

**Gender Symmetry, Gender Convergence
and Historical Work-time Invariance
in 24 countries**

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TIME USE RESEARCH**

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Executive Summary

The Multinational Time Use Study (MTUS) currently consists of 81 nationally representative time use surveys, describing daily activity patterns in 24 countries. The earliest dataset available is from 1961, the latest from 2015. It includes evidence from 1.2 million diary days from across the developed world, and new surveys are being added continuously. Most of the data can be downloaded free-of charge from the CTUR website (though some requires additional permissions from the original collectors of the data). The MTUS allows researchers to look at how much time is spent in all the different activities undertaken through the day, and at all the events through the day, listed in unbroken sequence for 24 hours from 4 am. This is the largest collection of time use estimates available anywhere in the world.

This paper uses the MTUS to investigate, in the very broadest terms how (or if) the distribution of time between four broad categories of activity—paid work, unpaid work, leisure time, and personal necessities (sleep, personal toilet and eating)—has changed, for working age (20-59) adults over the period covered by the data.

Considered in these broad terms, and for the working population as a whole, we find surprisingly constant historical patterns of time use. The main findings are presented in Figure 1 on Page 8.

- Paid work time converges, somewhat from a broader range in the 1960s to a narrower concentration of between 250 and 300 minutes per day for working aged adults.
- Unpaid work time also converges somewhat over the period to around 180-250 minutes per day.
- Leisure time levels off at around 350 minutes per day for the richest countries.
- Sleep and personal care remains at 580 to 640 minutes per day throughout the period.

Within these broadly constant levels for the working-age populations we find (Figure 2 page 10) strikingly regular (though incomplete) gender convergence, men doing more unpaid work, women more paid. But even in the countries where this trend is most advanced, women still do just under 60% of the unpaid work. Unexpectedly, for the four most recent decades in most of the countries, the totals of paid plus unpaid work are essentially unchanging, clustering around 450 to 500 minutes (approximately eight hours) per day, and these national totals are relatively constant over time and similar to each other (Figure 3 Page 12).

The gender balance of paid plus unpaid work also remains remarkable constant: men and women do roughly similar totals of work time. But this symmetry does not imply equality. Women, across our large sample of countries, still do more than 60% of the unpaid work, and less than 40% of the paid. Women's lower totals of time in paid work presumably explain a large part of the gender wage gap, both overall, and within different occupational groups.

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1. Introduction.

We do everything in space and time, but, unaided, we have only imprecise knowledge of the distances we move and of the durations of our activities. We are much more likely to know how much money we spend on various goods and services, than how much time we allocate to the different things we do.

National statistical agencies conduct questionnaire-based surveys to estimate population distributions of wages, and diary-type studies of households' money budgets. Until relatively recently, policymakers remained incurious about the population's allocation of time. But now various public issues (listed below) have led to an increase in the academic and policy salience of population time use data. Since the 1960s growing numbers of countries have begun to collect occasional diary-based "time budget" surveys. Bringing many of these together in a harmonised form, we are now able to consider, exhaustively, how (or *if*) populations' time allocation *changes*, across much of the developed world, over an extended historical period, using evidence not available from any other sources.

This newly accumulating evidence reveals some unexpected, indeed puzzling, trends, particularly in relation to work. What follows combines discussion of a range of theorising about changing time-use patterns, with findings from a collection of comparative statistics of historical change. It deploys evidence from a sample of 81 time-use surveys, from 24 countries, covering the period 1961-2015, constructed from the 1.2 million randomly sampled whole-day diaries in the Multinational Time Use Study (Fisher et al 2014). It is mainly descriptive, tests no hypotheses, and rather than final conclusions, it provides theoretically-grounded speculations about the new historical puzzles that now emerge.

Why time-use matters.

We can identify four quite distinct applications for population-representative quantitative information about activity sequences and durations of the sort that derive from time-use diary studies.

The first and most familiar is for the measurement of economic activity. Until relatively recently, and outside the richest parts of the world, most work was for subsistence, with market-based measures reflecting only a minority of economic activity. The very earliest academic time-diary research was undertaken in Russia, to establish the extent and nature of peasant productive activity (Zuzanek 1980). More recently, an understanding of the importance of non-market production— "informal economic activity" (Hart 1974)—in the poorest countries led international development agencies to fund time-use research programmes. And almost simultaneously there emerged the view that, contrary to the expectation that unpaid work would be progressively replaced by paid "market" labour (Polanyi 1941), innovations in the service sectors of developed economies, with households purchasing domestic capital equipment (washing machines, televisions, cars) involved transfers of work away from paid domestic, transport, entertainment and other services, in part to manufacturing and infrastructure, in part out of the money nexus and into private households (Gershuny 1977). National statistical offices

therefor use time diary studies for National Accounting “extensions” including valuations of output from unpaid work (Eurostat 2008, ONS 2017).

The second application relates to processes of formation of “embodied capital” both within and outside the money economy. Economists (Becker, Mincer) see participation in paid employment as key to the formation of economically salient skills in the form of “human capital”. A key determinant of gender differences in participation in paid work is women’s higher levels of engagement in unpaid work (which is most effectively measured through time diary studies: Bianchi et al 2001). This housework differential reduces women’s attachment to the paid labour force relative to men, and thus, independent of any workplace discrimination processes, underlies the gender wage-gap. And outside the economy, sociologists (eg Bourdieu 1985), see a recursive relationship between participation in non-work activities, and the formation of tastes and capabilities for leisure participation (ie formation of cultural and social capital). Time use, in the form of the sequence of daily activities recorded in time diary studies has, therefor, major implications for the differential rates of embodied capital formation which are the sources of gender inequity and social stratification.

Third, researchers in the field of public health have come to the view that the distribution of physical activity (exercise, sedentary behaviour, sleep) across populations is quite as important as is nutrition in the determination of populations’ health status. Until the present decade, estimates of physical activity patterns for epidemiological studies have been drawn from batteries of “participation frequency” questions, focussing on participation in specific categories of intentional exercise. It is now clear that time-diary studies, surveying even-handedly the full range of daily activity from the most sedentary (eg watch television), via the moderate to vigorous activities involved in household chores, to the most intensive forms of physical exercise, produce more reliable information about the overall patterns of personal energy expenditures (Tudor-Locke et al 2009).

The fourth major application is in studies of affect and wellbeing. Early research into the psychosocial adjustment effects of unemployment (Jahoda, Lazarsfeld and Zeisel 1931, Jahoda 1981), revealed various “latent functions” of common experiences in paid employment—social contact, feelings of societal contribution, as well as requirements for physical exercise and routine alternation of active and sedentary activities through the week (Warr 1994, 2008). Time diary studies provide the appropriate evidential basis for population-level studies in this area. The newer field of life-satisfaction and population happiness studies takes time-use methods as its starting point (Kahneman 1991, 2005), and the so-called “Stiglitz Report”, on methods of aligning National Accounting methods more closely to the measurement of national well-being (Stiglitz, Kahneman and Fitoussi 2011) explicitly identified time diary samples as a key resource for improvement of national accounts.

Theories and speculations about historical change in time use

In the original Hebrew of the biblical commandment to observe the Sabbath, the “work” that is prohibited is “m’lacha”, literally “what one is sent to do”. This provides an unambiguously direct linguistic connection to the standard modern economists’ definition of work, the “third person criterion” (Reid 1934, Hawrylyshn 1974; the “3PC”). Work is anything that you might ask a third party to do on your behalf without losing the direct utility that derives from it. You *could* pay someone to cook food for your household, or you could cook it yourself: cooking is thus considered to be “work” irrespective of whether you *actually* pay for it. Similarly, going to the theatre is not work because you would derive no benefit if you paid someone to do it for you. “Leisure” time, generally taken also to be time for consumption, is in this view valued in and for itself, intrinsically *expressive*

or (though we will immediately call this association into question) *affective*, while by contrast “work” is assumed to be essentially *instrumental*.

On this basis Dagfin Aas, in his foundational 1978 paper, established the fourfold classification of the activities of daily life—“contracted”, “committed”, “necessary” and “uncommitted” activities—still widely deployed by academic time diary researchers. The four categories derive in turn from an “instrumental” versus “expressive” distinction: the “contracted” and “committed” terms referring respectively to paid and unpaid work, “necessary” and “uncommitted” referring to physiological necessities and leisure activities. Note that the economists’ discussion of the Third Person Criterion, which is central to the modern practise of National Accounts “extension” (Hawrylyshn 1978) is asserting an instrumental/*affective* distinction. This is clear from the fundamental National Accounting convention in which National Production is equated with National Consumption. This procedure directly implies that work itself has no direct affective value to the worker, but only *indirect* value insofar as it contributes to the worker’s own wage and to the final output of the economy. But, irrespective of the established definitions of the United Nations System of National Accounts, people do undoubtedly, if to widely differing degrees, enjoy (or not enjoy) their work, while many elements of leisure or consumption time are often undertaken for duty not pleasure; so in reality, work and leisure *both* have affective *and* instrumental characteristics

This problem was resolved by the leading applied economists then working in the field of time use, in Juster and Stafford (1985). In a chapter whose importance is only now coming to the fore, Juster and Dow (1985) describe the “joint production” of National Output and what they call “process benefits”. This latter involves measurement direct affective value or enjoyment of *all* of the activities (“processes”) of the day, irrespective of whether they involve “work” in the Third Person Criterion sense. Process benefits are the direct equivalents to the “instantaneous utilities” described by Kahneman (1991) in his **Introduction** to the **Handbook on Hedonic Psychology**, and relate to the 5 dimensions of instantaneous affect collected alongside daily activities in the American Time Use Survey, which are in turn prefigured by both the “Day Reconstruction Method” (Kahneman 2004), and the “activity enjoyment” measure collected throughout the 24 diary hours in various of the national incarnations of the Eurostat Harmonised European Time Use Study. Juster and Dow’s “joint production” refers to two distinct dimensions of value: National Output (extended to include the money value of unpaid work), calculated on the 3PC basis, and National Utility (Krueger et al 2012, Gershuny 2014) calculated from an affective valuation of all the minutes of the day. Both National Output (in its fully extended form) and National Utility are calculated from the whole of a society’s 24-hour Time Budgets, both can therefore be considered “exhaustive” accounts.

More or less work?

The history of discussion of time use trends features a push-pull contrast in attitudes to work and leisure. JS Mill’s *Political Economy* (1st Ed. 1846) represents a push towards leisure from the unwelcome nature of work. Technological progress implied the imminent (within one or two generations from 1846) saturation of human wants, and the economic steady state resulting from freedom from necessity will imply much shorter hours of work. Eighty years (or three generations) later JM Keynes advanced a very similar argument in his (1924) “Economic prospects for our grandchildren” (EPFOG) lecture. And Dumazadier 1963 (**vers une civilisation du loisir**, more blandly titled **Towards a Society of Leisure** in its 1967 English translation) starts from essentially the same “escape from the necessity of work” thesis.

By contrast Veblen (1899) advances a quite distinct “pull” thesis. Leisure is “the badge of honour”, the conspicuous abstention from labour or indeed commerce, is the distinguishing feature of the superordinate class. The (male) members of the richer mercantile classes, not able to indulge in honorific idleness themselves, nevertheless enforce it on their wives and children (and conspicuously

under-occupied servants), The ideal of idleness “trickles-down” through the social classes in what Veblen identifies as “the principle of stratified diffusion”.

A more recent economic approach, succinctly summarised by Becker (1965), provides a balance between these two processes. Individuals seek optimal returns by varying the ratios of work to leisure time according to their levels of embodied “human” (economically salient) capital (or simply, work skills). Higher productivity in employment (as might be reflected by a wage increase) might *either* lead to more work time (positive wage elasticity), the double increase in income (from both the volume of and the return from paid work) allowing more “efficient” time-intensive leisure utilising more expensive consumption items, *or* to less paid work, freeing time for consumption of a perhaps unchanging basket of purchases. Rather surprisingly, a careful reading of Bourdieu (1985) reveals an essentially similar calculation. Individuals seek “distinction” through an optimal deployment of their time so as to best use their unique combinations of embodied production (income-earning human capital) and consumption (“cultural capital”) skills.

Unexpected by proponents of either push or the pull to leisure, is the effect of a positive wage elasticity in the growth of “busyness”. Initially identified as a purely sociopathic development—as implied by the title of Schor’s (1990) “Overworked American” book describing the relative historical constancy of US paid work time—we find widespread academic and popular argument suggesting that (in apparent reversal of any previous assumptions) an increase in paid work time, and hence of feelings of being “busy”, across the developed world (Rosa, 2013, Wajcman, 2015, Schulte, 2104). It is apparent that in contrast to the turn-of-the-20th century circumstances, the superordinate class at the turn of the 21st century—with incomes derived more from earnings-related ownership of human capital than from inherited wealth—should be considered a *labour* rather than a *leisure class*. So part at least of the “busyness” claim derives from a similar “trickle down” of aspiration towards this *new* “badge of honour”: busyness here reflects, in part status assertion rather than genuine increased extra work pressure (Gershuny and Sullivan 2017).

Following the broader conception of work as presented by the Third Person Criterion—is a somewhat parallel discussion of unpaid work trends. Unpaid housework was represented by some academic observers as an “absorptive activity”, expending irrespective of the spread of supposedly labour-saving technology (Vanek, 1978, Schwarz-Cowan, 1980, Mokyr 2000, Bittman et al 2004). This finding is not supported in the multinational historical evidence provided below, though we do observe some growth in some unpaid work activities other than domestic chores.

Three isowork puzzles

Young and Willmott in their UK “symmetrical family” time-diary study (1974) found an approximately equality in the overall gender balance of work time once paid and unpaid are added together. This finding is generalised by Burda, Hamermesh and Weil (2013) as “isowork”.

In fact we shall see three distinct isowork issues emerging from our evidence: *gender symmetry*, *cross-national convergence* and *historical invariance*. It shows something approaching constancy in the total of the two distinct sorts of work identified by the Third Person Criterion, both as distributed between man and women, and over historical time. And these two imply a further puzzle: given the general unawareness of total durations of work, and the abstract nature of the Third Person Criterion definition, what is the mechanism that allows the emergence of these manifestations of isowork?

We should, however, before moving to the empirical discussion, briefly consider the second, often ignored, part of EPFOG. Having established the possibility that technological advance would lead to productivity growth, that could be used, in part to reduce the hours of paid work as well as increasing the society’s wealth, Keynes then asks, in effect, what will the mass of the population, not educated for a life of leisure, do with a newfound freedom from work (this is what came to be known as “The Problem of Leisure”—the title of a widely-read 1938 book by Henry Durant). Keynes (somewhat

condescendingly we might now think) speculates that the newly freed time will, in the absence of any other established practices, be largely deployed in listening to radio broadcasts. This brings us neatly back, via Bourdieu, who thinks of the motivation for leisure choices as the combination of time in particular leisure pursuits with specifically related cultural capital so as to produce enjoyment, and Becker, who considers work as motivated simply as the combination of time in work with economically-salient embodied capital to produce income, to Jahoda and colleagues in the early 1930s, who, implicitly, ask what work and leisure are *for*. Is time in employment really *just* about generating income, or does it have other latent functionality?

2. Time-use data.

Just as we remember yesterday's sequences of locations, without knowing exactly how far we have moved, we also recall yesterday's sequence of activities, without knowing the exact elapsed time devoted to each of them. A diminishing proportion of people still have to clock-on and clock-off at their work places. Others without regular hours of employment claim payment on the basis of hours actually worked. But most of us are unaware of how much time we spend in our paid work, let alone our time in unpaid work, leisure pursuits and sleep. As a result, estimates of time allocation based on simple questionnaire items provide inaccurate results, reflecting the conventional expectations (eg "contracted" as opposed to "actual" work hours) as well as the desirability or otherwise of particular activities (eg exaggeration of exercise time).

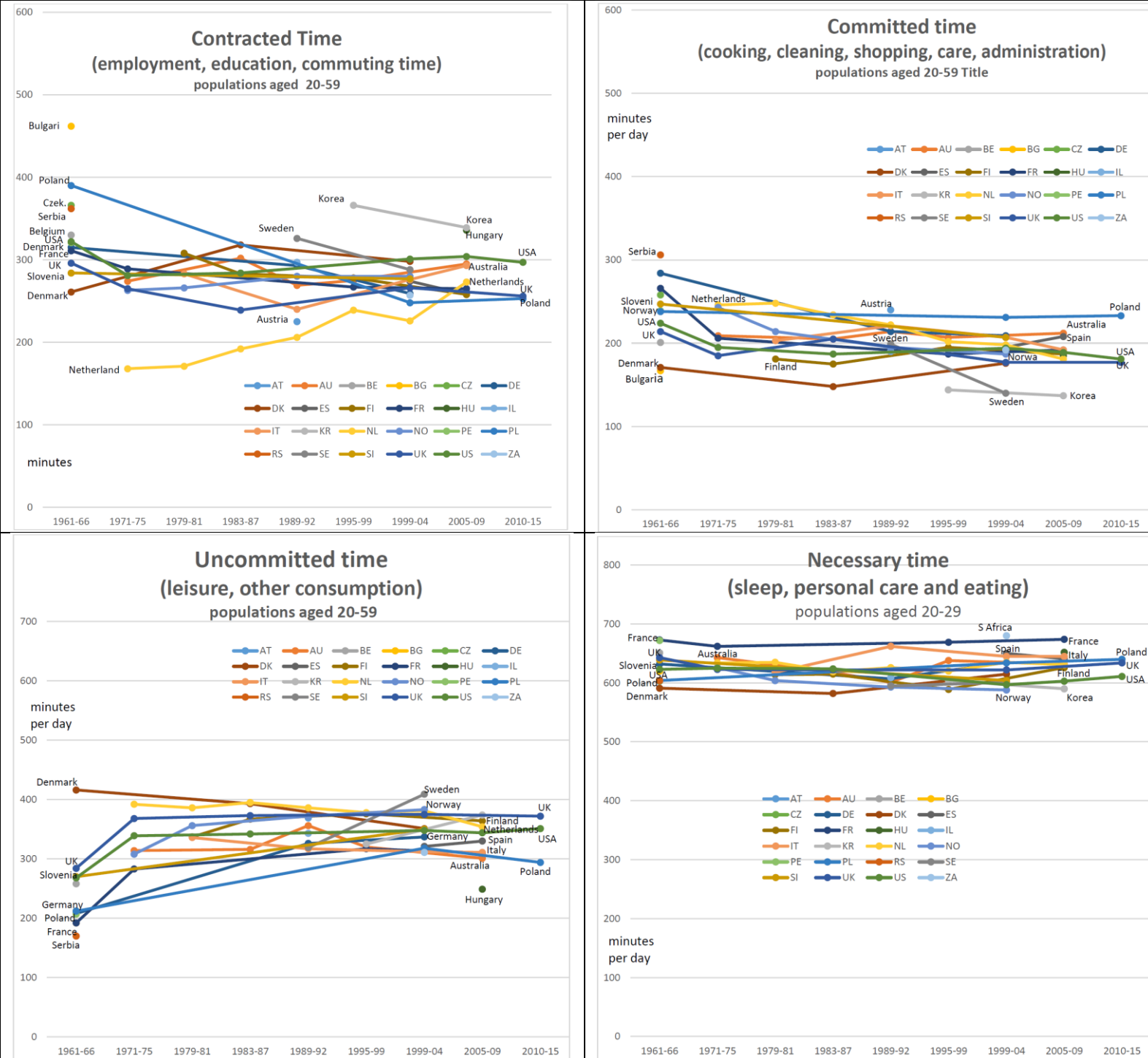
Time diary research makes use of our ability to remember activity sequences and to make reasonably accurate estimates of start and finish times of each episode in these sequences. Time diary evidence is drawn from national random-day samples, respondents recording in some detail each successive activity state (main activity, any other simultaneous, location, co-presence with others, and perhaps some affectual information relating to the present circumstances), normally starting from 4am, throughout the following 24 hours. Large samples of this sort provide detailed nationally representative accounts of time allocation through the populations' years (Szalai 1972).

The very earliest research of this sort, focussing on peasants' time use started in Russia in the late 19th century (Zuzanek 1980). A small purposive sample of women from London in 1912 is reported in Pember-Reeves (1913). Larger samples of industrial workers' diaries were collected in the Soviet Union in the early 1920 (Strumilin 1924) and around 6,000 days of farm, town, and later, elite educated women were collected under the auspices of the US Department of Agriculture (Kneeland 1929). Radio, and later television, broadcasting agencies began this sort of work in the 1930s (BBC1938) and a collection of day diaries from the later 1930s is stored in the UK Mass Observation Archive. The first large-scale cross-national comparative time-use study, funded by UNESCO was organised by Alexandor Szalai in 1965 and 1966, and various National Statistical Institutes (NSIs) subsequently started to collect this sort of data. From 1991 Eurostat started to develop the protocol for the Harmonised European Time Use Study (Gershuny 1995, Eurostat 2008). Tranches of national HETUS studies are typically collected by most EU member states at 10-year, or in some cases 5-year intervals. Since 2003 the US Bureau of Labor Statistics has collected the American Time Use Survey on a continuous annual basis.

Until recently reliability of the diary method has been more frequently asserted than demonstrated. But reliability testing has become practicable, with new technologies to capture criterion measures (registering movement in real time and space, using wearable cameras recording activity throughout whole days) for comparison with diary-based recall. Results from a 130-day study using these technologies demonstrate very precise correspondence of mean estimated durations of daily activities derived from diaries and from independent coding of camera records of the same days (Gershuny et al 2017).

The evidence used in this paper is drawn from a subset of the Multinational Time Use Study (MTUS) which provides post-fieldwork harmonised, anonymised diary microdata, (www.timeuse.org/mtus). The MTUS provides two type of files, respectively aggregate minutes per day in primary activities, and more detailed activity sequence data. These are in general freely downloadable from the website (though download of some national datasets requires prior permission from the relevant NSI. The MTUS currently includes 85 datasets, covering 25 countries, over the period 1961-2015. (Temporary technical problems with the converted Canadian data lead to its exclusion from the present analysis.)

Figure 1 Minutes per day in Aas' (1978) time-use categories.



3. Findings

These data provide a unique picture of social change. They give us a complete, exhaustive (in the sense of “no time unconsidered”) accounting of all the various activities of the day.

Figure 1 provides a summary for adults (men and women) of core working age, giving the mean minutes per day, weighted to give equal representation of each day of the week, and averaged to represent the whole year of the entire 20-59 population (excluding major holidays such as Christmas). The horizontal axis is not strictly a scale, but rather, a chronologically ordered grouping of sets of years selected so that only one survey per country falls within each year-range. (Exceptionally, the USA, with annual time diary surveys since 2003, is drawn with two groups of yearly results averaged, the earlier group reported in 2005-2009, the later in 2010-2015).

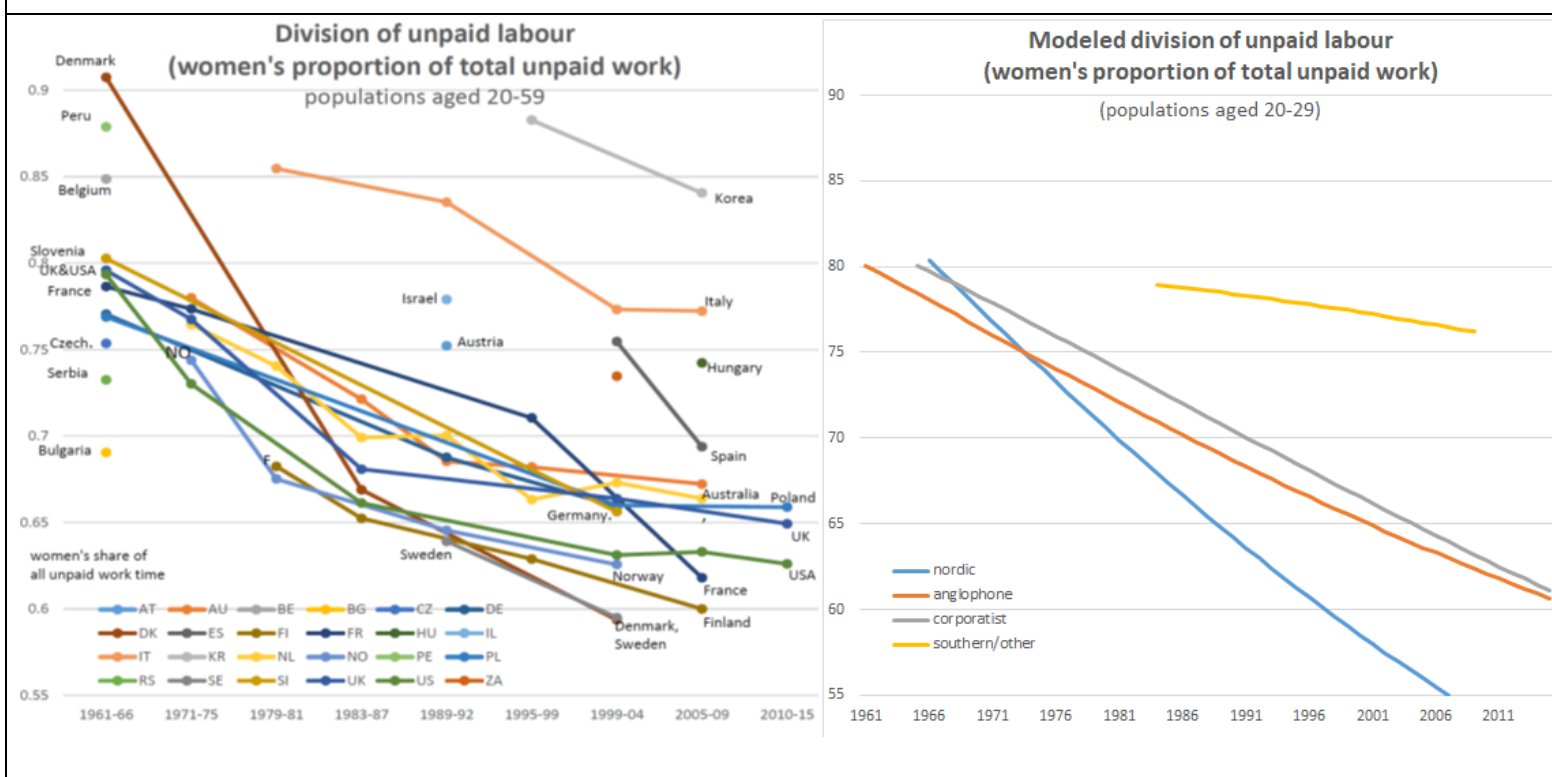
The model implemented in Table 1 (developed and further simplified from that in Kan et al 2011, and with the addition of 25 surveys added to the MTUS since that time) is estimated from an aggregated version of the dataset with 162 cases, corresponding to the men’s and women’s mean times in each of the activities for each of the 81 surveys plotted in Figure 1. The 25 countries are grouped into regime types “anglophone” (UK, US, Australia) “Nordic” (Sweden, Finland, Denmark Norway), “corporatist” (Belgium, France, Germany, Netherlands, Poland), with a disparate residual category of mainly southern European countries (Italy, Spain) as well as Slovenia, South Korea and 1960s studies from Bulgaria, Czechoslovakia and Serbia. The year variables are all transformed to run backwards from the latest date represented in the dataset.

**Table 1 Modelling Aas’ (1978) time-use categories.
Summary of time-use, 24 countries, over 55 years: sample aged 20-59**

	committed		contracted		uncommitted		necessary	
men								
<i>Adj R Sq</i>	0.43		0.49		0.44		0.29	
NORDIC	80.08	***	-43.18		5.47		-42.27	*
ANGLO	59.71	***	-2.13		-11.96		-42.62	***
CORPO	59.04	***	-54.52	*	2.58		-9.68	
YR	-0.24		-2.73	***	2.73	***	0.18	
YRSQ_100	0.05	**	-0.08	*	0.06		-0.03	
NORDYEAR	1.92	**	0.49		-2.21	*	-0.21	
ANGLYEAR	1.29	**	1.23		-1.68	*	-0.74	
CORPYEAR	1.17	**	-0.61		-0.38		-0.27	
(Constant)	85.52	**	335.80	***	382.34	***	633.21	***
women								
<i>Adj R Sq</i>	0.66		0.23		0.41		0.16	
NORDIC	-85.72	***	82.85	*	24.94		-21.49	
ANGLO	-37.33	*	52.99	*	11.73		-24.10	*
CORPO	-34.25		-18.07		35.44		14.71	
YR	-1.96	***	-0.71		2.38	***	0.21	
YRSQ_100	-0.11	**	0.11	*	0.02		-0.02	
NORDYEAR	-0.81		3.21	*	-2.22	*	-0.16	
ANGLYEAR	-0.06		2.87	**	-1.97	*	-0.72	
CORPYEAR	-0.89		0.97		-0.11		-0.03	
(Constant)	261.29	***	202.98	***	335.43	***	636.82	***

First compare the men's and women's models for committed time. Since all the regression coefficients involving the year variables go to zero in 2015, the main country coefficients (Nordic, anglo and corporate) plus the constant term represent the model predictions for those countries for 2015, while the constant alone represents the prediction for the default "southern and other" category. So we see that, for example, nordic men are predicted to do roughly twice as much unpaid work as southern (80+85 minutes vs 85 minutes) while Nordic women are predicted to do 156 minutes unpaid per day minutes as opposed to the "southern etc" category who are predicted to do 261. We see, by comparing the sizes of the year and year squared coefficients that the rate of increase in unpaid work with the pattern of (smaller) increases in men's unpaid work and (larger) declines in women's unpaid work holds for each of the regime types. Comparing the coefficients for men is slower than the

Figure 2 Historical changes in gender division of committed time: comparisons of plots and models



rate of reduction for women. The terms for the interactions between the regime-types and the (backwards running) years have opposite signs for men and women, consistent with the general pattern of convergence between men and women, and we see the largest coefficients for annual rates of increase in men's work in the Nordic regimes, the smaller coefficients for the anglophone and corporate regimes indicating their slower rate of convergence of the men's and women's unpaid work

The left-hand pane of Figure 2 calculates, for each of the 81 surveys, the ratio of women's mean minutes per day of committed (unpaid work) time to the total of men's and women's committed time. The overall trend, of gender convergence, with the ratio regularly falling, and the rate of change slowing as the period approaches the present, is clear and unambiguous. The right-hand pane of Figure 2 is calculated by instantiating the men's and women's models for committed time in Table 1, and again dividing the women's estimates for each year by the total of the men's plus the women's estimates. Plainly this very simple model is telling the main features of the same story of gradual but

incomplete gender convergence in unpaid work totals, further advanced for the nordic than for the anglophone and corporatist states. The relatively small number of cases, means that adding in an interaction between the regime variables and years squared reduces the the number of significant coefficients: its effect is however simply to reduce the rate of decline in the ratio at the right-hand end of the curves.

The apparent constancy in the paid work “contracted time” plots in Figure 1, after small declines over the first two decades is revealed as misleading when we consider the model of contracted time. In Table 1, again, as the larger positive coefficients for the women’s regime/year interaction terms of the “contracted” column in Table 1 suggest, this aggregate summary disguises the somewhat contrary trends for men and women. Women in the nordic, anglophone and corporatist countries show a substantial increase in paid work time, while men show a weak decline of time in this activity. Contracted time occupies overall around 280 minutes per adult day. The stand-out national exceptions are, at the lower extreme Netherlands in the 1970s, explained by exceptionally low levels of women’s paid employment, and at the upper Poland in the 1960s, reflecting in fact the very high levels of women’s employment characteristic of the then COMECON regimes (note for example the similarly high paid work totals for Bulgaria, Czechoslovakia and Serbia in the 1960s). Both these exceptional cases, however, gradually converge with the generality of countries. Korea, similarly exceptional in its high levels of paid work time, also appears to be converging gradually with the generality.

Overall the picture, showing some declines in the earliest decades, pretty much constant since the later 1970s. Of course, over this period, for most of the countries covered here, and relative to a low point of participations in paid work in the 1950s, regularly decade by decade, women have been increasing their participation in the paid labour force. And—ignoring the incidence of unemployment, and noticing that time in full-time education is included alongside paid employment—men’s paid work time has fallen, in most cases where we have the time diary evidence from the 1960s to the 1980s, but more slowly thereafter. The approximate constancy, or small rise, in the totals of paid work plus education and commuting over the majority of the historical period, is as the comparison of the upper and lower part of the “contracted time” column in Table 1, are the outcome of opposing trends for men and women.

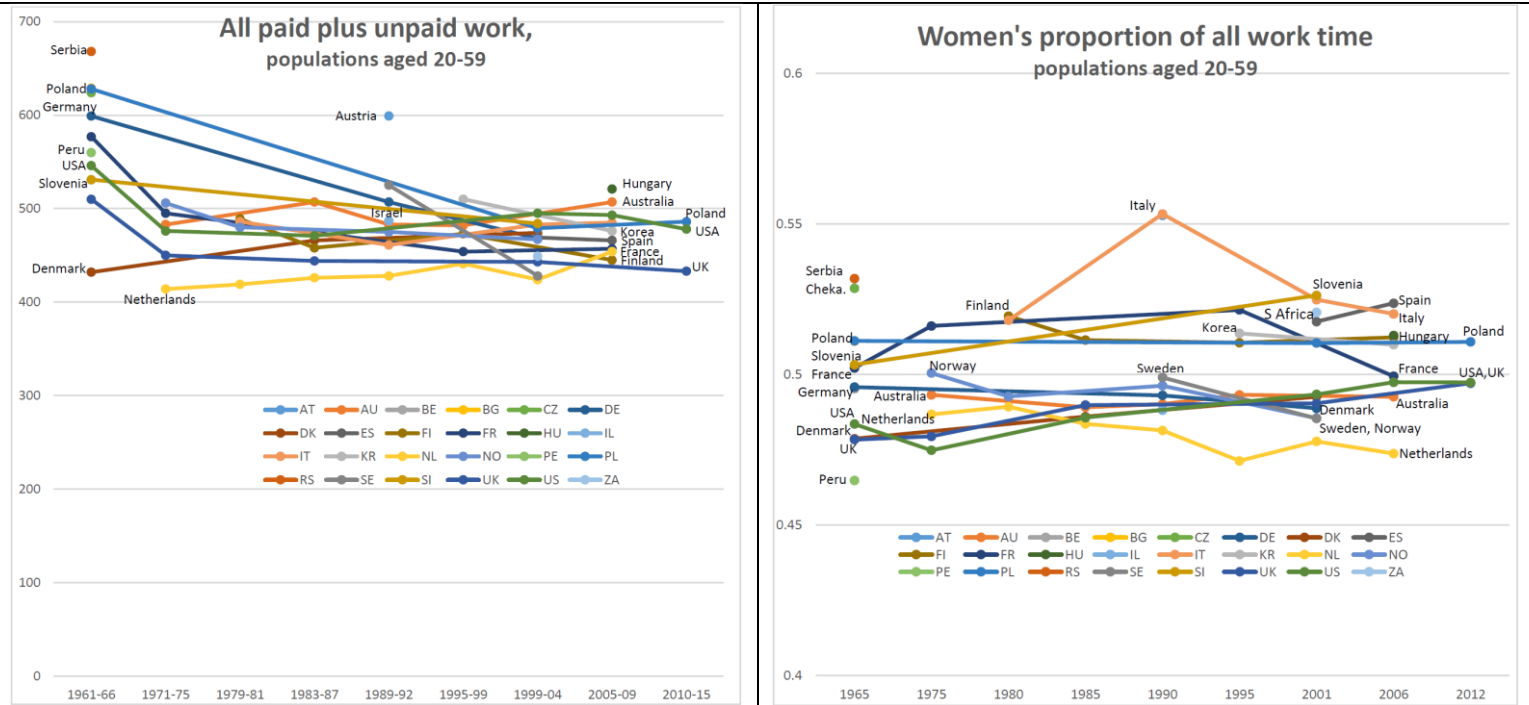
The remaining two categories however have, as we see when we compare the coefficients for men and women for “committed” and “necessary” time, generally similar trends. Necessary time (principally sleep) remains largely constant, country by country, with most countries lying within the narrow band between 600 and 650 minutes, and the greatest variation (between France and Denmark) reflecting France’s remarkably high level of time devoted to eating. Sleep time on its own is even more tightly concentrated close to the 480 minute (8 hours per day), and—very surprisingly given the insistence by sleep researchers of sleep reducing effect of “24/7 society”—with a small but determined increase over the more recent decades. Uncommitted time shows a convergence, with some countries (eg Denmark) reducing their free time, others increasing it during the first few decades, then settling to relatively constant levels between 300 and 400 minutes per day.

Symmetrical is not equal.

The two panes of Figure 3 illustrate remarkable, and perhaps surprising, findings that emerge from this evidence—and do so with increasing clarity as we include more and more surveys in the harmonised MTUS format for historical and cross-national comparison.

In the right-hand pane of Figure 3 we see the gender-symmetrical “isowork” phenomenon, first remarked by Young and Willmott in their pioneering 1973 “study of work and leisure in the London

Figure 3. Work constancy and gender symmetry



Region”, and amplified by Burda, Hamermesh and Weil (2011). In using the term, Young and Willmott are at pains to insist that “symmetrical” does not imply “egalitarian”.

“...the essence of a symmetrical relationship is that it is opposite but similar. If all segregation of roles ever disappeared (apart from that minimum prescribed by the dictatorship of a biology from which there is for most people no escape) then one might properly talk about egalitarian marriage. But...a term is needed which can describe the majority of families where there is some role segregation along with a greater degree of equality...” (Young and Willmott 1973 p33).

The pattern first identified by Young and Willmott in their pioneering time budget study, of two-and-a-half job heterosexual couples, in which the man has full-time employment, and the woman has a shorter-hours job and takes on a disproportionate share of the unpaid work, is a pretty good summary of what we see in all the 81 national surveys discussed here. We see, in the “woman’s proportion of all work” plot, with remarkably few exceptions, a reasonably constant (thought with a slight upward slope, women’s proportion increasing slightly), a clustering of each of the various national tracks around the 50% level, plus or minus 2% or so. This is not equality, since men do substantially more paid work, and women do substantially more unpaid. And this inequality has, in turn, important consequences for inequality in earnings —since extra time in employment for men translates pretty directly into extra human capital. And extra human capital, deriving from the remaining role segregation within households, must constitute a major element in the explanation of the ubiquitous and still-substantial gender gap in wage rates. So, not equality. But nevertheless symmetry in overall patterns of responsibility for the total of work time.

Historical Stability of total work time.

Arguably more surprising is the result shown in the left-hand pane of Figure 3. The total of minutes of paid plus unpaid work seems to be stabilising, in all the countries, within a fairly narrow range between 400 and 500 minutes per day. Again, in recent years, we see if anything an upward trend.

This is in fact a double isowork result. Most counties (the major exception seems to be South Korea) appear to arrive at a reasonably constant level. And most countries seem to arrive at a rather similar total of work minutes. This is indeed a very long way from the prospect set out for the grandchildren of his young audience in the 1920s (who were in fact the generation of the present author's grandparents).

4. Discussion: Three isowork puzzles

So here are the three puzzles emerging from the newly accumulating evidence of historical changes and cross-national differences in time use--each of which is worthy of some attention in the sociological and economic literatures.

Gender symmetry-type isowork is not in *itself* particularly puzzling. When demographic change (particularly more easily controlled fertility and the related smaller family sizes) is combined with concepts of fairness in civil society which find expression as aspirations to fairness within the family, it would be altogether much stranger if spouses of one or other gender systematically worked longer total hours than the other. The puzzle is rather in how this is achieved. The Third Person Criterion is, after all, an academic abstraction, and not a part of common discourse. It does, however map reasonably directly onto a common-sense notion of what sorts of activity—both paid and unpaid—count as work, and which do not. Spouses might reasonably object to doing more than “a fair share” of this work total, and there is a simple “exit voice and loyalty”-type model that leads to the emergence of symmetrical patterns within couple households.

However, the puzzle here concerns how spouse pairs might know about the relevant totals of work times. Earlier in this paper we explained the need for diary-based surveys in terms of individuals' general unawareness of durations in all activities including work. The reader might at this point like to consider how much housework she or he did last week. Add this uncertain total to the time spent working last week--a major source of uncertainty in itself—and we might wonder *how we know* what is really fair or unfair in our household relationships. One potential answer to this question already available in the literature, is that couples intentionally try to take their work simultaneously, if only in an attempt to ensure that they have someone to play with in their leisure time!

The second and third isowork puzzles are, respectively, the historical invariance, and the cross national convergence in work totals. How does it come to be that the eight hours of work per day, around which the plots in Figure 3 cluster so neatly, should hold so nearly constant, for some of the richest countries in the world, over a period of the three or more decades that must be remarkable for containing as much of more technical advance as any other period in human history? And how does it come about that a range of culturally diverse societies, widely separated in geographical terms, with, as we see in the models estimated in Table 2, quite widely differing practices in terms of the distribution of different sorts of paid and unpaid work between men and women, still all come to just a few minutes away from that 480 minutes total of paid and unpaid work?

Though the datasets in the MTUS are designed to enable micro-sociological and micro-economic analysis, containing as they do information about individuals' and households' daily activity sequences, all the discussion of this paper has been conducted at the macro-level of mean minutes of work and leisure time for countries as a whole. So we should be looking first for macro-type explanations.

And indeed the most straightforward type of potential explanation for both the invariance and the convergence, is that this is in same way a systematic property of all the successful economies included in the dataset. Anglo-liberal, Nordic, continental European, Mediterranean: these are all essentially capitalist systems driven to different degrees by a competitive search for profits. Perhaps, for reasons

that remain to be established, the only way 21st century rich countries can operate involves eight hours of work. During the 1960s and 1970s we had a rich and argumentative economic literature that argued for some conclusion not too far from this. JK Galbraith's **New Industrial State**, after all, maintained its integrity by generating (through a partnership between industrial R&D and the advertising industry) an unending stream of new wants to replace the older ones satiated by technologically driven productivity growth, and in turn promote new employment opportunities.

But Fred Hirsch's **Social Limits to Growth** neatly demonstrated that the status-seeking motives of those who aspired to new forms of consumption were self-defeating. We cannot advance our social status by acquiring goods that, howsoever desirable, are also available to all our social equals. And more generally, the idea that we can sustain a stable economy by continuously inventing new wants or discovering previously unnoticed ones, assumes an implausibly wide-spread collective myopia.

And in any case the phenomenon under question is not employment, but work more generally. Any such macroscopic argument would have to account for, in addition to new effective demand for products of manufacturing and service sectors, but also wants for new sorts of services produced by and for members of private households. When we look more specifically at change in the various components of unpaid work, we find for example a really substantial growth in childcare activities that goes some way to compensating for the reduction in unpaid cooking and cleaning time. This, presumably has relatively little directly to do with employment generation.

None of this is to say that there is no macro-economic or sociological explanation for working time invariance and convergence, but merely that we currently have no such explanation available to us. Particularly in the absence of any such macro explanation, we might will consider looking further, in the direction of more micro-related approaches. Of course, to avoid all sorts of potential ecological fallacies, any such arguments would have to go beyond the sorts of analysis in this paper, to take account of the wealth of micro-analytic detail, about the particular circumstances of individuals providing the accounts of daily life that are contained in the Multinational Time Use Study.

And in advance of this analysis, is the following speculation. It plays back into Juster and Dow's discussions of the "affective benefits", and ultimately to Jahoda, Lazarsfeld and Zeisel's assertion of the "latent functions" of work. Perhaps, once we look more carefully at the particular circumstances of the different patterns of work and leisure of the hundreds of thousands of diarists in the MTUS, and the outcomes of these patterns in terms of health, happiness and wellbeing, it may emerge that the reason for the eight hours of work is that... we need it. Consider: sociability, time structure, sense of social worth, physical exercise (in some jobs at least), Freud's "reality principle"—all these come, in various degrees, as a consequence of the work we do, and essentially independently of what—or whether—we are paid for it. Speculation indeed, but grounded in a certain range of serious social theory. And it comes ready provided with a substantial historical, cross-national comparative dataset as a basis for its investigation

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