HHS

Recomposing persons: Scavenging and storytelling in a birth cohort archive

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Abstract

Birth cohort studies can be used not only to generate population-level quantitative data, but also to recompose persons. The crux is how we understand data and persons. Recomposition entails scavenging for various (including unrecognised) data. It foregrounds the perspective and subjectivity of survey participants, but without forgetting the partiality and incompleteness of the accounts that it may generate. Although interested in the singularity of individuals, it attends to the historical and relational embeddedness of personhood. It examines the multiple and complex temporalities that suffuse people's lives, hence departing from linear notions of the life course. It implies involvement, as well as reflexivity, on the part of researchers. It embraces the heterogeneity and transformations over time of scientific archives and the interpretive possibilities, as well as incompleteness, of birth cohort studies data. Interested in the unfolding of lives over time, it also shines light on meaningful biographical moments.

Keywords

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> By the end of my first year [at university] I had realised that I had lost interest. . . . By Xmas
> of my 2nd year my loss of interest had changed to hate and this was affecting my whole life.
> I didn't seem to have any interest in anything and was suffering from bad depressions.[1]

So wrote Dorothy, aged 22, in 1968, reflecting on her experience of doing a science
degree at a university in a major British city. This was a far cry from the lively descrip-
tion provided by her teacher five years earlier: 'An excellent girl – plenty of drive and
enthusiasm'.[2] Encountering Dorothy, we wonder what she did next, how she coped. We
ask ourselves, 'Could we have seen this coming?' This level of animation and evocation
is usually associated in social science with the richness of qualitative data. Yet Dorothy
emerges from the archive of the UK's National Survey of Health and Development
(NSHD). This may seem odd, given that this ongoing birth cohort study is designed
principally to generate quantitative data, a resource used mostly by epidemiologists,
where the experiences of Dorothy and other Survey members are combined to render
statistics at the level of the population or social group.

Yet we can do more than generate statistics from birth cohort studies such as the
NSHD; we can also recompose persons. The crux is how we understand data and
persons. Recomposition entails scavenging for various (including unrecognised) data,
and combining them to generate biographical collages.[3] While recognising the broader
historical and political contexts that underpin cohort studies, it does not reduce them to
these. Rather, it requires being mindful of the heterogeneity and transformations over
time of scientific archives and the interpretive possibilities of cohort studies data. It
demonstrates how longitudinal cohort studies can be a biographical resource, including
about women and others whose voices have been historically marginalised within
archives.

Recomposition speaks to the turn to the biographical and the personal across history
and the social sciences. In doing so, it foregrounds the perspective and subjectivity of
survey participants, but without forgetting the partiality and incompleteness of the
accounts that it may generate. Although interested in the singularity of individuals, it
attends too to the historical and relational embeddedness of personhood. It examines the
multiple and complex temporalities that suffuse people's lives, hence departing from
linear notions of the life course. It implies involvement, as well as reflexivity, on the part
of researchers. The data that recomposition generates are often unique and irreplaceable.
Prospective cohort studies (those that follow participants over time), in particular, elicit
at specific moments information that, later, may well be forgotten, redefined, and re-
evaluated by them. They provide a unique opportunity to trace the unfolding of lives in,
and over, time; how these were experienced and perceived; and how they relate to wider
cohorts and historical moments.

Our account draws from a study of the temporal and spatial experiences of girlhood in
post-war Britain.[4] In our broader project, we examine experiences and accounts of
growing up, shifting articulations of selfhood, and 'critical moments' (Thomson,
2002) in the life course, as well as the long-term implications and 'resonances' of youth.[5]
As part of this project, we examine 30 participants in the NSHD, tracking them from
birth into later life across decades marked by dramatic changes in opportunities for
women and in gender norms and relations.[6] In this article, we discuss our approach to

the NSHD. We address and draw from historical and critical studies of scientific archives and data, and cross-disciplinary conversations on the person. We bring these to bear on efforts to unlock the potential of longitudinal studies through qualitative reworking of archived data.

In the following, we first introduce the NSHD as an evolving archive. We then discuss what it means to scavenge for data in such an archive. We consider what we can learn about a person by scavenging, particularly issues of subjectivity, relationality, and temporality. We focus on Dorothy, born to a professional middle-class Northern English family, but draw also on the stories of Vicky, who grew up in an upper-working-class home in the south of England, and Enid, who was raised in extreme poverty in a Scottish city. These cases were selected to demonstrate that scavenging is effective for learning about persons from diverse backgrounds, and to provide a range of examples of this, both commonplace and atypical. In the final part of our article we discuss how we might recompose and reanimate a person through storytelling and other acts of representation, particularly collage.

An evolving archive

The NSHD is the world's oldest continually running birth cohort study, and the first in the United Kingdom. Its history is well documented (e.g. Kuh, 2016; Kuh *et al.*, 2011, 2016; Pearson, 2016; Ramsden, 2014; Wadsworth *et al.*, 2005), and here, we only highlight key themes. Fuelled by concerns over declining fertility and maternal and infant health and mortality, it began in 1946 as a one-off survey of 13,687 babies born in England, Scotland, and Wales in one week in March of that year (Royal College of Obstetricians and Gynaecologists and the Population Investigation Committee, 1948). Realising the unique opportunity afforded for exploring post-war social changes – especially the introduction of the Education Act in 1944 and the establishment of the National Health Service in 1948 – its promoters reworked and extended the Survey, making it an example of 'big social science': large-scale researches in the 20th century that sought to document human life, at times aspiring for totality (Lemov, 2017). The NSHD was seen as a representative study of Great Britain, and it would play a pivotal part in policy debates surrounding education and health (Ramsden, 2014).

The initial sample was whittled down in 1948 to 5362 to make it manageable; apart from losses due to attrition, these have remained the core of the NSHD. The NSHD 'sought to represent all socio-economic groups and regions of England, Wales and Scotland'.[7] As three-quarters of the remaining sample were from the lowest social classes, a quarter of these were selected randomly creating parity across the social classes (Pearson, 2016: 40). However, the reduction in sample size involved the omission of some groups. Excluded were illegitimate babies, as there was no access to the adoption register needed to follow them, as well as twins. People from racial and ethnic minorities were included in the reduced sample, but they were, and remain, invisible in the coded data.[8] Imperialist concerns about the decline in fertility of white British people underpinned inter-war thinking that led to the 1946 maternal survey (ibid.: 19–20), but the NSHD has never collected data on ethnicity because its members were born in

Britain before the period of mass immigration, suggesting that in 1946 levels of ethnic, and especially racial, diversity were too low to be of interest.

Survey members' mothers were the main participants in its early years – they answered postal questionnaires and received home visits from municipal health workers. At age 13, members themselves started to answer questionnaires, and three years later, they became the study's main participants. At various points, members' teachers, school nurses and doctors, and youth employment officers were asked to fill in questionnaires. Social science issues jostled with medical interests: pregnancy and childcare, childhood health, personality and mental health and well-being, education, environmental pollution, and entry into the labour force, among others.[9] The Survey did not pursue a set hypothesis. Questionnaires were wide ranging, included many open-ended questions, and 'rambled' (Pearson, 2016: 111).

One reason for the NSHD's broad approach is the ad hoc nature of its funding during this time, which required it to meet the priorities of state agencies and charities (Ramsden, 2014). Since 1962, however, the UK's Medical Research Council (MRC) have provided core funding, transforming the NSHD to a leading epidemiological study. In the 1980s and 1990s, the Survey focused on the early origins of adult health and diseases (Wadsworth, 1992). It has subsequently played a leading role in the development of life course epidemiology, which examines the later health consequences of conditions and events throughout a person's life, as well as in the parental generation (Kuh and Ben-Shlomo, 1997). Since 2007, the NSHD's focus has been biological ageing, including its relationship to mental and social well-being (Kuh, 2016). It seeks to examine how conditions in earlier life, as well as during adulthood, shape ageing outcomes through various biological, social, and psychological mechanisms (Kuh *et al.*, 2011). To date, there have been 24 main waves of data generation, excluding sub-studies focusing on specific groups within the main sample.

The kinds of data that the NSHD collects and how it does so have changed. Survey members continue to be sent self-answered postal questionnaires, but these are now populated mostly with scales, yes/no items, and items that require specific quantities or figures. Since 1982, members have received home visits from nurses, who conduct tests, including those related to breathing, blood pressure, and physical function. In 2006, members were invited for the first time to take part in clinical visits, which included intensive functional tests and structural assessments of key body organs (Kuh *et al.*, 2011). Biological samples, including blood, urine, saliva, and cheek swabs, have been collected since 1999, while those who participated in the 2014–16 wave were also invited to wear activity monitors for one week. More recently, a subsample of members took part in a study of cognitive ageing that involved brain imaging (Lane *et al.*, 2017).

Hence, bioinformation – information generated from biological samples that pertains to biological mechanisms and processes (Parry and Greenhough, 2018) – have become fundamental to the NSHD. This development entails epidemiological and biomedical forms of 'big data': voluminous and complex data sets that require high computing power, such as those pertaining to biological processes at the molecular and cellular levels, which are then examined in terms of their distribution in the wider population, as well as their relationship with social and psychological factors.[10] Crucial here is the rise of postgenomics in the life sciences, which departs from seeing the gene as an entity that

is stable (i.e. not modified by social and environmental factors) and determinative of human biology and health, emphasising instead 'complexity, indeterminacy, and gene-environment interactions' (Stevens and Richardson, 2015: 3).[11] Here, the person is reframed from a unitary entity shaped by their social location into one that is made and remade in manifold relations that entail connections and disconnections, aggregation and disaggregation (Bauer, 2013). At the same time, a person's milieu is often reduced to the immediate family context, thereby displacing questions about wider socioeconomic inequalities and historical injustices (Lock, 2015).

The NSHD vividly demonstrates how scientific archives work more generally. Such archives are 'open-ended' and 'opportunistic', shapeshifting in relation to new theories, lines of inquiry, and technologies, particularly where long-term research is involved (Daston, 2017: 5). They come in diverse forms, entail different kinds of materials, and are necessarily selective. They register historical shifts and constitute disciplinary pasts, address contemporary concerns, and articulate visions of the future. These observations resonate with accounts of how longitudinal studies in epidemiology collect heterogeneous data and assemble them subsequently in unanticipated ways (Bauer, 2008, 2013). Echoing broader continuities between contemporary and earlier data (Daston, 2017), such studies enrol various data to enact visions of totality – for instance, through accounts of causation (Bauer, 2008, 2013). The capaciousness and flexibility of epidemiological longitudinal studies, however, recall the insights of postcolonial and feminist scholars, who have drawn attention to how archives can be used and read in different and unintended ways; they neither simply enact logics of domination nor render marginal subjects totally invisible (Chaudhuri, Katz, and Perry, 2010; Summerfield, 2019: 18–19; Zeitlyn, 2012).

Taking these accounts of scientific archives and epidemiological studies as our starting point, we ask: how might the NSHD be used in ways that embrace the heterogeneity of its data? In a context where bioinformation and big data loom large, how might this and other similar epidemiological archives generate alternative pictures of social life? Could the NSHD allow for a notion of the person that does not reduce it to sociological categories, molecular processes, and proximal milieux? How might it disrupt attempts at totality? Could we get a glimpse of senses of time aside from causality and association?

Scavenging data

Person-centred approaches to longitudinal surveys are not new. They involve qualitative re-analysis of pre-existing surveys, but work only with what is predefined as data.[12] They are generally done as a precursor to further statistical analysis or to enhance understanding of statistical results (Singer *et al.*, 1998; see also Dumais, 2005; Sharland *et al.*, 2017). They entail extracting coded data at the individual level, which are then narrativised and analysed qualitatively, the findings of which are tested against survey data on the larger population. Others have created case studies from coded data to make their quantitative findings more accessible (e.g. Joshi, Davies, and Land, 1996). Even where original questionnaires are available, researchers rarely include these in their analyses and look beyond coded data. Where this happens, researchers tend to focus on specific

open-ended questions or textual additions to a survey (e.g. Ballard, Kuh, and Wadsworth, 2001; Elliott, 2008).[13]

Our qualitative research involves a rethinking of what constitutes data about persons in longitudinal surveys. We see the NSHD as teeming with potential – 'latent' – data. What might constitute 'data' shifts over time, as does the particular meaning and significance of bits of 'data'. This is partly because researchers' sensitivities change over time. It is also because subsequently generated data can, and do, change the meanings and significance of what can be scavenged from earlier sweeps. Notably, while as discussed above, epidemiologists themselves mine previous data, they tend to stick to how variables and categories have been defined (Bauer, 2013: 518). Significantly, when Survey members participate in the NSHD, they often think that more of what they contribute is recognised as 'data' than actually is the case. Dorothy's account of her depression at university, reproduced at the start of this paper, was in response to an open question and uncoded: it was not recognised as 'data'.

The archive's origins do curtail the kinds of data we can scavenge. As noted earlier, NSHD data relate principally to white Britons. Identification of racial and ethnic minorities is dependent on serendipity and we cannot sample for this (our sample is seemingly all white), although scavenging can reveal uncoded data relating to race and ethnicity that would otherwise remain invisible. Lacking official variables for race and ethnicity, it is not possible to identify or trace Black, Asian and minority ethnic members, including Jewish, Cypriot, and Irish persons. The NSHD creates an image of Britain that renders invisible its diversity (see, for example, Fryer, 1984; Marks, 1994; Ryan, 2003; Visram, 1986). Decolonisation transformed British society in the 1950s and 1960s (Bailkin, 2012; Webster, 1998), but the NSHD archive, like others established around this time, does not enable exploration of the social ramifications of decolonisation – the 'afterlife of empire' – played out in the post-war welfare state (Bailkin, 2012).

Our revisioning of 'data' chimes with a growing cross-disciplinary conversation. Historians and other scholars of science and technology have shown how data constitute a historically contingent category (Rosenberg, 2018). What is considered as data is shaped by prevailing disciplinary conventions, political exigencies, material affordances and constraints, and cultural ideals, among others; in turn, how data are defined shapes how knowledge is produced (Gitelman and Jackson, 2013; Leonelli, 2016). Data, in short, entail interpretive work and are fundamentally relational. Feminist scholars in particular have accentuated how prevailing data practices erase issues of power, emotion, embodiment, perspective, and context in favour of 'objectivity' and 'neutrality' (D'Ignazio and Klein, 2020). Moreover, there is often more data, and of unexpected sorts, than is typically assumed. The proliferation of 'lively data', which are not recognisable or manageable within the 'straitjacket imposed by positivist statistical procedures', has been noted in the context of big data (Savage, 2013: 3). There is also the 'burgeoning and emergent field' of paradata, which 'treats the by-products of an activity as data and of research interest in itself', including marginalia such as annotations (Goodwin *et al.*, 2017: 1).

Scavenging involves scrutinising text and materials. We return to the questionnaires themselves, which were converted into microfiche in the 1980s, and subsequently digitised into PDFs. Indeed, scavenging embraces materiality, particularly the physical form

of the survey. Importantly, the materiality of PDF is different from that of the original paper copies (see Gitelman, 2014). A PDF is a version of the original and may not, for example, reproduce handwriting as clearly. We can also view a PDF in different ways than a paper copy, for instance by zooming in and manipulating brightness and contrast. Some questionnaires (especially, but not only, prior to 1982) have significant free-text items, but there are also numerous 'quick' questions that are not answered with pre-selected words or numbers. Here, the prose response is translated into one code, or occasionally several, and the rest is ignored. Relevant too are handwritten notes and marks on questionnaires. Sometimes there are additional materials requested from, or volunteered by, panel members such as letters and photos. Free-text comments and feedback were read by the NSHD team and sometimes used to refine questionnaires and research practices, but these elements have not been coded due to technological and resource constraints, and, importantly, because they are not seen as sources of data.[14] For example, postal questionnaires often have space for 'any other comments' to boost the impression that the Survey team were interested in members' views, a standard technique in questionnaire design to encourage the retention of study members.[15] Even in its earlier years, the NSHD was not interested in the perspective and experiences of individual Survey members per se, but in the broader patterns that could be discerned (Ramsden, 2014: 137).[16]

We are mindful of the location of our finds and note the different perspectives that they represent. Recall that it was only when Survey members reached age 13 that they filled in self-completion questionnaires. Throughout their childhood and youth, information about them was elicited from their parents and professionals. Yet at the point of analysis, the different perspectives from which data were generated are often obscured and collapsed into a singular, disinterested, seemingly objective 'fact'. Scavenging disentangles the voices that constitute the coded data, and the perspectives and interests that they represent. Reflecting on how NSHD participants were perceived and positioned by others offers insight into their social context; the magnifying glass directed at members can be turned back on to their viewers.

Evidence of research practices can also be scavenged. Sensitised by contextual research on the NSHD, we trace how the shifting politics, economics, and purpose of the Survey shaped whose views were sought, the various formats used, the kinds of questions asked, and coding practices. We learn too about researchers' and interviewers' assumptions about Survey members, the status afforded them, how they were treated and, sometimes, how they responded. Questionnaires were typically undifferentiated by gender, embracing changing post-war prospects for girls (Spencer, 2005): it was increasingly expected that some would take advantage of the expansion of tertiary and higher education; and it was the norm for girls from all social groups to work prior to marriage and, increasingly, to return part time if they married and had children. Nevertheless, at age 15 the NSHD presented girls and boys with different lists from which to select the job they aspired to: doctor was included in both lists, but where girls were offered the prospects of wages clerk and private secretary, boys were offered higher status careers of statistician and bank manager. A year later, in 1962, members received a birthday card from the NSHD, a practice that continues to this day. Suggesting gendered aspirations, the card for girls highlighted romantic prospects whereas sports and outdoor activities

featured on the card for boys. Through birthday cards and responses to members' queries, we see how researchers have developed a relationship with members. Such practices are akin to the 'courtesy work' that have been recently identified as fundamental to epidemiological cohort studies (Kalender and Holmberg, 2019). Since 2006, the NSHD has purposefully increased such practices to ensure continued participation, especially given the increased emphasis on clinical assessments and the collection of biological samples (Kuh *et al.*, 2016).

Like postcolonial and feminist researchers, we 'read' *along* the grain for the archive's 'regularities, for its logic of recall, for its densities and distributions, for its consistencies of misinformation, omission and mistakes', as well as *against* the grain to excavate hidden or subjugated voices (Stoler, 2002: 100). Thus, for example, as we track the NSHD's shift to life course epidemiology and the increased importance of bioinformation, we examine how participants continue to include their perspectives, even as the questionnaires provide less space for these. To cite a banal example, in 2008, Dorothy and other Survey members were asked how often they eat various kinds of meat. Dorothy answered this question, but noted 'what about fish?'[17]

Our practice involves juxtapositions – lateral and longitudinal – to shed light on the meaning and significance of an event or experience. We read across multiple questionnaires relating to a Survey member (including those completed by different people) and combine in unintended ways disparate bits of information found within them. The juxtapositions can cross time, thereby disrupting the linear logic of the NSHD and its archive. Recent sweeps can shift the significance of details, including coded data, generated in earlier sweeps: the meanings of data are not fixed, but fluid. They are 'lively' in ways that Savage (2013) identifies: unmanageable within usual modes of survey analysis. Moreover, juxtapositions can render gaps and absences visible, but they can also allow examination of alternative lives and possibilities, as we illustrate below.

Finally, reflexivity is critical to scavenging. Our research questions and how we conceptualise 'a person' are highly relevant. Our training as historian, anthropologist, and sociologist shape our encounter with the NSHD archive. Likewise, our previous work provides insights and comparative vistas. Once immersed in the archive we navigate according to our particular sensibilities – we are affected by the documents; these guide us also in how we recompose persons. Before returning to this, we first demonstrate how scavenging generates data about persons in terms of their subjectivity, relationalities, and temporalities.

Traces of subjectivity

Scavenging across the questionnaires we seemingly hear the voices of Survey members alongside those of their parents, health visitors, and teachers. Members were invited at various points to express their opinions and describe their experiences, thereby revealing aspects of their subjectivities. Describing what she least liked about university, Dorothy replied, 'Pressure of work and feeling of insecurity because of high failure rate'.[18] Her use of the word 'pressure' is telling, but she also explained why she felt it: the spectre of failure. The choice of words, expressions, and explanations provided in free comments sections on self-completion questionnaires can be very illuminating, and more so than

when Survey members are interviewed. In the case of the latter, members' responses are not always replicated verbatim by interviewers. But Dorothy's voice cannot be treated unproblematically. 'Voice' is always mediated by the Survey's format and the context of data generation, including perceptions of audience. Sometimes the member's voice bears traces of other voices (see below).

It is widely noted that not everyone responds to open questions in self-completion questionnaires. The length and depth of responses vary considerably, too. In a study of women's responses to a subsidiary NSHD questionnaire about their health in midlife (Ballard, Kuh, and Wadsworth, 2001), the fullest responses tended to come from those who were most academically successful and from the higher social classes (which often go together); this is consistent with our findings. The same study also suggests that a respondent's use of the free comments section revealed an effort to assert control over the interpretation of their life and that some women's lengthy responses indicated that they felt confident and agentic in the survey, 'possibly because of the ongoing relationship between the respondents and the researchers and the fact that these women had been completing questionnaires over their entire life times' (ibid.: 403).

Young Dorothy and her peers were also confident in writing about themselves for the NSHD, probably because they were used to doing so at school. In the 1950s it was established that the first word a child should learn to write in school was their name, 'thereby placing the 'I', the self, the named individual, as the focus of writing for educational purposes' (Steedman, 1999: 53). State-exhorted narration of the self has a long history, but it achieved heightened and new significance post-1945 because of faith in its psychological benefits and because of public scrutiny of 'the internal lives of citizens' (Conekin, Mort, and Waters, 1999: 11). At school, Dorothy and her peers were taught English literature and creative self-expression as means to become aware of their interiority and acquire a language for speaking about it (Steedman, 1999). Girls, in particular, showed aptitude for these subjects (Deem, 1978). As children, Survey members were examined by school doctors and visited by school nurses. They also completed cognitive tests at school at various ages. These activities probably consolidated continuity between the demands of school and the Survey. Such activities form part of members' earliest or most memorable memories of the Survey.[19] This resonates with Lemov's (2017: 249) point that the 'big social science' projects of the immediate post-war decades were key means for knowing the self and rendering it visible.[20] Hence, aside from registering members' voices and subjectivity, the NSHD has also helped shape their subjectivity, illuminating how members are agents in history whose selfhood is historically shaped (see Holland and Lave, 2001; Summerfield, 2019).

Scavenging reveals how Survey members responded to how they were conceived, positioned, and treated by the study and its researchers. One might expect teenagers and young women to be more conformist than their midlife selves in their engagements with the NSHD, but they sometimes resisted the straitjacket of the Survey, their answers spilling out beyond the allotted space and editing the questions. While education and social class are often associated with such responses, talking back to 'the Survey' transcends this. At 25, working-class Vicky was a full-time housewife and mother. Her exasperation at being asked once again to confirm that she was a housewife is suggested by her unprecedented use of bold capitals – 'STILL HERE!'[21]

As Vicky's textual outburst makes clear, Survey members were well aware of an audience even when responding via self-completion questionnaires. Dorothy had been completing these since 1959, but no doubt knew about her part in the NSHD before that. In an unusual act of engagement with the Survey, in late 1977, when Dorothy was 31, she wrote to Dr Douglas, founder of the NSHD. We know this because they subsequently used a questionnaire sent to Dorothy to discuss her health, specifically her second bout of depression; the first, as noted earlier, occurred a decade previously when she was at university. 'Many thanks for your letter. How are you now?' wrote Dr Douglas, in a section of the questionnaire. The other parts of that section are crossed-out, signalling that Dorothy need not answer them. In response, Dorothy wrote:

> Dear Dr Douglas,
>   I am much better and still improving although there are still bad (not so horrific) patches. As you can see I am still under medication and attend the [Hospital] weekly as an outpatient for individual psychotherapy.
>   Dorothy[22]

It is unlikely that Dorothy ever completed subsequent questionnaires without Douglas in mind. A recent study of a small sub-sample of the NSHD sought to assess the possibility of the 'Hawthorne Effect', i.e. how far membership in the Survey has affected participants' sense of self-identity and whether this might in turn influence how they behave and respond as participants (Elliott *et al.*, 2011: 7). Several of those interviewed thought the Survey valuable, and felt 'special' or 'important' because of their involvement.[23] This is likely to be true also for other Survey members. Participation in the NSHD was, and remains, voluntary, although determined by parents during childhood. Even if Dorothy left the Survey when she moved abroad in the 1970s, she chose to rejoin it when she returned to England. Like the members interviewed recently, Dorothy felt a connection to the NSHD and thought her involvement was worthwhile, and this in itself is likely to have created a heightened sense of self, even if in a small way, and greater reflexivity.

Survey members (or at least some of them) continue to inscribe their subjectivity into questionnaires despite the increased emphasis on bioinformation, a point to which we have already alluded. In 2007, Dorothy reported that she was experiencing some family trouble; less than a year later, she wrote in another questionnaire that the issue had been resolved.[24] Several years later, she wrote in the comments section that they were about to move abroad once more, and expressed willingness to be contacted in the future.[25]

Relational persons

In scavenging, we see how relationships are fundamental to personhood. We displace the figure of the unitary individual who belongs to sociological categories, which the NSHD has privileged for the most part of its existence. This figure is a version of a more widespread kind of personhood – the 'continuous' or 'forensic' model of the person, which 'entails the linear constitution of the person as a being in time', as well as 'psychological unity and boundedness' and 'singular identity' (Lambek, 2013: 848–9). It is unlike the 'discontinuous' or 'mimetic' model of the person, which emphasises how

a person's actions and statements are shaped by, and in turn, shape, others. Furthermore, the discontinuous person 'entails identification (or competition) with and introjection of others (or being projected upon)' as well as 'assuming status and role' (ibid.: 849). The figure of the unitary individual has received considerable critique within the social sciences. Yet individuals *are* relational beings. 'We are each continuous and discontinuous persons', says Lambek (ibid.: 852). How then might we see the discontinuous person in the NSHD and how might we do so without reducing relationality to the molecular and the proximal, as in postgenomic science?

A focus on the relationality sheds light on how kin leave their imprint on who Survey members are and who they can become; it shows how girlhood/womanhood, and gender more broadly, are shaped by kinship ties (Carsten, 2004). Kin are 'relational characters' (Mason, 2018) in the story of members' lives. Like subjectivity, their appearance is modulated by the Survey's apparatus. It is anchored on the post-war heteronormative family defined by marriage and biogenetic connection. It is predicated too on giving and receiving (especially factors that contribute to health and disease risk), or comparison (e.g. cohort members vs the parental generation). Family members, however, are not equally visible. Mothers are more prominent than fathers in the early years of the NSHD – a reflection of long-standing assumptions surrounding motherhood and children (see Sommerfeld, 1989). There are very few questions about siblings. In adulthood, the focus shifts to members' own families. Most of the materials that we have scavenged reflect these assumptions and logics, but some members write about kin in unexpected ways.

In 1954, Dorothy's mother M. expressed her desire that Dorothy eventually attend a grammar school in a nearby town, explaining that 'Child herself wished to be a teacher – Brother now attending this school'.[26] Prior to this questionnaire, we encounter M. as a full-time housewife since her son's birth several years earlier than Dorothy's; in the 1954 questionnaire, however, it emerges that M. was a teacher before her marriage in 1941.[27] A reading of the questionnaires suggests that M. actively pushed Dorothy to aspire to become a teacher, even if Dorothy herself also voiced such an aspiration. In the May 1959 questionnaire – the first that she ever answered – Dorothy said, 'I have always wanted to be a teacher'.[28] We get a sense of M.'s active role as early as three years previously: Dorothy's teacher wrote of M.'s anxiousness that Dorothy 'should have a grammar school education'; this was a prerequisite for teaching in a grammar school (Simon, 2000).[29] M. would repeat her aspiration for her daughter in later years. She justified this aspiration in her final interview in 1961: Dorothy, she said, 'is very patient with other children'.[30] The next month, it became clear that the job that Dorothy actually most desired was 'some kind connected with sport'.[31]

Part of what emerges here, as alluded to above, is the almost overpowering voice of parents and other adults, especially during the early years of the NSHD. Yet what is also at stake here is how Dorothy's personhood was shaped in relation to, and incorporated, aspects of her mother's. Even if M. did not push Dorothy to the teaching profession, it is likely that, given the limited options available to girls at that time, she was a role model for her daughter. M.'s influence was neither absolute nor forever, however. In 1962, then a grammar schoolgirl, Dorothy expressed a change of mind. 'I am not, in my opinion, suitable for teaching', she said, opting instead to pursue a career in research.[32] During

this year, Dorothy's teacher mentioned in a separate questionnaire that she thought research and teaching were suitable careers, raising the possibility that Dorothy picked up this alternative career from school.[33]

The salience of Dorothy's relationship with her brother also comes into view, if faintly. Several episodes hint that, when she was a schoolgirl, Dorothy was always following her brother's footsteps and she initially planned to follow him to Oxbridge. Yet we encounter her in 1964 studying elsewhere. Two years later, she explained that she applied neither to Oxford nor Cambridge: 'No suitable course offered. Desire to break away from following in brother's footsteps, no great desire to fight for female equality'.[34] She did not explicitly say how her decision affected her relationship with her brother and her parents, but she stated in the same questionnaire that going to university meant she was now enjoying 'much happier and more relaxed relations at home'. One wonders what the relationship between the siblings was like.

Ties of kinship can be fragile and carry with them the potential for ambivalence, and indeed, failure (Carsten, 2013; Das, 2018a). In scavenging, we see how parents can be overbearing, obligations burdensome, and families suffocating, thus prompting particular life-altering decisions (e.g. leaving school early, moving far from home, or getting pregnant). Part of the difficulty of kinship is that relationships move in time, waxing and waning in their significance for personhood (Carsten, 2013). Relational characters may recede from view over time, as new ones appear. Moreover, events that happen to, or conditions that afflict, significant others can shape the course of a Survey member's life, such as how the death of a parent necessitates that they leave school to undertake caring work at home. The significance of relationships extends to later life, for instance, how the sudden end of a decades-long marriage leads to feelings of uncertainty and loss of direction. This aspect dovetails with a recent study based on select interviews with NSHD members suggesting that a person's well-being in later life is shaped by their significant others (Carpentieri and Elliott, 2014).

In fact, the salience of kinship extends beyond the world of households and families. Ties of kinship, to begin with, are shaped by wider historical events and processes. We see this, for instance, where Survey members' fathers served during the Second World War and whose health suffered consequently, thereby affecting the texture of family life. In some cases, we witness how shifts in technology and the labour market allowed some members to gain distance from their families. Families, however, do not simply register the effects of changes emanating from elsewhere: they also intervene in history. Dorothy's decision not to follow in her brother's footsteps, for example, hints at how families mediate the reproduction of forms of capital and social inequalities (Cruz, 2019).

Lives in time

Causal pathways and associations, as well as comparisons over time and across generations, are major concerns of those who draw from longitudinal cohort studies. Temporalities, however, are more diverse and complex than this (Adam, 1995). Our approach enables an understanding of the non-linear, iterative, and relational nature of

temporalities. It generates insights into the 'life course', orientations in time (past/present/future), and the subjective experience of the texture and feel of time.

As we scavenge, we make sense of various chronologies, trajectories, durations, continuities, and ruptures. Witnessing the passage of time is especially relevant for understanding how transitions occur. We are interested in dramatic moments, but also less spectacular changes that take place slowly and over an extended period of time (Das, 2018b). We do not take for granted the shape of the life course, mindful of the unspoken cultural and classed assumptions that they carry (Day, 2007). Our practice is attuned to the post-war trend for women to have complex and disjointed 'careers' as they weave in and out of paid work, domesticity, further education and training (Spencer, 2005: 80). We pay attention to discontinuities, including, following Lambek (2013: 851), members' undecidedness, ambivalence, inconsistencies, feelings of guilt and regret, and discomposure, but also their ability to move on with their lives. Here, lives are not lived as if they are in straight lines (Das, 2010).

This much is suggested by the twists and turns in Dorothy's life. After foregoing an Oxbridge degree, she eventually abandoned the idea of a career in the sciences because of her experience of depression at university. She would go on to do a graduate diploma and work for a firm for a few years. In the early 1970s, she moved elsewhere in England, after, she said, experiencing 'boredom and general dissatisfaction'.[35] Yet Dorothy continued to be frustrated. This perhaps explains the courses, and later, voluntary work overseas, before returning to England in the mid 1970s. In 1977, as we have seen, she suffered from another bout of depression.[36] In the 1980s, she emigrated but returned again, only to move back in later life.

Close readings of Survey members' engagements with questionnaires reveal multiple and shifting orientations in time. Some questions invite members to project into the future about, for example, their education and career aspirations, and reflect on whether their lives are turning out as they had anticipated. These responses are either coded crudely or not at all. The latter is especially true, as in Dorothy's case, with regard to unsolicited reflections and projections. Often for girls, a post-war rhetoric of unprecedented opportunity and the transformative powers of education sat uneasily with the continued expectation that they should be satisfied with marriage, motherhood and the limited career prospects that often followed from this (Spencer, 2005; Todd, 2019). The archive reveals girls' shifting responses – their hopes and ambitions, sometimes their sense of achievement, often their frustration and disillusion. We also piece together disparate sources that suggest how lives might have unfolded differently. We glean 'shadow careers' or 'work histories which never took place' (Vincent, 1997: 98), and 'uchronic dreams' or accounts of what could or should have happened (Portelli, 1991). Following Irving (2018: 391), life 'incorporates numerous unlived possibilities and as such simultaneously encompasses multiple potential presents and futures'. The alternatives are not simply sidelines, as they can shape subjectivities. The archive reveals these coexisting and entangled threads; they are sometimes stated explicitly, and at other times, suggested, as we see with Enid and Vicky.

Born to a poor Scottish family, Enid grew up in a tenement flat with poor ventilation and a lavatory shared with other families. She was a sickly child and missed a considerable amount of school. At 15, Enid left school and worked in a string of retail jobs,

totalling eight in five years.[37] In 1968, she reflected on her quick succession of jobs. She started to work in a shop, she said, because of a desire to know and meet people. Yet 'some of the public were very difficult so I just kept changing my job. At that age I couldn't adjust myself to older people'. If she had her time again, she would study art:

> I couldn't wait to leave school at the time because I wanted to earn money to buy clothes etc. But now looking back I would have liked to study Art and maybe be an artist or designer but not being wealthy I think it would have been a struggle. I think to be someone or something more is essential.[38]

We bear witness to Enid's reflexive moments. Her reflections conjure an image of someone who regrets the course her working life has taken, but who knows that her family's economic situation meant that the version of herself – the artist Enid – that she could just about glimpse would have been difficult to realise. Temporal orientations bear the traces of wider social inequalities, as well as the explosion of opportunities and optimism after the Second World War (Vincent, 1997).

While still at school, Vicky wrote about becoming a civil servant because 'there will be promotions. I can take it up after marriage'.[39] As it turned out, she just missed out on the required 'O' level exam passes for an officer level position in the Civil Service, which may be why she pursued a different office-based job. Once she began working, she enrolled in a correspondence course in German that would have allowed her to widen her options. She stuck with this course for several months, but never took the exam. Later, she married at 21 and had her first child the following year, giving up work. It is unclear how Vicky felt about having come closer to securing the qualifications she required to pursue her desired career. Reading her files, however, we are struck by the shadows cast by what could have been.

Scavenging enables an appreciation of the texture of time, data that are often lost over the years and difficult to tap through retrospective accounts. The scavenger can, for example, sense the shifting and recurring emotional states of Survey members; it is discernible in the language and turns of phrase they use. At 16, Enid said she liked her job 'fairly well'. Yet her restlessness was palpable. When asked what she wanted for herself at 25 apart from this job, she wrote 'I just want to travel and get to know people and not stick in the same old rut'.[40] Six years later, she reflected ruefully on her youthful impatience to leave school.[41] Similarly, after leaving office work to look after her first child, Vicky reflected that she wished she had known paid work was 'almost as monotonous in routine as school work'.[42] Like the girls Sherratt (1983) interviewed in the 1970s, both Enid and Vicky had eagerly anticipated work and careers because of the opportunities they envisaged to travel and meet people. When the glamour of work proved elusive, they quickly became disillusioned and felt 'stuck', bored, and restless.

The temporalities of lives in the archive are only evident because of the privileged vantage point of the researcher, who can trace responses about a person over time, and see them from the perspective of different observers at a particular point in time. This leads us to how we interpret data, and recompose persons and their lives.

Recomposing persons: Storytelling and collage

Confronted with details about Dorothy's life it makes sense to construct a story; we use narrative in everyday life to make sense of the world (Riessman, 1993). Data themselves are embedded in, and generate, narratives, an insight that those working on big data increasingly recognise (Dourish and Gómez Cruz, 2018). The story that we are able to assemble necessarily bears the traces of our experiences of working in the NSHD archive. Archives, after all, have affective appeal and effect on their users, shaping the way they interpret the materials contained in them (Burton, 2005).

As we follow Dorothy closely from her birth, PDF after PDF of digitised questionnaires, we feel a gamut of emotions: excitement at what we find, confusion due to faint handwriting, relief at the how software allows us to manipulate images from the questionnaires, bewilderment at the range of information available, and disappointment at the gaps in the record. After days of scavenging in the archive, we feel that we know Dorothy, even if we will never meet her: we have 'heard' her voice from age 13 onwards, albeit muffled by the Survey apparatus. She has also left material traces: her tidy handwriting as a teenager and her more erratic, sometimes rushed, notes penned in later life. Like Barthes (2000) noted of old portrait photos, these indexical traces can 'pierce' us; sometimes more so because we know what lies ahead for the teenage Dorothy, or because we sense the resonances of youth in her later life. Interpretation and storytelling often collide in the process of working with longitudinal survey data. We are drawn toward interpreting the shape of the data collected within existing frames for storytelling (tragedy, 'success story', etc.) and have to resist the lure of convention.

Recomposing a person from a longitudinal survey, we tell stories, but sometimes we pause to dwell on a moment, and using words attempt to conjure that person at this time in their life. Zeitlyn (2008, 2010) proposes that visual metaphors are the best way to conceptualise textual composition of a person based on ethnographic study. Painted portraiture, he contends, comes closest to conveying 'a social science practice of representation' because of its similitude to its subject, its potential to include multiple viewpoints (including the artist's) and moments of time, and to evoke without copying (Zeitlyn, 2010). Visual metaphors are relevant to our practice in recomposing Dorothy and her peers at particular points in time, but we are less painters than collage artists. We work with snippets and fragments, images, mini-narratives, productive juxtapositions, shadows, and what is absent – the gaps; we cut and paste extracts from PDFs, our fieldnotes, and analysis; we resist seriality. Apart from a similar reliance on recombination, several other aspects of collage art resonate with our practice, including its focus on 'the ordinary and the commonplace', its embrace of 'dislocation in time and place', and its insistence on the multiple, layered, and kaleidoscopic meanings of fragments (Waldman, 1992). Indeed, for many of collage's early practitioners, the goal is not to arrive at a realist portrayal of a scene, but to evoke and express these varied meanings.

There is a lyrical dimension to this practice. A focus on the moment is a fundamental feature of lyrical sociology, which Abbott (2007: 70) defines as 'the recreation of an experience of social discovery'. In fact, the creation of an image is one way that Abbott describes the practice of lyrical sociology. While lyrical sociology can contain narrative elements, 'its ultimate, framing structure should [be] the use of a *single image* to

communicate a mood, an emotional sense of social reality' as experienced by the author (ibid.: 73; emphasis added). The 'lyrical moment' can be of any duration, even decades, and 'is often framed by *transitions* on either side' (ibid.: 85). This dovetails with our focus on recomposing persons at key periods in their life course. Abbott argues that, unlike narrative that focuses on a beginning, middle, and end, with the middle leading to the conclusion, lyrical accounts enable us to see more clearly the possibilities of moments in time: 'In lyric, we hear the whisper of possibility and the sigh of passage' (ibid.: 90).

The stories that we assemble are inevitably incomplete for various reasons: certain aspects of life have not been investigated by the NSHD; Survey members left the study at various points of their life, or they refused to answer particular questions; documents are missing from the archive. Archives, including those of science, are of course selective, and data do not capture the full complexity of lives. We embrace these gaps, taking them as spaces where we could make visible the possibilities in members' life and the moments when shadows begin to take shape. These gaps help loosen the grip of causality in our thinking, allowing us to hear resonances across time and other subtle temporal connections. They also provide space for tracing how personal, familial, and wider histories are folded into each other, giving rise to particular futures while precluding others.

Recomposing persons entails an ethical obligation to preserve anonymity. This is a personal commitment but also a condition of access to the archive and of institutional approval for our research.[43] The anonymisation of longitudinal data poses a particular challenge because of the inclusion of information about how a person's life unfolds and interlinks with other lives over time. Recomposing persons we scrutinise whether the course of a life reveals identity. In addition to the standard practice of removing most proper nouns, we also exclude or adjust some details such as dates, durations, distinctive patterns of activity, and some specifics relating to the lives of linked others, such as the age and gender of children. We recompose a person whose face and life course is just out of focus such that they are not identifiable. Here, collage art's move away from realism noted above obtains ethical significance for our practice. Nevertheless, it is possible that 74-year-old Dorothy would recognise our version of her self; the inclusion of her written note and comments might confirm this for her. In recomposing Dorothy and other persons we are therefore mindful that they may read our accounts and endeavour to always be respectful of them, their choices and views, and their generous, long-standing, and hugely valuable contributions to the cohort surveys.

While 74-year-old Dorothy might recognise our version of her self, she would undoubtedly have much to add and would challenge some of our interpretations. But if we could interview Dorothy today, she would reconstruct her younger self from the vantage point of her later-life perspectives and draw on hindsight. She would not know or recall all the details about herself that were recorded in the NSHD decades ago – the fine details, the twists and turns that were once noteworthy to her. Indeed, Dorothy's younger self might take issue with how she is represented by her older self. The Dorothy we have recomposed is a semblance of the girl and woman that lived/lives, but this person still has much to tell us about growing up in the post-war years, and much more, offering valuable and often rare perspectives on life as it unfolded.

Conclusion

By broadening our understanding of what constitutes data, and refashioning ourselves as scavengers, we have repurposed the NSHD archive. We have not been constrained by the definition of data and persons that the Survey privileges. We have scavenged for insights into subjectivity, relationalities, and temporalities. The archive has emerged in a new light as a vast, untapped reservoir of insights into persons – their selfhood, their embeddedness in relations, and the complexity of their lives. To recompose persons, we have developed a novel approach for doing research in the survey archive. We have drawn from the insights of those working on historical and scientific archives, as well as those who critically examine data in their various forms, both historical and contemporary.

The transformation of the NSHD from a big social science research project into an epidemiological cohort study, and its recent incorporation of big data and postgenomics, constrain what we can scavenge: the data generated are increasingly streamlined, eliminating the rich veins of latent data that, when spotted by a scavenger, might emerge as traces of subjectivity, relationalities, and temporalities. As scavenging relies on the interpretation of texts and materials, Survey members' decreased opportunities to engage with the instruments of the Survey pose serious questions for the future both of scavenging and of historical practice using birth cohort studies as source materials. At the same time, we have noted how, as Dorothy's comment in 2008 demonstrates, some Survey members continue to defy the logic of the archive.

In scavenging, we have grappled with questions of how to represent recomposed persons. We are drawn to storytelling to render how lives unfold over time, but narrative does not always convey the visions of a person that coalesce from scavenging. The creation of a collage of a person at a particular point in their lives emerges as a fruitful complement to storytelling. It can embrace the variety of forms of personal data that we scavenge, the fluidity of data, and the gaps in the archive. Our collages shimmer with possibilities.

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1. U2, University Questionnaire for Final Year Students, 1968. All archival materials referred to are kept by the MRC Unit for Lifelong Health and Ageing, University College London. All names have been changed.
2. S11a, School and College Questionnaire, October 1963.
3. We use the term *scavenge* as commonly defined: to search for and collect discarded things, in our case various (including unrecognised) data.
4. See 'Girlhood and Later Life', *University of Manchester*, available at: https://sites.manchester.ac.uk/girlhood-and-later-life/.
5. See Tinkler, Cruz, and Fenton (2019).
6. The cases were selected based on ideal-type life transition pathways focusing on the timing and combination of schooling, work, marriage, and motherhood. Our colleagues Anne McMunn and Baowen Xue constructed the sampling frame.
7. Michael Wadsworth, interview by Resto Cruz and Laura Fenton, 2 September 2019, Bristol, United Kingdom.
8. Thanks to Andy Wong and Laura Carter for sharing knowledge of diversity in the panel.
9. For a summary of the NSHD's key aims, the policy problems it sought to address, and the kinds of data it collected during its first five decades, see Wadsworth *et al.* (2005).
10. For example, Houtepen *et al.* (2018) examine the implications of childhood adversities on DNA methylation (the addition of methyl groups to the DNA molecule). An epigenetic process that marks ageing at the molecular level, DNA methylation is linked to age-related diseases, among others. Biological samples collected through cheek swabs from NSHD participants at age 53 were analysed along with samples collected from a later birth cohort study. DNA methylation analysis at the population level is a data-intensive technique that has become more accessible due to technological developments. Along with other data-intensive biological techniques, the challenges and possibilities it poses to birth cohort and longitudinal studies (including the NSHD) have been noted by epidemiologists and science and technology scholars alike. See, for example, Hoeyer, Bauer, and Pickersgill (2019); Kuh (2016); Ng *et al.* (2012).
11. See also Landecker and Panofsky (2013); Lock (2015); Meloni (2018).
12. They differ from the approach of 'adding narratives to numbers', i.e. employing qualitative interviews alongside, and in dialogue with, quantitative longitudinal survey data (see, for instance, Carpentieri and Elliott, 2014).
13. An exception is the ongoing research of Laura Carter, Chris Jeppesen, and Peter Mandler using coded and uncoded text responses to specific NSHD questions. See 'Secondary Education and Social Change in the United Kingdom Since 1945', *University of Cambridge Faculty of History*, available at: https://sesc.hist.cam.ac.uk/.
14. Members' feedback was welcomed. Considerable time and effort was devoted to corresponding with study members and answering their phone calls (Wadsworth, interview, 2 September 2019).
15. Wadsworth, interview, 2 September 2019. See also Rich, Chojenta, and Loxton (2013).

16. Kuh's health sub-survey of women's midlife experiences is one exception (Ballard, Kuh, and Wadsworth, 2001). Kuh replied to all the women who wrote responses (Diana Kuh, interview by Laura Fenton and Resto Cruz, 2 September 2019, Bristol, United Kingdom).
17. 2007–8 Postal Questionnaire, September 2007.
18. U1, University Questionnaire, c. 1966.
19. Healthy Ageing Across the Life Course (HALCyon) Interview Transcripts, 2010. See also children90s (2016); Harrop (2017).
20. For Mass Observation, see Hinton (2016).
21. H5, Postal Questionnaire, June 1971.
22. H6, Postal Questionnaire, December 1977.
23. HALCyon Interview Transcripts, 2010.
24. 2007–8 Postal Questionnaire, September 2007; 2007–8 Pre-Assessment Booklet, June 2008.
25. 2014 Postal Questionnaire, September 2014.
26. A4, School Nurse's Interview With Mother, November 1954.
27. Maternity Survey A, April 1946; A4, School Nurse's Interview With Mother, November 1954.
28. S7C, Children's Questionnaire, May 1959.
29. S4A, Teacher's Questionnaire, July 1956.
30. A7, Final Interview With Mother, January 1961.
31. NF4, Pupil's Questionnaire, February 1961.
32. S10B, Pupil's Questionnaire, 1962.
33. S10A, Teacher's Questionnaire, November 1962.
34. U1, University Questionnaire, c. 1966.
35. H5, Postal Questionnaire, June 1971.
36. H6, Postal Questionnaire, December 1977.
37. H1, Interview With Health Visitor, May 1965.
38. H3, Health and Employment Questionnaire, March 1968.
39. NF4, Pupil's Questionnaire, February 1961.
40. Y1B, Personal Questionnaire, c. 1962.
41. H3, Health and Employment Questionnaire, March 1968.
42. H3, Health and Employment Questionnaire, March 1968.
43. The British birth cohort studies prioritise the confidentiality and anonymity of panel members. Researchers are required to sign an agreement prohibiting them from identifying or aiming to identify individual members of the cohort study; this is also a condition of ethical approval from our institution, the University of Manchester.

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