



COMMENTARY

Reconstructing Robert Edwards: biography and the history of reproduction



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ABSTRACT

This commentary assesses *Let There Be Life: An Intimate Portrait of Robert Edwards and His IVF Revolution* by Roger Gosden (Jamestowne Bookworks, Williamsburg, VA, 2019, xxix + 359 pp., £15.99 / \$19.99), an authorized biography of the IVF pioneer who founded this journal. It reflects on the challenges of placing Edwards in the history of studying reproduction, especially the rise of interest in infertility. It analyses Gosden's narrative choices and practices of reconstruction, in particular of experiences of seeing human eggs, embryos and fetuses. And it suggests that further research should explore the full spectrum of communication around Edwards with a view to illuminating the roles of scientists in transforming reproduction and to feeding back into a richer view of his life.

AN 'INTIMATE PORTRAIT' OF 'HIS IVF REVOLUTION'

Readers of this journal have almost as many reasons for interest in the life of its founder, the IVF innovator Robert Edwards (1925–2013), as do the millions of families shaped by technologies of assisted conception. These have been so routine for so long, and reproductive biomedicine has become such a large and profitable industry, that it is easy to forget how controversial attempts to achieve in-vitro fertilization once were. History provides perspective.

The dominant accounts celebrate the struggles of Edwards and his gynaecologist partner Patrick Steptoe that led to the birth of Louise Brown, the first 'test-tube baby', in Oldham, near Manchester, on 25 July 1978. They chronicle battles against not just the medical establishment and anti-abortionists,

but also the majority of reproductive biologists with their commitment to population control. They end in vindication—and regret that recognition came so late (Edwards and Steptoe, 1980; Edwards, 1989; Johnson, 2011). By contrast, the normalization of IVF has eclipsed radical feminist critiques of a male takeover of women's reproductive powers (Corea, 1985). Other national traditions acknowledge debts to the UK pioneers while claiming priority of different kinds (e.g., Henig, 2004; Leeton, 2013; further: Franklin and Inhorn, 2016). Historians have placed the rise of IVF with respect to more general changes in approaches to reproduction and specifically infertility (reviews: Benninghaus, 2018; Hopwood, 2018a; Johnson and Hopwood, 2018; Marsh and Ronner, 2019).

For a long time, the main source for the British research, and in some

ways the most authoritative, has been *A Matter of Life*, the rather unreliable autobiography drafted by Edwards and Steptoe and revised by the medic and poet Dannie Abse (Edwards and Steptoe, 1980; also Edwards, 1989). They told of a partnership of opposites brought together by their determination to defeat the scourge of infertility. Reminiscences by former students and colleagues on anniversaries, and especially in response to Edwards' Nobel Prize in 2010 and death in 2013, have burnished memories of him (e.g., Ahuja et al., 2011).

Over the last decade, archival research led by Martin Johnson has revised and extended understanding of Edwards' motivation to achieve IVF, the start of the collaboration with Steptoe, the funding and non-funding of their work, the role of technician Jean Purdy and, not least, the clinical progress and ethics of the Oldham programme

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(Johnson *et al.*, 2010; Johnson, 2011; Johnson and Elder, 2015a; also Gardner, 2015). We now know how late Edwards began to focus on infertility, and that what has been lauded or lambasted as a breakthrough by two men in fact depended on women's work and money, and the cooperation of the patient-volunteers. New evidence thus facilitates certain interpretations and blocks others. It lets the past be reconstructed more specifically.

Another early PhD student of Edwards, Roger Gosden, has now written an 'authorized biography' (back cover), the first book-length life. Gosden's homage to a teacher and colleague, affordably published by his own press, makes good use of the most relevant reminiscences and research and adds some of his own. This 'intimate portrait' is hardly intrusive. He does comment, of the family of Robert and Ruth Edwards née Fowler, that 'Five daughters born to two fertility experts was sauce for speculation, especially since Bob had studied how to control the sex-ratio' (p. 120). Gosden is coyier than Edwards himself about the semen used in the early human fertilization experiments (p. 167; *Edwards and Steptoe*, 1980, pp. 52, 81). He mentions money only when it was short. The picture is intimate more in the sense that Gosden draws on his own knowledge and that of colleagues, friends and family to flesh out existing accounts of Edwards' relations with those groups, with more emphasis on youth and old age. Struggling to demystify a man of extraordinary drive, Gosden does a fine job of identifying formative experiences, role models and institutions, core values and the opposition that goaded Edwards to prevail.

The result is unsurprisingly sympathetic—and there is much to admire—but Gosden has tempered affection with judgment. For his Edwards had the vices of his virtues. Though endlessly 'creative', and 'encyclopaedic' in his knowledge, others had to winnow his ideas. He owed his success to 'stubborn' pursuit of a goal, but 'switched protocols on impulse' (pp. xix, 129, 132, 192). '[B]rilliant and charismatic', 'gregarious' and garulous, he infuriated colleagues by playing devil's advocate or defending an obscure explanation when a simple one would do. A 'bloody-minded Yorkshireman', he fought as well as nurtured individuals and organizations (pp. xix, 133, 204).

If Gosden concentrates on Edwards' triumphs and tribulations, 'his IVF revolution' in the subtitle points to the bigger picture, while the ambiguity in the personal pronoun encapsulates the biographer's dilemma: a revolution Edwards experienced or drove? Not to mention the larger issue, the extent to which it was a revolution at all. This raises questions about not just teamwork and his 'path to IVF', but also the roles of scientists in the greater transformation in reproduction as it moved centre stage and infertility became more of a concern.

This commentary examines Gosden's choices in tackling key issues and asks how further research on and around Edwards might advance understanding of the rise of reproductive biomedicine. I write as a professional historian. Gosden mostly ignores us—for ways into the literature, see *Buklijas and Hopwood*, 2008; *Davis and Loughran*, 2017; and *Hopwood, Flemming and Kassell*, 2018—but we shall all learn most when participants and historians join forces to complement and correct each others' work.

DISCOVERING RESEARCH IN REPRODUCTION

The young Edwards entered laboratories, attended meetings of scientific societies and received grants from agencies that, with farms and clinics, made up the social worlds within which reproductive biology was organizing at mid-century (A. Clarke, 1998; Graham, 2000). According to Gosden, in the 1930s 'reproduction and embryology were coming out of the dark ages of descriptive science' (p. 50). That is an experimentalist's polemical view of research that had already established the roles of egg and sperm and was providing detailed accounts of human development, but it is true that only as experimentation took off were the sex hormones identified and their functions in the menstrual cycle worked out.

Gosden brings Edwards to science through a story of impressive upward mobility that sheds new light on his working-class background and childhood and introduces his politics. His father Samuel was a coal-miner, whose injuries in World War I forced him into the lower-paid railway tunnelling, and his mother Margaret a machinist in a cotton mill. Born in Batley in 1925, and always a

Yorkshireman, Robert Geoffrey—'Geoff' as a child and 'Bob' as an adult—was brought up in Manchester, in a council house with an inside toilet and vegetable garden, where he imbibed his parents' commitment to the Labour Party. While Samuel worked away, Margaret pushed her three sons to advance through education. Edwards passed the selective 11-plus examination, allowing him to attend a good secondary school, until wartime evacuation interrupted formal learning. Gosden vividly reconstructs an unauthorized and formative year on the farm of a family friend in Ribblesdale, North Yorkshire. This decided the city boy to study agriculture at the University College of North Wales (now Bangor University).

After military service—Edwards saw no battles, but much of the Middle East—he started in Bangor in 1948. But he disliked the dull practicality of this leading agriculture course. Inspired by the young, dynamic professor of zoology, Francis Rogers Brambell, he swapped to that subject after two years. There his interest in reproduction was either reinforced—Edwards credited it to the farm—or, as Gosden has it, focused for the first time (pp. 36, 50; *Edwards and Steptoe*, 1980, p. 16). Farm experience set many a clever lad on the path to agricultural studies, but the brightest were sometimes advised to trade up to academic biology. Gosden presents Edwards' shift rather as a rebellion, yet the puzzle is why a man so theoretically inclined and so sure of himself delayed so long that he had to settle for the bare pass degree that nearly stopped him continuing in science. Though Gosden has Edwards 'willing to pay a price' for his transfer (p. 49), Edwards' disappointment suggests that he had gambled on catching up, like he had with the schoolwork missed during that year on the farm. The positive response to a speculative application for the diploma course at the Institute of Animal Genetics in Edinburgh saved him and led on to a PhD. Gosden's account of Edwards' early life thus keeps those standard tropes in biographies of scientists: humble origins shaping a lifelong world view, a determining experience and rescue after a period of difficulty.

Run by Conrad Waddington on a long leash, the Edinburgh institute was a mecca for mammalian genetics and reproduction, and in five decisive

years Edwards found powerful models, including the polymathic 'Wad', his research field and his wife, fellow student Ruth Fowler. Supervised by Alan Beatty, Edwards' thesis on the effects of heteroploidy in mouse embryos condemned him to night after night in the 'moose-hoose' and was not even the most important of his outpouring of research. That was the project with Fowler to show their sceptical elders that gonadotrophins could induce superovulation in adult (not just immature) mice, the prototype of a standard technique that would help mouse geneticists keep less antisocial hours. He was set on a career in the field—and that is about as close as we get to how Edwards discovered a vocation.

Next came a year at Caltech, courtesy of the Population Council, to work unsuccessfully on developing anti-sperm antibodies as a contraceptive (and perhaps for sex selection), and to enjoy sun, fresh produce and camping. Edwards returned in 1958 to a five-year position in Alan Parkes' division at the National Institute for Medical Research (NIMR) in Mill Hill, London, another centre of reproductive science. He followed Parkes to the Cambridge Physiological Laboratory in 1963, the beginning of a period which Gosden covers in several chapters that develop storylines at some cost in clarity about what happened when.

Funded by the Ford Foundation, Edwards was marginal to a collegiate university with an inspiring past, a high concentration of researchers on reproduction and a hide-bound poshness that repelled the working-class northerner. Yet, as Gosden stresses, he was an insider by marriage to the daughter of mathematician Ralph Fowler and granddaughter of physicist Ernest Rutherford. As a left-wing scientist Edwards himself represented a Cambridge type. In Parkes and then 'Bunny' Austin, the Australian fertilization expert Edwards also knew from Mill Hill, he had skilled protectors. A charismatic if chaotic teacher, he adopted the then common 'sink or swim' approach to student supervision, but was caring towards even undergraduates in difficulties, and built up a loyal research group.

Edwards kept institutions going and launched new ones. He had published eight papers in the first five years of

the Society for the Study of Fertility's *Journal of Reproduction and Fertility*, a Parkes initiative, when Parkes persuaded him to edit the news sheet *Research in Reproduction* for the International Planned Parenthood Federation. Studying reproduction was still controversial—Cambridge Nobelists knighted for research on nerve and muscle ostracized the sex physiologists—but they tackled what many saw as urgent tasks: more food and fewer people. With fears of a 'population bomb' peaking around the first Earth Day in 1970, even—perhaps especially—reproductive biologists tended to disparage work on infertility.

CONTRACEPTION AND CHROMOSOMES

Modern infertility medicine was established before 1937, when the Harvard gynaecologist John Rock envisaged employing extracorporeal fertilization to bypass women's blocked fallopian tubes. This attracted research over the next 40 years, but no one knew to what extent it would succeed. To use the abbreviation 'IVF' for the period before 1980 risks giving the clinical procedure a matter-of-fact identity it lacked (Benninghaus, 2018; Hopwood, 2018a). With contraception the priority, Rock is still known more for the pill than his work with Miriam Menkin on conception, and Steptoe owed his first fame to laparoscopic sterilization. It would be extraordinary had Edwards always concentrated on developing in-vitro fertilization to alleviate infertility, and Gosden does much to avoid giving that impression—but not always enough.

Edwards' work on immuno-contraception, his official project at the NIMR, was in the mainstream. But he devoted increasing attention to oocyte maturation *in vitro* and developed a sideline he came to see as the unrecognized discovery of embryonic stem cells. Flying to Glasgow every week for a year to collaborate with cell culturist John Paul and biochemist Robin Cole, he grew rabbit blastocysts and isolated inner cell masses and obtained apparently immortal cells of every germ layer. But, as Gosden has to accept, their articles were little noticed and, to Edwards' frustration, the lack of either markers or tests of developmental potential made it an uphill battle to claim priority after Martin Evans and Matthew Kaufman found a more receptive audience in 1981.

Edwards brought the oocyte maturation project with him to Cambridge from the NIMR, where he had expanded from mice to other mammals including humans, until, he wrote, the director banned him from fertilizing human eggs (compare p. 142 and *Edwards and Steptoe, 1980*, pp. 48–49). The initial aim was to study abnormal meioses, though it would provide eggs to fertilize, too. Belatedly discovering that the physiologist Gregory Pincus had claimed in the 1930s that he matured human oocytes, Edwards concluded that Pincus' incubation period was too short. He reported the human work in *The Lancet* in November 1965 (the animal results went to *Nature*) with a discussion that looked forward to dodging blocked tubes by in-vitro fertilization and embryo replacement, and to selecting female embryos to avoid sex-linked recessives. In 1968, he and his student Richard Gardner raised rabbits of known sex from biopsied blastocysts.

Here was a man furiously seizing opportunities and generating ideas. Martin Johnson has argued that '[i]mmuno-reproduction was, in retrospect, ... a distracting diversion'. Yet, as he pointed out, it accounts for 23 of Edwards' papers between 1960 and 1976 and was the focus of the first society he helped found, the International Coordinating Committee for the Immunology of Reproduction (Johnson, 2011, p. 249). Gosden is clear that human in-vitro fertilization was then far from Edwards' main goal, and even exaggerates that 'until 1968 it seemed likely he would spend the rest of his career studying fertilisation in animals' (p. 133). Elsewhere, Gosden leaps ahead, as when he has camping companion Margaret Pritchard recall Edwards' saying at Caltech in 1958, 'one day because of this mouse a woman who cannot now have a baby will be able to have one'. He could have made that portentous comment, perhaps in relation to an unsuccessful effort, led by Ruth Edwards, to culture mouse embryos, but Pritchard chose the memory when she heard about Louise Brown (p. 103).

Today, in-vitro fertilization is associated with infertility. Then, many infertility experts put their money on tubal surgery, while in-vitro fertilization had potential uses also in contraception and improving the quality of offspring. Gosden pits Edwards against Parkes, for whom 'in an overcrowded world, it is hardly

logical that time and money should be spent on the treatment of infertility, and who gently chided Ruth for her big brood (quoted on p. 123; *Edwards and Steptoe, 1980*, p. 56). Edwards would insist that population not be controlled on the backs of the infertile, but Gosden seems to accept that his motivation was the prevention of genetic disease until Steptoe shifted the focus to infertility. Yet this would mean that for most of the 1960s Edwards' 'real work' was not 'proception' (the opposite of contraception) so much as understanding chromosomal disorders of development, with restoring fertility a secondary benefit (compare pp. 106–107, 123 and 135 with *Edwards and Steptoe, 1980*, p. 38; *Johnson, 2011*). I wonder to what extent he and Parkes, a keen eugenicist, agreed about human genetics.

TEAMWORK FOR IN-VITRO FERTILIZATION

Once Edwards had settled in Cambridge and focused on in-vitro fertilization the story becomes easier to tell. Rejecting the *Daily Express* headline presenting Steptoe and Edwards as 'The men who made the breakthrough' (*Thurlow, 1978*), the second half of Gosden's book builds on recent research to follow his subject in acknowledging a team. As in the development of oral contraceptives, women played key roles, and not just as volunteers and patients. Ruth Edwards ran the household and stayed involved with the science, while Jean Purdy made a major contribution alongside secretary Barbara Rankin and Steptoe's staff, led by nurse Muriel Harris (*Johnson and Elder, 2015b, 2015c; Johnson, 2019*).

As well as many social obstacles, human in-vitro fertilization faced two technical challenges. The first was obtaining oocytes, which Edwards could now mature but few British clinicians would provide, and none reliably in Cambridge. The second was achieving 'capacitation'; since the early 1950s, spermatozoa had been reckoned to need time in an environment equivalent to the female tract before they could fertilize an egg. Edwards visited Johns Hopkins and Chapel Hill only to find a solution at home. An alkaline fluid with which PhD student Barry Bavister increased the fertilization rate in hamsters also worked for human sperm. In February 1969 *Nature* published their article, with Steptoe as co-author, on

early stages of fertilization of in-vitro matured oocytes.

For the next 10 years the team rode a roller coaster and weathered attacks from senior biologists and medics, the new bioethicists and many others. The National Health Service and Lillian Lincoln Howell, owner of a Californian television station, made up for the denial of UK government funding, but the modest facilities were split between Cambridge and Oldham. The collaboration involved Edwards and Purdy in an extraordinary amount of (to his passengers, terrifying) driving. The man whose father's job had come with a rail pass spent countless hours in hired cars and as an 'airport professor'.

Gosden conveys well how dogged teamwork allowed endless 'trial and error, mostly error' (p. 206). Edwards and Steptoe, who expected quick progress when they began implanting in 1971, nearly gave up after a few years. Gosden stresses how much the programme gained in 1974, when Edwards, already a city councillor, was not selected as the Labour Party's prospective parliamentary candidate for Cambridge. This (true) story serves to highlight Edwards' political commitment while dramatizing the cost of the struggle—the risk that medical science might lose him altogether—before the ultimate success.

The team resumed the work, but Edwards could cut himself off in ways that are hard to imagine today. In 1976, working outside a rented farmhouse in the Yorkshire Dales, he saw the postmistress's husband cycle back from delivering a telegram which would tell him that evening that Steptoe had a first pregnancy and to go to a phone box and call. It proved distressing because ectopic, but kept hope alive. Surprisingly, in hindsight, Edwards and Steptoe credited their eventual achievement to switching from superovulation to natural cycles. Since this involved urine assays every three hours to detect the luteinizing hormone surge, and produced only single oocytes, it was demanding in the extreme. The rewards were 'baby of the century' Louise Brown and the first boy, Alastair MacDonald, born six months later.

Now that Edwards' large role in all this has been abundantly recognized, others are more in need of historical attention, not least the patients with their stories

of hope, failure or success (e.g., *Bedford, 1970; New 'test tube' mother says: never again, 1970; Brown and Brown, 1979*; see also *Crashley, 2014*). Involuntarily childless people were not just guinea pigs and then beneficiaries; nor were they only invoked to block challenges to medical authority (*Wilson, 2017*). Some helped to drive the very development of IVF by sharing experiences and writing letters which strengthened Edwards' commitment, among other things. Some may have provided funding—though genetics appears to have motivated Howell (*Johnson and Elder, 2015c*, p. 63)—but as far as I know they did not go in for organized lobbying before 1978.

Compared with Edwards, even Steptoe, who as the obstetrician was more prominent in news of the births, has been neglected. That is in part because he died in 1988 and left no archive; in part because Edwards did the controversial embryo research, engaged more in ethical debate and built more institutions. This justifies further attention, and studying Edwards will continue to bring others into view.

POLITICS, THE MARKET AND THE TWILIGHT YEARS

By following scientists around, biography can add to bigger pictures; conversely, life-writing should use the full canvas. In sketching the wider world, Gosden works with simple dichotomies: 'progressive convictions against conservative beliefs', 'reason and science against religion and tradition' (p. 259). These may reflect Edwards' own attitudes, but can hardly contain those tumultuous decades when reproductive science moved centre stage and priorities were realigned. That requires a more complex map of national and international, cultural, disciplinary and institutional politics.

While population control, with its eugenic and imperialist legacies, went into crisis during the 1970s, infertility, previously neglected, rose up the agenda. It was made more urgent because the easier availability of contraception and abortion—embattled though these became—reduced the number of children put up for adoption. Yet in-vitro fertilization confounded expectations. Advocates and critics had long assumed that the state would organize everything, but as governments did less and markets were left to do more, IVF came to

symbolize a new health consumerism. No socialist would have chosen to build reproductive biomedicine here (Hopwood, 2018b).

Gosden notes Edwards' egalitarianism and the contrast to Steptoe—a cheese and onion roll with a pint of bitter versus haute cuisine with vintages chosen by a Chevalier du Tastevin—but it would be useful to know where Edwards sat in the Labour Party's broad church. Gosden lets on that Edwards admired Margaret Thatcher and was a substantial landowner, but speculates that he felt distant from what she is said to have regarded as her greatest achievement: New Labour (pp. 133, 296). When government inaction forced IVF into the private sector (not his preference), he and Steptoe (retired from the NHS) relied on the support of Associated Newspapers, publisher of the conservative *Daily Mail*, to buy Bourn Hall.

While waiting and then setting up the clinic, which opened in 1980, Edwards wrote the massive *Conception in the Human Female* and his share of *A Matter of Life* and helped Ruth with the 60-acre Duck End Farm they had bought west of Cambridge. He planted thousands of trees and became a vegetarian. Bourn Hall then gave Edwards the joy of vicarious fatherhood to thousands of babies. Gosden appreciates the profound innovation of clinical embryology, but rightly criticizes profiteering. He deals frankly with the troubles of 'Heartbreak Hall', always a compromise in its beautiful but impractical setting, particularly staff resignations, the shock takeover by Ares-Serono in 1988 and the abandonment of basic research. (Fisher, 2019, pp. 15–27, gives a more jaundiced view.) The sadness of Purdy's early death was followed by Steptoe's passing.

Although Edwards had published prolifically on ethics since the late 1960s, the 'poacher' could not turn 'gamekeeper' (p. 263), especially after he was attacked in 1982 for alleged 'experiments' on human embryos. Others took the lead in promoting embryo research through the Warnock Committee and the lobbying organization Progress (Mulkay, 1997; Franklin, 2019). Instead, he co-founded the European Society of Human Reproduction and Embryology (ESHRE) and its journal *Human Reproduction*. These are said

to have made up for the absence of European equivalents to the American Society for Reproductive Medicine and *Fertility and Sterility* (Brown, 2005, p. ix). Gosden makes clear the limitations of the European Congress on Sterility, but not why none of the national societies or their journals had apparently come close to playing this role (J. Clarke, 2007). Junior colleagues queued for their 'Bob photos', but all was not plain sailing here either. Gosden recounts how Edwards broke with ESHRE over colleagues' rejection of his demand that *Human Reproduction* leave Oxford University Press, and how, aged 75, he started a rival, *Reproductive BioMedicine Online*.

The book ends in elegy, with Edwards' withdrawal from the world, the Nobel Prize almost too late and an analogy between planting trees and implanting embryos.

POETIC LICENCE AND PRECIOUS DAYS

In telling this story Gosden has made innumerable decisions about evidence and emphasis. In view of the 'intended broad readership'—and it is a lively read—he did not want his text 'speckled with references to support every important fact and quotation, like purely academic books' (p. xxi), and so relies on sparse notes and a little further reading. Yet trade biographies often provide full endnotes, and referencing on phrases avoids 'speckling'. As things stand, it is hard for readers to assess claims from a writer who had privileged but undocumented access to people and materials and admits taking 'occasional liberties to create internal reflections' (p. xx)—especially when the main point of comparison, Edwards and Steptoe's *A Matter of Life*, liberally reconstructed thoughts and dialogue and employed Abse as a ghostwriter.

Such stories are of historical interest in their own right, even when rather obviously constructed. They deserve analysis as texts that conform to or subvert the expectations that readers bring to biographies, such as of consistency and triumph over adversity. But it still makes sense to ask whose experiences the narratives represent—their subjects', their authors' or both?—and the extent to which they draw on fresh memories or later rationalizations. We may wish, above all, to see how close

we can come to knowing what it was like to go through the events described (Shortland and Yeo, 1996; Merchant, 2019). Gosden accepts the responsibility to respect evidence in striving for historical sensitivity. I would add a duty of transparency—though one may differ on the optimum density of notes as on the limits of poetic licence (Ginzburg, 1999).

As examples, it is worth looking at how Gosden handles some of the defining scenes in the making of IVF, especially those experiences of beauty and awe when Edwards saw significant phenomena down microscopes for the first time. Providing an opportunity to examine Gosden's practices of reconstruction, these reveal—as far as I can judge—a mix of careful revisionism in weighing inconsistent information, slips that subtly change meanings and what seem to be 'liberties' too far. Although less clear-cut than the simple errors no one can entirely avoid—like placing the Cambridge Garden House riot in 1968 or moving a British Medical Association meeting from Hull to London (pp. 163, 214)—the effects are more insidious.

In the early 1960s Edwards shared his first sight of a human oocyte matured *in vitro* with PhD student Michael Ashwood-Smith, who insisted on putting the specimen under his new UV microscope to reveal 'lovely green chromosomes shining brilliantly on a yellow background'. Edwards and Ashwood-Smith agreed that the attempt to 'get a really beautiful picture' did not go well, with the former stressing that his still-friend lost the egg before photography and the latter that he took photos but they were useless because the camera contained the wrong film (Edwards and Steptoe, 1980, pp. 46–47; Ashwood-Smith, 2002, 2011). Gosden acknowledges the 'blurred' memories while favouring Edwards' version. The problem comes, I assume, from relying on Ashwood-Smith's observation that 'Bob imagined a glossy image published on the front cover of *Nature*' (p. 140). Edwards could have wanted to wow audiences, but *Nature* introduced (black-and-white) cover photos only in the early 1970s; in the 1960s there were still just words and ads. More generally, although long a favourite of Edwards, *Nature* gained its preeminent status later (Baldwin, 2015).

For Edwards' first sight of the early stages of human fertilization in 1968,

Gosden presumably used his interview with Barry Bavister to embellish earlier accounts. Gosden ties to that evening a story, which Bavister previously could not place exactly, about climbing the gate because they had forgotten the key (pp. 168–169; *Bavister, 2009*). *A Matter of Life* had Edwards see fertilization first, yield the microscope to Bavister to take his turn, but then suspect him of reservations about the implications; it rather downplayed what Edwards elsewhere presented as an emotional highpoint (*Edwards and Steptoe, 1980*, pp. 82, 85; *Edwards, 1990*). Following Bavister instead, Gosden lets him go first and, if I have understood correctly, still makes this Edwards' 'most precious day' (p. 309).

A Matter of Life gave the next microscopical vision more weight. Edwards reconstructed at length how Purdy had called him ('attending to my university duties in Cambridge') from Oldham one evening, his race up to see their first 'four beautiful blastocysts' and awed response that very night before going to stay with his mother (*Edwards and Steptoe, 1980*, pp. 93–95). Gosden makes that two blastocysts in August 1970, with the viewing in the morning, and two more in September (p. 182). His warrant is likely Kay Elder and Johnson's supplementary table, based on clinical notebooks which are closed to other researchers till the 2050s. This lists two pairs of blastocysts from laparoscopies on 17 August and 24 September 1970 respectively (both dates outside the teaching term). The first pair includes the 'first blastocyst', the second a 'fully expanded blast[ocyst]' with the same number of nuclei as one in the *Nature* paper and a '2nd blast[ocyst] to Camb[ridge]' (*Steptoe et al., 1971*; *Elder and Johnson, 2015*). Though other interpretations seem possible—including that four embryos were expanding on that first evening but (like the cohort described in *Nature*) did not all remain beautiful—Edwards may have combined two occasions into one. I still miss his lyrical description—or was it all Abse's? (*Abse, 2001*, pp. 240–241)—but I forgive Gosden for shifting the drama to Cambridge and, I take it, his own recollection of Edwards' asking his students, of that last blastocyst, "What do you think it is?" They looked puzzled and at each other. ... Was Bob teasing them with a new species? And then it dawned, and the room hushed' (pp. 182–183).

Gosden appears to have dealt more freely with Lesley and John Brown, as when he imagines that, for Lesley, 'the sight of her baby on the scanner screen was immensely moving' (p. 227). The sight is not on screen and its effect less clear in John's description, as reconstructed with help from writer Sue Freeman: "'I've seen the baby,' Les told me ... at visiting time. Mr. Steptoe had done a scan to see which way the baby was lying inside Les, and he had shown her the photograph afterwards. 'It looked like a picture of the moon to me,' Les said, but I could tell she was excited all the same' (*Brown and Brown, 1979*, p. 118; further: *Nicolson and Fleming, 2013*). Gosden also has Lesley 'told it would be a girl' (p. 227), and yet he would need strong evidence to override Steptoe's statement and the press consensus that staff respected her wish to keep the sex a surprise (*Edwards and Steptoe, 1980*, p. 163; *Hopwood, 2018c*). Or, as the *New York Times* put it, 'Given the power to bypass nature, she nonetheless aspired to preserve its mysterious ways' (*Conceiving the inconceivable, 1978*). Details, yes, but such as to change meanings of precious days.

FROM PERSONALITY TO PUBLIC FIGURE

These stories will be worth revisiting, and much else exploring, because there is more evidence to exploit and still a great deal to learn. I believe that Gosden had only limited advance access to the Edwards Papers, held at the Churchill Archives Centre, which opened to researchers in general in June 2019. Many other archives contain material. Yet the main resource is the vast printed (and increasingly digitized) record, from scientific journals and conference proceedings to glossy magazines and tabloid newspapers, and to a lesser extent television and radio broadcasts, interpretation of which has barely started (but see *Van Dyck, 1995*; *Turney, 1998*, pp. 166–187; and *Dow, 2017, 2019a, 2019b*; for an exemplary study, *Nathoo, 2009*; and for a general review, *Hopwood et al., 2015*). Analysis could, among many other things, bring several more patients from the Oldham programme into the picture (e.g., *Bedford, 1970*; *New 'test tube' mother says: never again, 1970*). The news media matter here because Edwards relied on them and because they lead beyond 'intimate' biography to his public lives.

For Gosden, journalists appear chiefly as a hindrance, with their inaccurate exposures and channelling of hostility. Some did libel Edwards; others harassed Steptoe's patients. Yet the core of truth in colleagues' criticism of both men as publicity-seekers—today quaint and then often unfair—is that they needed the press and television. Gosden acknowledges Edwards' argument that individual scientists had to run risks to try to bring the public with them. The reporting was also part of a whole web of communication (*Lewenstein, 1995*) that helped him stake claims; this was never achieved through journal articles alone. It thus deserves more balanced treatment, more careful in chronology and content, than Gosden's dim view of the fourth estate lets him take.

Fame and notoriety began with the oocyte maturation work in late 1965; included 'Assault on Life' on BBC1 in 1967 with its negative analogy to splitting the atom, as well as the sex selection results that Edwards and Gardner themselves described in *New Scientist* in 1968; and took off with the 1969 *Nature* paper (compare pp. 116, 143 and 193). I am unaware that anyone objected in 1969 (as they would in 1978) that publicity preempted publication (p. 170); photographs of the press conference show Edwards and Steptoe with *Nature* in front of them (and a bevy of bevvies behind). The objection was more that it looked like advertising and would give false hope. Specialists also worried either that others had already done more or that Edwards' evidence of 'early stages of fertilization' was still too preliminary. Gosden discovered that Edwards' old supervisor Alan Beatty shared the latter view, but retreats to the current status of the work as 'the first authentic account of human IVF' (p. 173). I would argue that recognition of the 1969 article was initially secured by the publicity and consolidated when the team produced more convincing results (*Hopwood, 2015*).

Of Brown's birth Gosden opines that '[f]ew people imagined it would join the pantheon of medical breakthroughs' (p. 239). Some experts were sceptical, but the world's press tended to echo the strap headline in the *Daily Mail*'s final edition on 26 July 1978: 'First test-tube baby is born and medical history made as mother's dream comes true' (*Hopwood, 2018c*). More generally, the media were

crucial to establishing the claim, because Steptoe and Edwards delayed so long before publishing any substantial paper. The triumphant 'scientific meeting' at the Royal College of Obstetricians and Gynaecologists on the afternoon of 26 January 1979 gave rather detailed explanations. But the pair were criticized for not communicating data, even for selling their story to tabloids, as well as (the aspect Gosden highlights) thanked for supporting other groups (pp. 239–240, 252, 273; *Hopwood, 2015*; and, e.g., *Fishel, 2019*, p. 16).

Edwards, who had cordial relations with some journalists and TV producers, thus depended on them to promote his field and his results, in addition to securing public consent to the research as the coverage shifted from Dr Frankensteins to childless couples. The press recruited not just patients, but co-workers, too. When Gosden went for an admission interview with Edwards in February 1970, his pocket held the item that had prompted him to apply for a 'scientific adventure': 'a newspaper cutting' (p. 1).

It is not just that Edwards needed the media. The press and broadcasting also offer an abundance of evidence about him as a public figure. The many avatars that others constructed, from the sinister, secretive experimenter to the brilliant, humane pioneer, should illuminate the politics of reproduction and provide the resources for a broader view. The focus would be less on what made Edwards tick, more on what friends and foes made of him as a reproductive scientist. Broader perspectives and a larger cast would open up new plots. In some, Edwards might remain in the lead; in others, he would play a bit part. This would anchor him more firmly in the wider society, and that should help us see his own remarkable life with new eyes.

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