THE TIME LAB

WHY DOES MODERN LIFE SEEM SO BUSY?

AN OXFORD CENTRE IS TRYING TO FIND ANSWERS WITH THE WORLD'S BIGGEST COLLECTION OF TIME-USE DIARIES.

BY HELEN PEARSON

In 1961, when more and more people were buying television sets to go with their radios, the BBC wanted to work out the best times to air its programmes. So its audience-research department decided to ask a sample of people across the United Kingdom to record what they were doing every half hour of the day, and to indicate whether the TV or radio was on.

The result was a trove of 2,363 diaries filled with the everyday details of British lives. "8 a.m., Eating breakfast," read one; "8.30 a.m., Taking children to school; 9 a.m., Cleaning away, washing up and listening to Housewives' Choice" — a popular radio record-request programme of the day.

Today, these files are part of the biggest collection of time-use diaries in the world, kept by the Centre for Time Use Research at the University of Oxford, UK. The centre's holdings have been gathered from nearly 30 countries, span more than 50 years and cover some 850,000 person-days in total. They offer the most detailed portrait ever created of when people work, sleep, play and socialize — and of how those patterns have changed over time. "It certainly is unique," says Ignace Glorieux, a sociologist at the Dutch-speaking Free University of Brussels. "It started quite modest, and now it's a huge archive."

The collection is helping to solve a slew of scientific and societal puzzles — not least, a paradox about modern life. There is a widespread perception in Western countries that life today is much busier than it once was, thanks to the unending demands of work, family, chores, smartphones and e-mails. But the diaries tell a different story: "We do not get indicators at all that people are more frantic," says John Robinson, a sociologist who works with time-use diaries at the University of Maryland, College Park. In fact, when paid and unpaid work are totted up, the average number of hours worked every week has not changed much since the 1980s in most countries of the developed world.

Epidemiologists, meanwhile, are mining the diaries to explain how lifestyle changes are contributing to a rise in many chronic diseases. The diaries "were the greatest asset I could possibly have", says physiologist Edward Archer at the University of Alabama at Birmingham, who used the data in a 2013 study[1] of obesity.

Now, the Oxford centre is testing a major update to its 50-year-old methods. In addition to asking people to complete a handwritten diary, it last year began giving them an electronic fitness tracker and a small camera that snaps a stream of pictures of their day (see 'The gadget guinea pig'). "The idea is to be a bit more adventurous," says Teresa Harms, a sociology research fellow who is leading the project. "Are new technologies better than what we've been doing all these years?"

TIME MANAGEMENT

Ironically for a scientific institute dedicated to time use, the researchers at the Oxford centre are no better at time management than anyone else. If anything, they are worse. One day in July, students were playing a game of croquet on the lawn outside the centre's home: a stone building in the placid grounds of St Hugh's College. But inside, things were more fraught. One flustered postdoc had slept through her alarm and arrived at 10.33 a.m. — more than an hour late for her meeting. The centre's ebullient founder and co-director, sociologist Jonathan Gershuny, cheerily admitted that his own time management is "terrible" — shortly before locking himself out of his office without his keys, ensuring that he would arrive for his next appointment catastrophically late.

None of this seems to have slowed down Gershuny, who can trace the origins of the centre to the 1970s, when he was starting his career at the University of Sussex in Brighton, UK. Gershuny wanted to predict what society and the economy would look like in future decades — but he realized that there was very little empirical evidence showing how people actually spend their time.

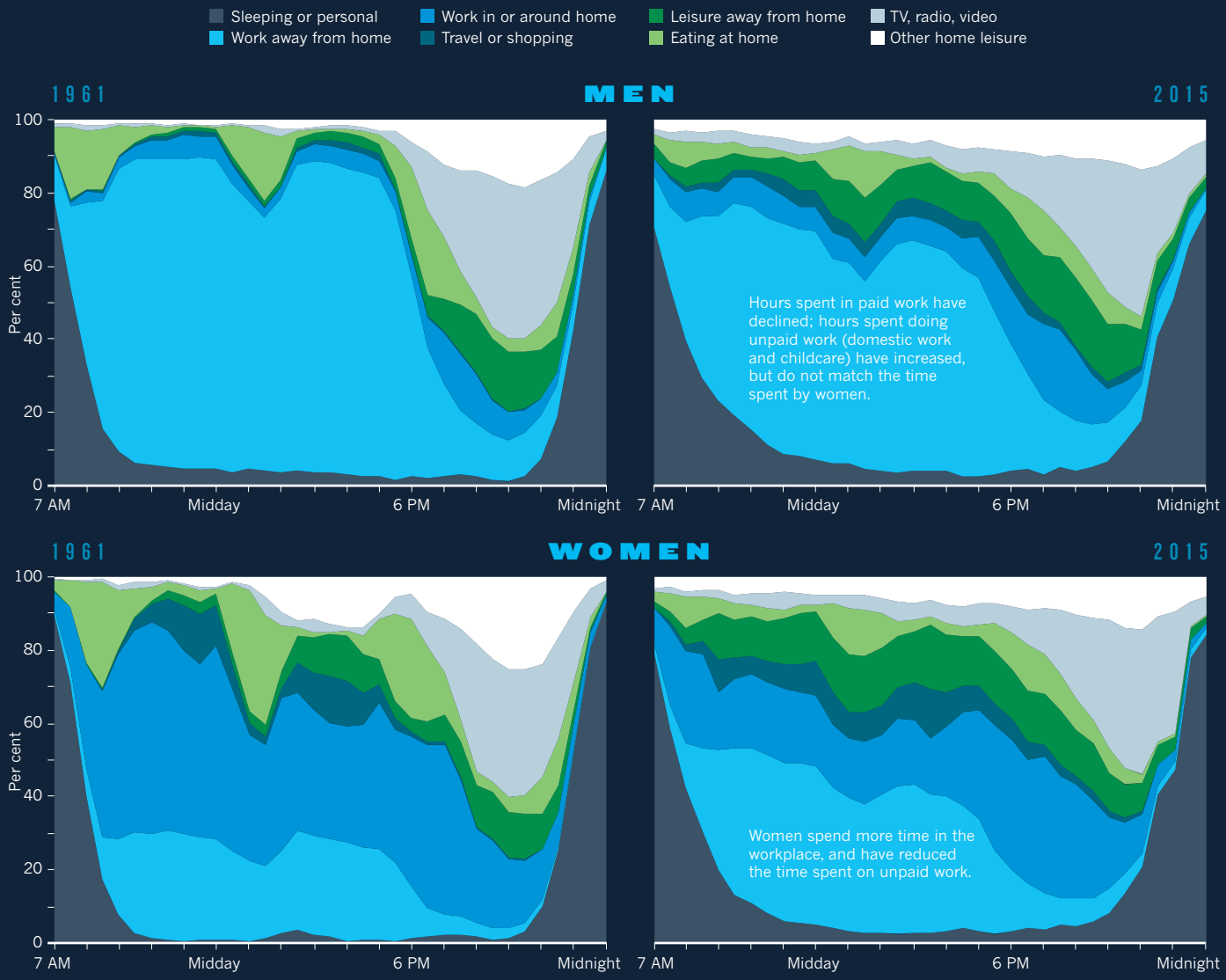
Gershuny started to search for surveys in which people had been asked to record their daily activities. Among his first discoveries were the BBC diaries. Another thousand or so journals, recorded in the 1930s, turned up in a mouldering old tea chest at the university.

As Gershuny's diary collection grew, it became obvious that the

SOURCE: TOP: J. GERSHUNY/OXFORD CENTRE TIME-USE RES.; BOTTOM-LEFT: REF. 6.; BOTTOM-RIGHT: REF. 7

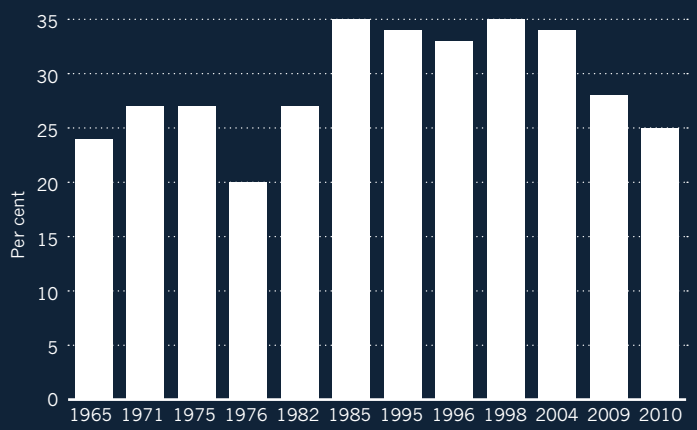
THE TRUTH ABOUT TIME

Analysis of diaries reveals how the average use of time has changed on a standard weekday between 1961 and 2015 in the United Kingdom (similar patterns are seen in other developed countries). In broad terms, the data show a slight growth in leisure time for men and women, and that patterns of paid work are changing for both.



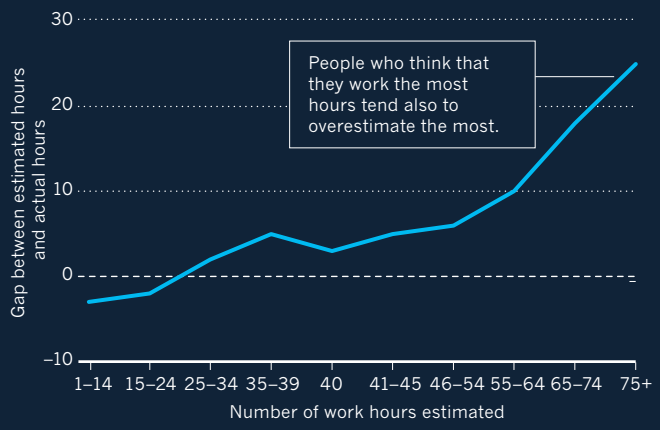
HOW RUSHED ARE YOU?

Despite a perception that life has become busier, the number of people in a US survey who report feeling 'always rushed' has fallen in the past decade.



HOW MANY HOURS DO YOU WORK?

A comparison of estimated work hours with actual hours (based on US time-use diaries, 2003–07) showed that people often overestimate how much they work.



records had been gathered by many different investigators around the world for many different purposes. To align the data and make meaningful comparisons, he would have to put them into a standardized form. So in the 1980s — by then working at the University of Bath, UK — he developed the Multinational Time Use Study: a system in which every activity is given one of 41 codes (gardening, 9; sleeping, 16; relaxing, 36). In an early project that assessed diaries from the United States and the United Kingdom, Gershuny and Robinson showed in 1988 that women in both nations were spending less time on domestic work, whereas men were doing slightly more — a consequence of women's increasing entry into paid employment and of shifting societal norms[2].

By the early 2000s, many countries had started to collect standardized time-use data; the US Bureau of Labor Statistics started gathering them annually in 2003. These efforts were driven by a growing global interest in understanding the impacts of time use on economies and on well-being.

But the diary bank still remained something of a side line for Gershuny until 2008, when he won funding to develop a centre at Oxford dedicated to time-use research. Then, in 2013, the centre was awarded two major grants: €2.5 million (US$2.8 million) from the European Research Council and £3.7 million (US$5.7 million) from the UK Economic and Social Research Council (ESRC), to exploit the diary bank and to launch a major collection of time-use diaries in the United Kingdom.

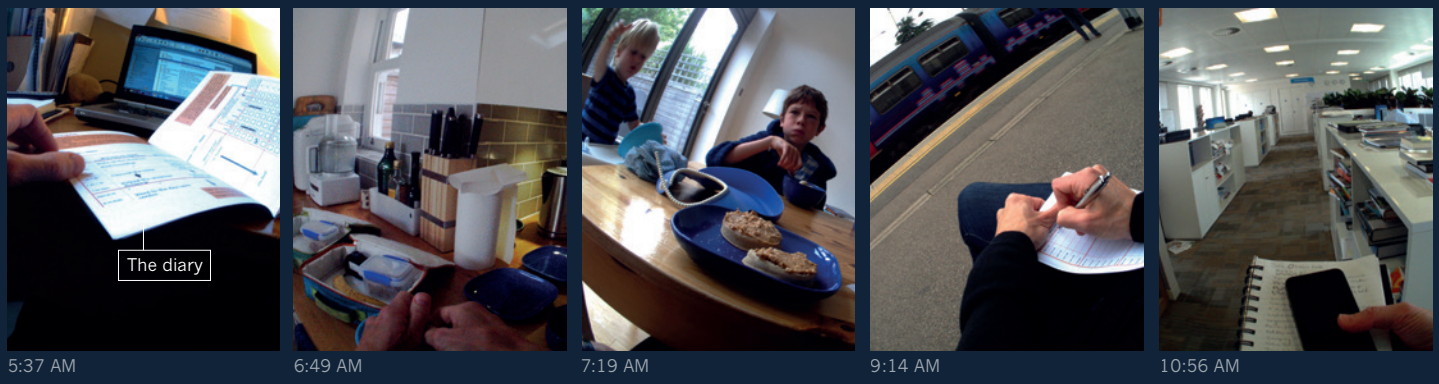
"We were paid suddenly to do the things that I'd been agitating to do," Gershuny says. And one of those things has been to find out why some people feel so busy all the time.

NO TIME

In 1930, the economist John Maynard Keynes wrote an essay predicting life 100 years ahead. The United States and Europe would be so prosperous that people would work just 15 hours a week, he said, and the main concern for "our grandchildren" would be how to fill their copious leisure time.

That's not quite how things are turning out — something that Gershuny started to think about in the early 2000s. He was feeling desperately busy — more so than in the past — and people around him were complaining that they were stressed out and working harder as well. Books on the matter were proliferating, with titles such as *Fighting for Time*[3], *Busier than Ever*[4] and *Work Without End*[5]. Survey data hinted at the problem too: in the United States, the proportion of people reporting[6] that they 'always' felt rushed was 24% in 1965 but 34% in 2004.

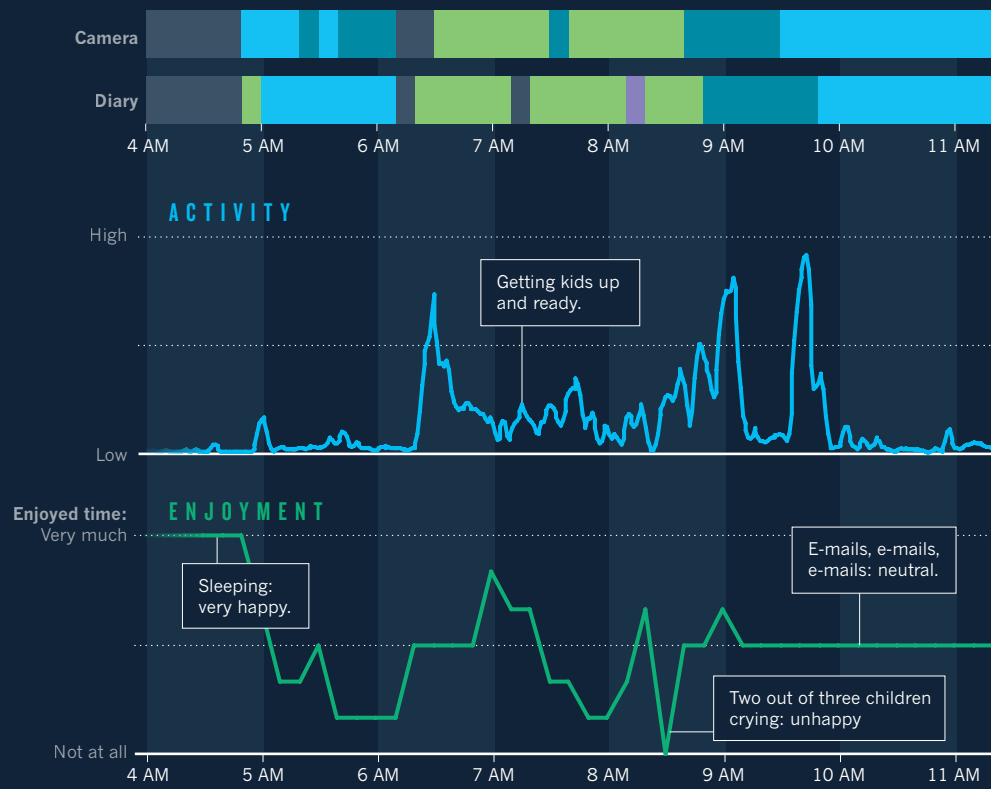
Yet when researchers used diary data to look into the matter, a



THE GADGET GUINEA PIG

DIARY OF A *NATURE* EDITOR

On 16 July 2015, I wore an accelerometer that tracks movement and a camera that took three images per minute. I also recorded what I was doing — and how much I was enjoying it — in a written diary. The Oxford Centre for Time Use Research in the United Kingdom is collecting gadget diaries in this way to find out if they produce more-useful information than do conventional paper diaries. **H.P.**



different picture emerged. Analyses showed that people in many countries routinely overestimate the amount of time that they spend working — in the United States, by some 5–10% on average[7] (see 'The truth about time'). But those who work longer hours tend to overestimate by the most: people who guess that they work 75-hour weeks, for example, can be over by more than 50%, and those of certain professions — teachers, lawyers, police officers — overestimate by more than 20%. (Scientists were not the worst exaggerators: they estimate working close to 42 hours per week on average, whereas diaries clock them at 39 hours)[8].

In a 2005 study[9], Gershuny compared the BBC diaries from 1961 with UK diaries collected in 1983–84 and 2001, adding up the number of minutes per day spent on paid work, unpaid work (such as chores around the house) and other activities. He wanted to know whether people were actually working longer hours than they did 40 years ago.

The answer was that it depends. Men had reduced the number of hours they spent on paid work, increased those in unpaid work and overall came out ahead, with just under 50 minutes more free time per day. Women were doing more paid work — again reflecting their movement into the workplace over the decades — and less unpaid work, producing little change overall.

Studies in the United States and western European countries have shown similar patterns: little overall change in work time and, at least in some studies and groups, a slight growth in leisure time. All in all, there is little support for the idea that everyone is working harder than ever before. "When you look at national averages of time-use data, it doesn't really show up," says Oriel Sullivan, a sociologist who now co-directs the centre with Gershuny.

But certain groups have experienced a different trend. According to analyses by Gershuny, Sullivan and other time-use researchers, two demographic groups are, in fact, working harder. One consists of employed, single parents, who put in exceptionally long hours compared to the average; the other comprises well-educated professionals[10], particularly those who also have small children. People in this latter group find themselves pushed to work hard and under societal pressure to spend quality time with their kids. "The combination of those pressures has meant that there is this group for which time pressure is particularly pertinent," Sullivan says.

These findings, the researchers say, could help to explain why there is a widespread perception that life is busier for everyone. Sullivan and Gershuny propose that the time-squeezed professional group includes many of the academics who study and discuss the phenomenon, as well as the journalists who write about it — in other words,

SOURCE: OXFORD CENTRE TIME-USE RES./*NATURE*

the people in society with a loud voice.

But Gershuny suggests that changing attitudes to work and leisure may also play a part. In nineteenth-century Europe, having ample leisure time signified a person of high social status: one philosopher described the literary types in Paris around 1840, who had such an abundance of time that it was fashionable to walk a turtle on a leash through the arcades.

In the twenty-first century, the situation has reversed, so that being busy is a signal of a privileged social position — and therefore an impression that some people are keen to give. Gershuny calls being busy in the modern day a "badge of honour", and Glorieux agrees. "The first thing we say when we meet people is 'I'm busy'," he says. "Suppose we say, 'I'm not busy; I have nothing to do; I was watching some TV.' It's not what people want to say."

People might also feel busier because of an increase in multitasking, especially with computers and smartphones. The US time-use diaries are poor at recording how long people engage with their devices, says Robinson — in part, he suspects, because they have become so prevalent that people don't even report when they are on them.

FAMILY TIME

The diary bank at Oxford has revealed other changes in how people use their time. In 2011, Oxford centre postdoc Evrim Altintaş drew on diaries collected in the United States between 1965 and 2013 to examine how much time parents spend on 'developmental childcare' — engaging with children through reading, talking and helping with homework[11]. Activities of this type are strongly associated with better educational scores, behaviour and other positive outcomes in later life.

Altintaş found that parents overall were spending more time on developmental childcare in the 2000s than they were in the 1960s and 1970s, but she found a bigger increase among parents who both had university degrees than for those who had high-school diplomas or less. She estimated that a child born to a highly educated mother in the early 2000s would receive 27 minutes more developmental childcare per day than one born to less-educated parents — adding up to 657 extra hours of focused attention for that child during the first four years of life. "That puts the children who are born to less-educated parents at a real disadvantage," Altintaş says.

The diaries have also exposed trends that could affect the health of adults. In his study on obesity[1], Archer analysed more than 50,000 diary days collected between 1965 and 2010 and divided women's time into paid work, household work, personal care and free time. Then he calculated what that meant for the amount of energy they were burning up. The results showed that women in 2010 were spending around 12 hours less per week on cooking, cleaning, laundry and other domestic work than women in 1965, and that had shifted towards more-sedentary pursuits such as using a computer. As a result, the team estimated that working women today are burning some 130 kilocalories per day less than those in the 1960s, and they proposed that this could be one explanation for the rise of obesity in the United States. (Archer stresses that he is not saying that women should do more housework; rather, the work reinforces public-health advice encouraging more physical activity of any kind.)

> "THE FIRST THING WE SAY WHEN WE MEET PEOPLE IS **'I'M BUSY.'"**

At Oxford, Gershuny and Harms are attempting to carry out more-detailed analyses of energy use in collaboration with researchers at the US National Cancer Institute in Rockville, Maryland. Harms has been matching up entries in a selection of diaries to a list, widely used in research, of more than 800 activities alongside estimates of the energy burned doing each. (It includes entries as specific as playing darts, coalmining, whirlpool-sitting and casino gambling.) The study, which is still under way, has so far shown that a gym session or other structured work-out accounts for only a small fraction of the energy that a person typically burns each day. Activities such as paid work and childcare often burn more — because even if they are less physically intense, they take up longer periods of time. "The real metabolic activity is built up during the working day," Harms says.

NEXT-GENERATION DIARIES

Since Gershuny started his diary bank, time-use research has become a thriving industry: there are now several hundred researchers in the field. But time-use diaries have weaknesses, and the biggest is that they can be wrong: people quickly forget what they were doing and record their days inaccurately — or they can lie. The desire to improve accuracy is one of the motivations behind CAPTURE-24: Gershuny and Harms's project to collect a new generation of diaries using some of the latest gadgets around.

So far, about 150 people have each spent 24 hours wearing a watch-like accelerometer strapped to their wrists and a small camera, which takes around three pictures per minute, hung around their necks. They also jot down what they are doing for every 10-minute slot of the day in a conventional paper diary. The aim is to see whether the devices can provide more-useful information for the researchers than a standard paper diary alone.

The accelerometer should collect more-accurate data on body movement and energy use, one reason that the project has earned support from biomedical-research funders the British Heart Foundation and the Wellcome Trust, both in London, as well as the ESRC. The photos could keep a more faithful record of when and what people eat — food diaries are notoriously unreliable — or reveal important nuances in people's interactions with children. (It is harder to say that you were focusing on childcare when the camera pictures show that you were checking your phone.)

In her preliminary analyses, Harms has found that gadget diaries and paper diaries show the same sequence of events, but that the gadgets reveal details that paper diaries missed. Most researchers in the field agree that the future lies in collecting data through phones and other devices. "Maybe this will bring a new boost to time-use research," Glorieux says. He anticipates a situation in which reams of diary data — such as location, heart rate, calories burned and even ambient noise — are collected through phones and linked-up gadgets.

The researchers at Oxford are keen to grow their diary collection in other ways. They recently added ones from China, South Korea and India, and they are trying to include more from Eastern European and developing countries. And Gershuny holds out hope that there are more tea chests of old diaries still waiting to be found. Then, scientists can begin to examine cultural differences in how people from different regions work, rest and play.

So many questions, so much data, so little time. Clearly, doing all this is going to take a lot more than Keynes's 15 hours a week. But the scientists hope to get there, by taking it one day at a time. ■

Helen Pearson *is Chief Features Editor for* Nature.

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