Social Survey GSS 1972–2018 Cumulative Datafile https://sda.berkeley.edu/sdaweb/analysis/?dataset=gss18, last accessed 11th November 2019.

Figure 18. Homicide and Incarceration rate in US per 100,000 people

1900–1998: https://ourworldindata.org/homicides

1999–2018: https://ucr.fbi.gov/crime-in-the-u.s/2018/crime-in-the-u.s.-2018/tables/table-1

2019: https://www.pewresearch.org/fact-tank/2020/11/20/facts-about-crime-in-the-u-s/

Incarceration data from: https://commons.wikimedia.org/wiki/File:U.S._incarceration_rates_1925_onwards.png Accessed 20 December 2020.

2015–2018: Bureau of Justice Statistics https://www.bjs.gov/nps/resources/documents/QT_imprisonment%20rate_total.xlsx

Figure 19. Party share in the US House of Representatives

Party Divisions of the House of Representatives, 1789 to Present. US House of Representatives. History, Art & Archives. Available at: https://history.house.gov/Institution/Party-Divisions/Party-Divisions/ Accessed: 7 January 2021.

Figure 20. Federal / State & Local Employees per 100,000 population

Statistical Abstract of the United States (various years).

1970–2010: 2012 (Table 496)

1982–2009: 2012 (Table 461)

US Bureau of the Census (1975) *Historical statistics of the United States. Colonial times to 1970*. US Department of Commerce.

Figure 21. Confidence in Scientific Community

Derived from General Social Survey GSS 1972–2018 Cumulative Datafile https://sda.berkeley.edu/sdaweb/analysis/?dataset=gss18, last consulted 11th November 2020.

Figure 22. The word 'secession' in Google Trends

Downloaded from Google Trends (https://trends.google.ie/trends/explore?date=all&geo=US&q=secession#cmpt=q) on April 28, 2021.

Numbers in this figure represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular.

Author statement

This is to certify that all authors have seen and approved the final version of the manuscript being submitted. We warrant that the article is our original work, hasn't received prior publication and isn't under consideration for publication elsewhere.

Donncha Kavanagh
Geoff Lightfoot
Simon Lilley
19 April 2021

References

Atkinson, Anthony B., Hasell, Joe, Morelli, Salvatore, Roser, Max, 2017. Chartbook of economic inequality. ECINEQ WP. Available at: https://www.chartbookofeconomicinequality.com/inequality-by-country/usa/. Accessed on: January 12, 2021.

Barad, Karen, 2003. Posthumanist performativity: toward an understanding of how matter comes to matter. Signs (Chic) 28 (3), 801–831.

Bauer, Raymond A. (Ed.), 1966. Social Indicators. MIT Press, Cambridge.

Beniger, James R., 1986. The Control Revolution : Technological and Economic Origins of the Information Society. Harvard University Press, Cambridge.

Bjelland, M., et al., 2011. Employer-to-employer flows in the United States: estimates using linked employer-employee data. J. Bus. Econ. Stat. 29 (4), 493–505.

Braudel, Fernand, 1972/1996. The Mediterranean and the Mediterranean World in the Age of Philip II. Fontana, London.

Bumpass, Larry L., Sweet, James A., Cherlin, Andrew, 1991. The role of cohabitation in declining rates of marriage. J. Marriage Family 53 (4), 913–927.

Burnet, Macfarlane, 1971. Genes Dreams and Realities. Medical and Technical Publishing, Aylesbury.

Cajaiba-Santana, Giovany, 2014. Social innovation: moving the field forward. A conceptual framework. Technol. Forecast. Soc. Change 82, 42–51.

Caplow, Theodore, 1982. Middletown Families: Fifty Years of Change and Continuity. University of Minnesota Press, Minneapolis.

Caplow, Theodore, 2002. Towards a typology of social trends. Année sociologique 52 (1), 131–145.

Caplow, Theodore, Bahr, Howard M., Call, Vaughn R.A, 2004. The Polls – Trends: the Middletown Replications: 75 Years of Change in Adolescent Attitudes, 1924-1999. Public Opin. Q. 68 (2), 287–313.

Caplow, Theodore, Bahr, Howard M., Chadwick, Bruce A., Hoover, Dwight W, 1983. All Faithful people: Change and Continuity in Middletown's religion. U of Minnesota Press, Minneapolis.

Caplow, Theodore, Hicks, Louis, Wattenberg, Ben J., 2001. The First Measured Century : an Illustrated Guide to Trends in America, 1900-2000. AEI Press, Washington, D.C.

Carroll, Jackson W., Johnson, Douglas W., Marty, Martin E., 1979. Religion in America: 1950 to the Present. Harper & Row, San Francisco.

Carter, Susan B., Gartner, Scott Sigmund, Haines, Michael R., Olmstead, Alan L., Sutch, Richard, Wright, Gavin, 2006. Historical Statistics of the United States, Earliest Times to the Present: Millennial Edition. Cambridge University Press, New York.

Coates, Joseph, 2005. A visible end to innovation? I think not'. Res. Technol. Manag. 48 (6), 5–7.

Coates, Joseph F., 2006. Mea culpa? No. Technol. Forecast. Soc. Change 7 (73), 912–914.

Colvile, Robert, 2017. The Great acceleration: How the World is Getting faster, Faster. Bloomsbury Publishing, New York.

Cowen, Tyler, 2011. The Great Stagnation : How America ate All the Low-Hanging Fruit of Modern history, Got sick, and Will (eventually) Feel Better. Dutton, New York.

Davis, S.J., Faberman, R.J., Haltiwanger, J., 2012. Labor market flows in the cross section and over time. J. Monet. Econ. 59 (1), 1–18.

Decker, R., et al., 2014. The role of entrepreneurship in US job creation and economic dynamism. J. Econ. Perspect. 28 (3), 3–24.

Douthwaite, R.J., 1992. The Growth Illusion : How Economic Growth Has Enriched the Few, Impoverished the Many, and Endangered the Planet. Lilliput Press, Dublin.

Drucker, Peter F., 1969. The Age of Discontinuity; Guidelines to Our Changing Society. Harper & Row, New York.

Drucker, Peter F., 1987. Social innovation—Management's new dimension'. Long Range Plann. 20 (6), 29–34.

Durkheim, Émile, 1897/1970. Suicide. Routledge and Kegan Paul, London.

Dwyer-Lindgren, Laura, Bertozzi-Villa, Amelia, Stubbs, Rebecca W., Morozoff, Chloe, Kutz, Michael J., Huynh, Chantal, Barber, Ryan M., Shackelford, Katya A., Mackenbach, Johan P., van Lenthe, Frank J., Flaxman, Abraham D., Naghavi, Mohsen, Mokdad, Ali H., Murray, Christopher J.L, 2016. US county-level trends in mortality rates for major causes of death, 1980-2014. JAMA 316 (22), 2385–2401.
Edwards-Schachter, Mónica, Wallace, Matthew L, 2017. Shaken, but not stirred': sixty years of defining social innovation. Technol. Forecast. Soc. Change 119, 64–79.
Elvery, J., 2019. Changes in the occupational structure of the United States: 1860 to 2015. Econ. Comment. https://doi.org/10.26509/frbc-ec-201909 (2019–09).
Eichengreen, Barry, 2015. Secular stagnation: the long view. Am. Econ. Rev. 105 (5), 66–70.
Einola, Katja, Alvesson, Mats, 2020. Behind the numbers: questioning questionnaires. J. Manag. Inq. 30 (1), 102–114.
Fischer, Claude S., 1994. Changes in leisure activities, 1890-1940. J Soc Hist 27 (3), 453–475.
Fischer, Claude S., 2011. Still Connected: Family and Friends in America Since 1970. Russell Sage Foundation, New York.
Fry, Richard, 2019. The number of people in the average U.S. household is going up for the first time in over 160 years. Pew Res. Centre. October 1. Available at: https://www.pewresearch.org/fact-tank/2019/10/01/the-number-of-people-in-the-average-u-s-household-is-going-up-for-the-first-time-in-over-160-years. Accessed on: 5 January 2021.
Gates, Bill, 2000. Business @ the Speed of Thought: Succeeding in the Digital Economy. Warner Business Books, New York.
Gersick, C.J.G, 1991. Revolutionary Change Theories : a Multi-Level Exploration of the Punctuated Equilibrium Paradigm, 16. Academy of Management Review, pp. 10–36.
Gibson, Campbell, Jung, Kay, 2002. Historical Census Statistics on Population Totals by Race, 1790 to 1990, and by Hispanic Origin, 1790 to 1990, for the United States, Regions, Divisions, and States. U.S. Census Bureau, Washington, DC.
Giddens, Anthony, 1984. The Constitution of Society. Polity Press, Cambridge.
Gleick, James, 1999. Faster: the Acceleration of Just About Everything. Pantheon Books, New York.
Gordon, Robert J, 2016. The Rise and Fall of American growth: The US standard of Living Since the Civil War. Princeton University Press, Princeton.
Gordon, Robert J., Technology and Economic Growth. Springer, 2000a. Interpreting the "one big wave" in US long-term productivity growth. In: van Ark, B., Kuipers, S.K., Kuper, G.H.e.P. (Eds.), Productivity, Technology and Economic Growth. Springer, Boston, MA, pp. 19–65.
Gordon, Robert.J., 2000b. Does the "New Economy" measure up to the great inventions of the past? J. Econ. Perspect. 14 (4), 49–74.
Gordon, Robert J., 2015. Secular stagnation: a supply-side view. American Economic Review 105 (5), 54–59.
Gould, Stephen Jay, 2009. Punctuated Equilibrium. Harvard University Press, Boston.
Guyer, Bernard, Freedman, Mary Anne, Strobino, Donna M., Sondik, Edward J, 2000. Annual summary of vital statistics : trends in the health of Americans during the 20th Century. Pediatrics 106 (6), 1307–1317.
Haustein, Heinz-Dieter, Maier, Harry, 1980. Basic improvement and pseudo-innovations and their impact on efficiency. Technol. Forecast. Soc. Change 16 (3), 243–265.
Heinberg, Richard, 2011. The End of growth: Adapting to Our New Economic Reality. New Society Publishers.
Holmes, Thomas, Rahe, Richard, 1967. The social readjustment rating scale. J Psychosom Res 11 (2), 213–218.
Hout, Michael, 2020. A New Compendium of Trends in the General Social Survey, 1972–2018: Period and Cohort Trends and Differences by Race, Gender, Education, Urban-Rural, and Region for 276 Repeating Items. NORC at the University of Chicago. Available at. https://gss.norc.org/get-documentation/social-change-reports. Accessed on: 5 January 2021.
Huebner, Jonathan, 2005a. A possible declining trend for worldwide innovation. Technol. Forecast. Soc. Change 72 (8 (October)), 980–986.
Huebner, Jonathan, 2005b. Response by the Authors. Technol. Forecast. Soc. Change 72 (8), 995–1000.
Huebner, Jonathan, 2006. Discussion of Coates' commentary. Technol. Forecast. Soc. Change 73 (7), 906–912.
Jackson, Tim, 2019. The Post-growth challenge: secular stagnation, inequality and the limits to growth. Ecol. Econ. 156, 236–246.
Kavanagh, Donncha, Lightfoot, Geoff, Lilley, Simon, 2007. Running to stand still: late Modernity's acceleration fixation. Cultur. Politic. 3 (1), 95–122.
Kinsey, Alfred C., Pomeroy, Wardell B., Martin, Clyde E, 1948. Sexual Behavior in the Human Male. W. B. Saunders Co, Philadelphia.
Kinsey, Alfred C., Pomeroy, Wardell B., Martin, Clyde E, 1953. Sexual Behavior in the Human Female. Saunders, Philadelphia.
Kurzweil, Ray, 2005. The Singularity is Near : When Humans Transcend Biology. Viking, New York.
Latouche, Serge, 2009. Farewell to Growth.
Laumann, Edward O., Gagnon, John H., Michael, Robert T., Michaels, Stuart, 1994. The Social Organization of Sexuality: Sexual Practices in the United States. University of Chicago Press.
Levinson, Sanford, 2014. The twenty-first century rediscovery of nullification and secession in American political rhetoric: frivolousness incarnate or serious arguments to be wrestled with. Ark. Law Rev. 67 (1), 17–80.
Lynd, Robert Staughton, Lynd, Helen Merrell, 1929. Middletown; A Study in Contemporary American Culture. Harcourt Brace Jovanovich, San Diego.
Lynd, Robert Staughton, Lynd, Helen Merrell, 1937. Middletown in Transition: A Study in Cultural Conflicts. Harcourt Brace, San Diego.
Magdoff, Harry, Sweezy, Paul Marlor, 1987. Stagnation and the Financial Explosion. Monthly Review Press, New York.
Mensch, Gerhard, 1979. Stalemate in Technology: Innovations Overcome the Depression. Ballinger Pub Co, Cambridge MA.
Metz, Rainer, 2006. Empirical evidence and causation of Kondratieff cycles. In: Devezas, T.C. (Ed.), Kondratieff Waves, Warfare and World Security. IOS Press, Amsterdam, pp. 91–99.
Michael, Robert T., Gagnon, John H., Laumann, Edward O., Kolata, Gina, 1995. Sex in America: A Definitive Survey. Warner Books, New York.
Modis, Theodore, 2005. Discussion of Huebner Article. Technol. Forecast. Soc. Change 72 (8), 987–988.
Mojtabai, R., Olfson, M., Han, B., 2016. National trends in the prevalence and treatment of depression in adolescents and young adults. Pediatrics (Evanston) 138 (6) e20161878-e20161878.
Molloy, R., Smith, C.L., Wozniak, A., 2011. Internal migration in the United States. J. Econ. Perspect. 25 (3), 173–196.
Monto, Martin A., Carey, Anna G., 2014. A new standard of sexual behavior? Are claims associated with the "hookup culture" supported by general social survey data? J. Sex Res. 51 (6), 605–615.
O'Mahony, Seamus author, 2019. Can Medicine Be cured? The Corruption of a Profession. Head of Zeus, London.
Ogburn, W.F., Gilfillan, S.C., 1933. The influence of invention and discovery in US President's Research Committee On Social Trends. In: Mitchell, W.C. (Ed.), Recent Social Trends in the United States, Volume 1. McGraw-Hill, New York, pp. 122–166.
Ogburn, William F., Nimkoff, Meyer F., 1940. Sociology.
Ogburn, William Fielding, 1922. Social Change With Respect to Cultural and Original Nature. B.W. Huebsch, New York.
Ogburn, William Fielding, 1938. Machines and Tomorrow's World. National Resources Committee, Washington.
Orlikowski, Wanda J, Scott, Susan V, 2008. Sociomateriality: challenging the separation of technology, work and organization. Annal. Acad. Manag. 2 (1), 433–474.
Pansera, Mario, Fressoli, Mariano, 2020. Innovation without growth: frameworks for understanding technological change in a post-growth era. Organization 1–25.
Peters, Tom, 1989. Thriving on Chaos. Pan Books Ltd, London.
Phillips, Fred, 2011. The state of technological and social change: impressions. Technol. Forecast. Soc. Change 78 (6), 1072–1078.
Phillips, Fred, 2016. The circle of innovation. J. Innovat. Manag. 4, 12–31.
Phillips, Fred, Linstone, Hal, 2016. Key Ideas from a 25-Year collaboration at TFSC'. Technol. Forecast. Soc. Change 105, 158–166.
Phillips, Fred (forthcoming) 'Goodbye to determinism: the circle of innovation' *Eur. J. Int. Manag.*, DOI: 10.1504/EJIM.2020.10021762.
Popenoe, David, 1993. American family decline, 1960-1990: a review and appraisal. J. Marr. Family 55 (3), 527–542.
Putnam, Robert, 2000. Bowling Alone. Touchstone, New York:
Ramey, Valerie A., 2009. Time Spent in Home Production in the Twentieth-Century United States: new Estimates from Old Data. J. Econ. Hist. 69 (1), 1–47.
Ray, Marcella Ridlen, 2002. The Changing and Unchanging Face of US Civil Society. Transaction Books, New Brunswick.
Reiss, Albert J., 1986. Measuring social change. In: Smelser, N.J. (Ed.), Behavioral and Social Science: 50 Years of Discovery. National Academies Press, Washington, DC, pp. 36–72.
Ruggles, S., Goeken, R., Grover, J., Sobek, M., Flood, S., Meyer, E., Pacas, J., 2020. IIPUMS USA: Version 10.0. IPUMS, Minneapolis.
Semega, Jessica, Kollar, Melissa, Shride, Emily A., Creamer, John F, 2020. Income and Poverty in the United States: 2019. US Census Bureau. Available at: https://www.census.gov/library/publications/2020/demo/p60-270.html. Accessed on: 5 January 2021.
Shapiro, Stuart, 1997. Caught in a web: the implications of ecology for radical symmetry in STS. Social Epistemology 11 (1), 97–110.
Sheldon, Eleanor Bernert, Moore, Wilbert E, 1968. Indicators of Social Change Concepts and Measurements. Russell Sage Foundation, New York.
Singh, Shiwangi, Dhir, Sanjay, Das, V.Mukunda, Sharma, Anuj, 2020. Bibliometric overview of the technological forecasting and social change journal: analysis from 1970 to 2018. Technol. Forecast. Soc. Change 154, 1–26.
Smart, John, 2005. Discussion of Huebner article. Technol. Forecast. Soc. Change 72 (8), 988–995.
Smith, Tom, 2020. The Laws of Studying Societal Change. NORC at the University of Chicago. Available at: http://gss.norc.org/Documents/reports/social-change-reports/SC50.pdf. Accessed on.
Summers, Lawrence H., 2015. Demand side secular stagnation. Am. Econ. Rev. 105 (5), 60–65.
Taleb, Nassim, 2007. The Black Swan: The Impact of the Highly Improbable. Penguin Books, London.
Teulings, Coen, Baldwin, Richard (Eds.), 2014. Secular Stagnation: Facts, Causes and Cures. Centre for Economic Policy Research, London.
Tocqueville, Alexis de, 1835/2002. Democracy in America, Volume 1.
Toffler, Alvin, 1970. Future Shock. Bantam, New York.
Trainer, Ted, 2012. De-growth: do you realise what it means? Futures 44 (6), 590–599.
Trist, Eric L., 1978. On socio-technical systems. In: Pasmore, W.A., Sherwood, J.J. (Eds.), Sociotechnical Systems: A Ssourcebook. University Associates Inc, La Jolla, pp. 43–57.
Turchin, P., Korotayev, A., 2020. The 2010 structural-demographic forecast for the 2010–2020 decade: a retrospective assessment. PLoS ONE 15, e0237458.
Twenge, Jean M., Sherman, Ryne A., Wells, Brooke E, 2015. Changes in American adults' sexual behavior and attitudes, 1972–2012. In: Arch. Sex Behav., 44, pp. 2273–2285.

US Bureau of Labor Statistics, 2020. Union Members Summary. Available at: https://www.bls.gov/news.release/union2.nr0.htm. Accessed on: January 5, 2021.
World Prison Brief, 2020. Highest to Lowest - Prison Population Rate. Available at: https://www.prisonstudies.org/highest-to-lowest/prison_population_rate?field_region_taxonomy_tid=All. Accessed on: January 5, 2021.
Wyatt, Ian D., Hecker, Daniel E., 2006. Occupational changes during the 20th century: MLR'. Monthly Labor Rev. 129 (3), 35–57.

Donncha Kavanagh is Professor of Information & Organization in the College of Business at University College Dublin, Ireland. His-research interests include the sociology of knowledge and technology, the history and philosophy of management thought, money, play, innovation and ethics. He has published widely in the fields of information and organization, management, marketing, organization studies, and engineering.

Dr Geoff Lightfoot is Associate Professor in Entrepreneurship and Accounting in the School of Business, University of Leicester, Leicester, UK. He is also a member of the centre for Philosophy and Political Economy at the University of Leicester. His-current research explores aspects of representation and markets, and reaches into policy debates over issues such as sustainable accounting and entrepreneurship. He has published widely in journals such as *Critical Perspectives on Accounting, Organization, The Sociological Review* as well as a book, an edited book and a selection of book chapters.

Professor Simon Lilley is Professor of Information and organization at School of Business, University of Leicester. His-research interests turn around the relationships between (human) agency, technology and performance, particularly the ways in which such relationships can be understood through post-structural approaches to organization. These concerns are reflected in a continuing focus upon the use of information technologies and strategic models in organisations and investigation of the regulation and conduct of financial and commodity derivatives trading.