

## RAMPANT MISATTRIBUTED PATERNITY: THE CREATION OF AN URBAN MYTH

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*There is a common view that misattributed paternity is widespread in Western societies, between ten and 30 per cent of all births. Such estimates are an urban myth. The actual evidence suggests that the true extent of misattributed paternity is closer to one per cent, and not more than three per cent.*

In March 2005 there was a media frenzy in Australia around the story of the Commonwealth Minister for Health Tony Abbott and the son he had put out for adoption 28 years earlier. The story had originally been one of an adopted child finding out that his biological father was one of the most powerful men in the country. It became instead a story about misattributed paternity. DNA paternity testing revealed that Tony Abbott was not the biological father of his alleged son. Along with my colleague Lyn Turney, I had been doing research about the social implications of paternity testing for several years. Both Lyn and I were now suddenly swept along by the media frenzy, doing one interview after another for television, radio and the press.

A recurring question in the course of interviews was the extent of misattributed paternity. We both resolutely insisted that there was no reliable data on the extent of misattributed paternity; that claims of a 30 per cent non-paternity rate were a gross exaggeration; and that claims of a 10 per cent non-paternity rate were also unfounded. Our observations had little impact. The most commonly cited figure in the media was 10 per cent.<sup>1</sup> Lyn herself was cited as the author of a study that found a 20 per cent non-paternity rate!<sup>2</sup> On live media, notably talkback radio, our observations were routinely challenged. For example, on the Radio National show *Australia Talks Back* a caller asked where

the show had got its so-called experts from. He then referred confidently to a study done thirty years earlier in the UK which showed that misattributed paternity affected more than 30 per cent of the population. Later in the program another interviewee from a fathers' rights group observed that misattributed paternity was widespread in Australia.<sup>3</sup>

In 1991 — at the dawn of the commercial paternity testing industry — Macintyre and Sooman observed in *The Lancet* that 'reliable estimates of the incidence of non-paternity are few and far between, although various rates are quoted in an authoritative manner by several sources'.<sup>4</sup> In particular, they reported:

Medical students are usually taught that the rate is 10 to 15 per cent; 10 per cent is a figure widely used in DNA studies and quoted in standard genetics textbooks; and commentators on proposed screening programmes for cystic fibrosis carriers have recently quoted similar rates. Most such references are prefaced by statements such as 'it is well known that' or 'it is commonly found that'; but if one attempts to trace the source of such estimates they often appear to be based on hearsay, anecdote, or unpublished or unevaluable findings.<sup>5</sup>

There is still some truth in this statement. The evidence remains thin, and statements are still made in an authoritative manner. Yet there is now another layer to this disjunction between evidence and authority. Estimates of the incidence



of non-paternity are more informed than was once the case, and these estimates mostly suggest that the non-paternity rate widely accepted in the past is too high, at least for Western Europe, North America and Australia. On the other hand, inflated claims made in an authoritative manner are perhaps more widespread than was once the case, as reflected in the media coverage of the Tony Abbott story. This article explores this disjunction. First, it addresses the evidence, based upon medical records, sex surveys, DNA testing laboratories and genetic studies. It then addresses the reasons for the disjunction between the evidence and what is commonly believed.

### MEDICAL EVIDENCE

When the irate caller corrected me on *Australia Talks Back*, he was referring to a remark made by Elliott Philipp at a symposium in 1972 on the ethics of artificial insemination by donor. The transcript of the symposium reads:

*Philipp:* We blood-tested some patients in a town in south-east England, and found that 30 per cent of the husbands could not have been the fathers of their children ...

*Killbrandon:* Mr Philipp, surely the figure of 30 per cent must be a minimum? What you established was that 30 per cent could not be the children of their mother's husband, not that 70 per cent of them were?

*Philipp:* Yes, it is a minimum. We were screening some female patients by testing their husbands for their blood groups, because we were interested in antibody formation in correlation with the ABO groups as well as the rhesus groups. From our results we suddenly realised that 30 per cent of the children could not have been fathered by the men whose blood group we analysed.

*Stallworthy:* What was the extent of that group?

*Philipp:* Not large — between 200 and 300 women — but large enough to give us a real shock.<sup>6</sup>

As Killbrandon (a judge) observed in this exchange, the serological techniques used in the early 1970s did not reveal all cases of misattributed paternity. The most elementary ABO test only 'excluded' 17 per cent of falsely identified fathers.<sup>7</sup> In other words, if there was an imaginary town (let us say in the south-east of England) where all the supposed fathers were not in fact the biological fathers of their wives' children, then the ABO technique would still indicate that only 17 per cent of all so-called fathers were falsely identified, that is excluded from being their putative child's biological father. A panel of more complex serological tests could exclude more falsely identified fathers: 53 per cent for ABO, Rh and MNSs tests combined; about 72 per cent for ABO, Rh, MNSs, Duffy, Kell and Kidd tests combined; and between 95 and 98 per cent when a panel of 14 tests were combined, including those for HLA, serum proteins and red cell enzymes.<sup>8</sup> It is not clear precisely how many tests Philipp applied, so the actual non-paternity rate is uncertain. Unfortunately we just do not know. Nor do we know anything about the women who were tested. There is a passage in the transcript (immediately following the one quoted above) which suggests that the families tested might have been ones where births occurred outside of marriage. Certainly another medical participant in the symposium thought that the sample was 'highly biased'.<sup>9</sup> Again, we can only speculate. Philipp's work was never published, which meant that it could not be independently evaluated, in terms of serological techniques or population sample.<sup>10</sup>

Given the fact that the research has never been published or independently



evaluated, it is extraordinary that this exchange is still quoted authoritatively more than thirty years later. Similarly, another widely-quoted study with a non-paternity rate of 20-30 per cent, the so-called 'Liverpool Flats study' in the 1970s, can 'only be traced to lecture notes'.<sup>11</sup> Macintyre and Sooman commented that these incidence rates have taken on the status of 'well known facts', and that 'many authorities who cite them, including medical geneticists, seem unaware of the lack of publicly available data to support them'.<sup>12</sup> This observation begs the question as to how such unsubstantiated claims achieved their status in a competitive field that prides itself on its scientific standards.

Macintyre and Sooman observed that published data in the field were 'sparse and often a by-product of investigations into other topics'.<sup>13</sup> Even so, some published studies were available prior to 1972, based upon medical research and blood typing. For example, a 1949-50 British (West Middlesex) study indicated a non-paternity rate of five per cent; a 1960s US (Michigan) study estimated non-paternity rates of 1.4 per cent and 10.1 per cent for caucasian and black children respectively; and a 1960s Hawaiian study estimated a non-paternity rate of 2.3 per cent.<sup>14</sup> The West Middlesex figure at least may have been inflated, given that the research was concerned with abortion where paternity might be expected to be an issue. Even so, it is striking that all of these published studies suggested much lower non-paternity rates than the two better-known but unpublished British references from the 1970s.

From the mid 1980s DNA analysis narrowed the gap between 'exclusion' and non-paternity, excluding up to 99 per cent of falsely identified putative

fathers.<sup>15</sup> In response to Macintyre and Sooman's observations, Brock and Shrimpton (in a 1991 letter to the *The Lancet*) reported data drawn from DNA carrier testing for cystic fibrosis (CF) at their own hospital in Edinburgh, as well as eight other laboratories from around Britain (in Belfast, Cardiff, East Anglia, London, Manchester and Oxford). Of 521 families tested, there were seven results (1.35 per cent) incompatible with biological paternity. Most of the tests arose in the context of genetic counselling, where parents sought advice on recurrent risk after having an affected child. This group could be biased towards true paternity as it is possible that women with doubts on the issue may have avoided genetic counselling. By the same token, Brock and Shrimpton observed that pregnant women attending clinics at their hospital were invited to join a CF carrier testing trial. Women who were unsure of the father or whose partners were not available were asked not to participate. Of 1,619 women, only 17 (1.05 per cent) disqualified themselves on these grounds, while another 31 (1.9 per cent) did not participate for other reasons. Brock and Shrimpton concluded: 'We believe that cited rates of non-paternity are somewhat exaggerated, and that the true rate lies closer to one per cent'.<sup>16</sup>

There have been a number of other studies since 1991. Le Roux, Pascal, David and Moisan tested DNA markers in 89 nuclear families in France in 1992 in the course of genetic testing. Of the 362 children tested, there were 10 who could not have been the offspring of their declared fathers, corresponding to a non-paternity rate of 2.8 per cent.<sup>17</sup> Sasse, Müller, Chakraborty and Ott tested 1,607 Swiss children and their parents for CF and bone marrow transplantation in 1994. They reported 11 exclusions, amounting



to 0.68 per cent of their sample, suggesting a maximum non-paternity rate (given undetected exclusions) of 0.78 per cent.<sup>18</sup> Cerda-Fores, Barton, Marty-Gonzalez, Rivas and Chakroborty tested 396 Mexican newborn babies and their parents in 1999, on the basis of which they estimated a non-paternity rate of 11.8 per cent. They also found significant variation by socio-economic status (SES), whereby misattributed paternity was most common among those of low SES and least common among those of high SES.<sup>19</sup>

Medical studies provide one of the best sources of evidence in relation to the incidence of non-paternity in the general population, given that they often derive their subjects on the basis of medical conditions that are unrelated to paternity issues. Such studies provide evidence of substantial variation in the extent of misattributed paternity on the basis of culture and socioeconomic status. Even so, it is striking that since the advent of DNA analysis, not one medical study in a Western country indicates a non-paternity rate of more than three per cent.

### SEX SURVEYS

In 1991 Macintyre and Sooman observed that there were 'few surveys of sexual behaviour and most rely on unrepresentative or volunteer surveys'.<sup>20</sup> Nonetheless they cited a volunteer survey of female sexual satisfaction among the readers of one British magazine, on the basis of which the sociobiologists Bellis and Baker predicted a non-paternity rate of 6.9 to 13.8 per cent.<sup>21</sup>

In the wake of AIDS, it is no longer necessary to rely upon volunteer surveys. There are now many representative sex surveys across Western countries. The most famous of these, the path-breaking National Health and Social Life Survey in the US, conducted a representative survey

of 3,432 respondents in the early 1990s, achieving the remarkable participation rate of 80 per cent.<sup>22</sup> The researchers were impressed, above all else, with the conservatism of sexual behaviour. In particular, they found that the 'marriage effect is so dramatic that it swamps all other aspects of our data':

Our study shows that no matter how sexually active people are before and between marriages, no matter whether they lived with their sexual partners before marriage or whether they were virgins on their wedding day, marriage is such a powerful institution that, essentially, married people are nearly all alike — they are faithful to their partners as long as the marriage is intact.<sup>23</sup>

Since then, there have been many representative sex surveys across Western societies. These surveys have arrived at much the same conclusion. A 2001 Australian survey of 10,173 respondents (with a response rate of 73 per cent) found that of those respondents who had been in their regular relationship for at least one year, only 4.9 per cent of men and 2.9 per cent of women reported more than one sexual partner in the past year. In Europe during the late 1980s and early 1990s comparable figures were 5.6 per cent of men and 2.3 per cent of women in Britain; 7.6 per cent and 3.8 per cent in France; 8.2 per cent and 2.6 per cent in the Netherlands; 9.8 per cent and 3.8 per cent in Belgium; and 10.3 per cent and 5.6 per cent in Norway.<sup>24</sup>

Of course only women in their teens, twenties, thirties and forties are able to bear children. The 2001 Australian survey found that 8.0 per cent of women aged 16-19 in regular heterosexual relationships reported more than one partner; for those aged 20-29, the figure was 5.6 per cent; for those aged 30-39, 2.6 per cent; for those aged 40-49, 1.6 per cent;



and for those aged 50-59, 1.7 per cent.<sup>25</sup> Assume for a moment that the non-paternity rate in any given year directly reflects the extent to which women in their childbearing years have sexual partners outside of their regular relationships. The median age of Australian mothers on the birth of their first child in 2001 was 29 years. Even if we take the mid-way point for the percentages of women in their twenties and thirties who had more than one sexual partner — 4.1 per cent — then we are still a long way from 10 per cent.

In any case, the assumption that underpins the above estimate of a 4.1 per cent non-paternity rate is absurd, for three reasons. First, it assumes that women take active steps to prevent conception and birth in relation to marital sex, and take no such measures in relation to extra-marital sex. Second, it takes no account of the fact that those who have more than one sexual partner almost certainly have more sex with their regular partner, increasing the likelihood of conception and having a child with him. Third, it assumes that women who have more than one partner while in regular relationships are equally likely to have children. They are not. The 2001 survey found that 7.2 per cent of unmarried women in regular relationships reported more than one sexual partner in the past year, but only 1.2 per cent of married women did so.<sup>26</sup> Most births — 68 per cent in 2003 — occur in legal marriage. This was even more the case in earlier times: in 1960, 95 per cent of births occurred in marriage.<sup>27</sup> There is no reason to believe that married women in earlier times were more likely to have extra-marital sex than married women today. In other words, the evidence from sex surveys suggests that the Australian non-paternity rate is a great deal less than 4.1 per cent!

One other pattern of sexual behaviour among different groups of women warrants consideration. According to the 2001 Australian survey, household income had no significant influence on whether men in regular relationships were likely to have had more than one sexual partner in the past year. On the other hand, it did have an influence on women's behaviour. Of those women in regular relationships whose household income was less than A\$20,000 per annum, 6.5 per cent had more than one sexual partner in the past year; for those with a household income between A\$20,000 and A\$52,000, the figure was 3.0 per cent; for those whose household income was more than A\$52,000, it was 2.2 per cent.<sup>28</sup> Given that extra-marital sex is a necessary condition of misattributed paternity, this evidence supports the view that misattributed paternity is more common among those on low incomes than among those on high incomes.

#### **PATERNITY TESTING LABORATORIES**

In the wake of DNA technology, paternity testing has become more commercialised, more institutionalised and more widespread. The best available data on paternity testing come from the United States. There the American Association of Blood Banks, the main regulatory agency, conducts an annual survey of laboratories. In 1991, 89 laboratories responded to the survey. They reported 143,459 cases of paternity testing, mostly using established serological techniques. Of these cases, 43,387 — or 30 per cent — were exclusions where non-paternity was established.<sup>29</sup> In the most recently published 2003 survey, twelve years later, 44 laboratories responded to the survey. (The smaller number reflects the consolidation of the industry, not lower



participation.) The overwhelming majority of tests now employed DNA technology. Altogether there were 354,011 cases of paternity testing, amounting to 0.125 per cent of the US population. Results were provided for 353,387 cases, of which 99,174 — or 28 per cent — were exclusions.<sup>30</sup> That is, 28 per cent of putative fathers were found not to be the biological father.

There is no reliable data on the number of tests or exclusions in Australia. Nonetheless, in 2004 laboratory managers agreed in the course of interviews that there were about four to five thousand tests per annum,<sup>31</sup> that is about 0.025 per cent of the Australian population (about one-fifth as many tests per capita in Australia as in the US). In the course of interviews, managers also agreed that the exclusion rate was about 20 per cent, well below the US rate.<sup>32</sup> The largest provider, Genetic Technologies in Melbourne, also told a government inquiry in 2002 that the exclusion rate was about 20 per cent, although it was less — only 10 per cent — for those tests that were done without the knowledge or consent of the mother.<sup>33</sup>

The problem with these figures is self-evident. They come from a small, self-selecting part of the population: that is, the clients of paternity testing laboratories. By definition, the clients of these laboratories have grounds to question the biological paternity of their children. Clients come from two main sources: first, unmarried mothers who want to enforce child support from reluctant fathers, and second, men who have doubts about their partners or ex-partners. In this context, the surprising statistic is not that the non-paternity rate is so high, but rather that it is so low! Given that the non-paternity rate is less than 30 per cent among those with most cause to question biological paternity, the

rate is obviously a great deal less for the whole population.

The fact that the US non-paternity rate is nonetheless higher than in Australia, notwithstanding five times as many tests per head of population, strongly suggests that the non-paternity rate is significantly higher in the US than Australia. Even so, the US figures do not suggest widespread misattributed paternity on the scale commonly suggested.

## GENETIC RESEARCH

A unique English study of genetic relatedness and lineage provides another form of evidence regarding misattributed paternity. Sykes and Irven sent a postal request for a cheek-cell sample to 269 men with the surname 'Sykes', chosen at random from men with this surname in three counties whereabouts the name first appeared during the thirteenth and fourteenth centuries. They received 61 replies (response rate 22.7 per cent), from which they successfully extracted DNA from 48 (78.6 per cent). They also established two control groups: one of men from all over England, and another from unrelated male neighbours of the Sykes volunteers. The participants' DNA was tested for sequences that tend to be inherited together, known as 'haplotypes', on the Y chromosome. Sykes and Irven found a 'highly significant association' among the Sykes volunteers, indicating — contrary to expectation (derived from written records) — that there was a 'single surname founder for extant Sykes males'. On this basis the 'averaged nonpaternity rate estimate is 1.3 per cent/generation, given the assumption that 23 generations have passed since the first common male ancestor'.<sup>34</sup> It should be noted that non-paternity in this context does not necessarily imply misattributed paternity. Most obviously, it could include adoption. In



other words, the average rate of misattributed paternity for the past 700 years — in this particular lineage group at least — is well below 1.3 per cent per generation.

### THE MAKING OF AN URBAN MYTH

As Macintyre and Sooman observed in 1991, 'reliable estimates of the incidence of non-paternity are few and far between'. Moreover, such estimates as there are suggest substantial variation, ranging from less than one per cent in Switzerland to more than 10 per cent in one Mexican city. Even so, these estimates suggest a relatively low non-paternity rate in Western societies. In particular, Brock and Shrimpton's data derived from DNA carrier testing for cystic fibrosis across the UK suggests a non-paternity rate of about one per cent; random surveys of sexual behaviour in Australia, North America and Europe indicate high levels of sexual monogamy within marriage; and Sykes and Irven's study of men bearing the name 'Sykes' in three English counties suggests a non-paternity rate of, at the most, 1.3 per cent per generation over the past 700 years. Even among the tiny sub-section of the population who have most reason to doubt the non-paternity of their children, the exclusion rate is only 28 per cent in the US and about 20 per cent in Australia.

Yet much higher estimates of non-paternity are routinely cited with authority. In everyday language, the high non-paternity rate might be understood as an 'urban myth', defined by *Oxford Online* as 'an entertaining story or piece of information of uncertain origin that is circulated as though true'.<sup>35</sup> In more sociological terms, it might be understood as what the US sociologist Robert Merton called a 'pseudofact'. In his own words:

It might at first seem needless to say that before social facts can be 'explained,' it is

advisable to ensure that they actually are facts. Yet, in science as in everyday life, explanations are sometimes provided for things that never were ... In sociology as in other disciplines, pseudofacts have a way of inducing pseudoproblems, which cannot be solved because matters are not as they purport to be.<sup>36</sup>

There are at least three parties that have promoted this particular urban myth or pseudofact. First, there are the fathers' rights activists, some of whom I crossed paths with in the course of the Tony Abbott affair. Fathers' rights activists have mobilised around DNA paternity testing as part of a broader campaign against what they regard as an unjust socio-political system biased in favour of mothers in disputes about child support payments and custody. Such activists believe that DNA paternity testing evens up the ledger. It allows men, as non-custodial parents, to make sure that they are not treated as just 'a wallet', or a 'means of income' for women to 'live off the Family Law settlements and on-going Child Support'.<sup>37</sup> Activists cite high rates of non-paternity to support their claims of widespread paternity fraud. They are especially active on the Internet, which provides a medium for the rapid spread of such claims. For example, a website that solicits campaign funds for a high-profile paternity fraud case in Victoria declares:

It is estimated that at least 25 per cent of children living in the western world aren't the biological offspring of their legal fathers. Many men are supporting and raising other men's children without knowing or suspecting that they've been the victims of a mother's deceit. Since DNA testing has become widely available, the facts of these cases are now being revealed.<sup>38</sup>

Second, there are the DNA paternity testing laboratories and their agents. The



industry is a relatively new one, but it is already crowded (or 'saturated', as one US laboratory manager told me).<sup>39</sup> The industry cannot do much to increase demand for the tests among single mothers, the largest market in the US, whose tests are largely funded by government agencies (Legal Aid in Australia, the Child Support Enforcement Division in the US). It *can* take active steps to increase demand among the other main market of alienated fathers, often paying child support. Such steps include: working with brokers to bring in customers (there is only one Australian broker, but brokerage is widespread in the US); building business through the Internet, including links with fathers' rights groups;<sup>40</sup> working the media, including (in the US only) live television shows where paternity disputes are played out in front of a studio audience;<sup>41</sup> and, not least, promoting the view that misattributed paternity is rampant. The 'cowboy' segment of the industry — unaccredited laboratories and Internet brokers — most actively promote this view. Even so, it was the largest laboratory in Australia that authoritatively stated in the course of the Tony Abbott affair that one in ten Australian children were affected by misattributed paternity.<sup>42</sup>

Finally, sociobiologists — or evolutionary psychologists as they are sometimes called — have provided intellectual credibility for inflated non-paternity rates. Sociobiologists explain animal and human behaviour in terms of genetic competition. Humans, like other life forms, are ultimately driven by genetic code, refined through millennia of evolutionary competition. Men and women want to maximise viable reproductive output, but they have different capacities to do so. More specifically, the minimum reproductive effort is much less for men

(copulation) than women (pregnancy); and men, unlike women, face the risk of raising someone else's child. From this perspective, the institution of marriage is a compromise between competing capacities and needs, within which men and women pursue their different interests. In this context, extra-marital sex and misattributed paternity are strategies designed to enhance reproductive output. On the one hand, men are more likely than women to pursue opportunities for extra-marital sex. On the other, women will take advantage of misattributed paternity when it suits them, usually to mate with higher status men whom they would be unable to lure into marriage and have the children raised by their lower status husbands.<sup>43</sup> Thus, Robin Baker's *Sperm Wars* imagines a scenario where a dying man leaves behind his son and heir, who is not in fact his biological son. He elaborates:

In his generation's cruel competition to pass on its genes, the dying man was a reproductive failure. For him there were no descendants; no dynasty. He had been outmanoeuvred in life's mating game by his partner and a man he never even knew - the man who was the real, genetic, father of his 'son'. Between them, the two had tricked him into dedicating all of his reproductive effort into raising a child who wasn't his, just like the small bird that is tricked into raising a monstrous cuckoo chick.<sup>44</sup>

In fact, sociobiologists often describe bird studies in their accounts of extra-marital sex and paternal deception. In *The Rise and Fall of the Third Chimpanzee*, Jared Diamond describes studies of blue herons, great egrets, herring gulls and snow geese, revealing 'a series of sophisticated strategies by which adulterous male birds try to have it both ways, so as to obtain confidence of paternity at home while sowing their seed abroad'.<sup>45</sup> Similarly, Baker's *Sperm Wars* observes



that properly controlled DNA fingerprinting studies of 'apparently monogamous' birds suggest 'a roughly 30 per cent incidence of males raising other males' offspring, comparable with but slightly higher than the level in humans'.<sup>46</sup> This is a very liberal interpretation of what it means to be 'slightly higher'. More specifically, he claims:

World wide, it has been calculated from studies of blood groups that about 10 per cent of children are in fact not sired by the man who thinks he is their father. This is also the level found in industrial Western societies.<sup>47</sup>

It is ironic that sociobiologists pride themselves on bringing scientific method to the study of sexual behaviour, but in this instance show so little regard for hard evidence. This suggests that their ideology drives their analysis. Whatever the case, their account provides a pervasive rationale for high non-paternity rates. In the course of the Tony Abbott affair, for example, one Melbourne obstetrician declared in a newspaper interview that the non-paternity rate could be as high as 15 per cent. He explained:

The human female has two needs — one is to get a nice secure environment to bring up her children, and the second is to get the best genes she can for her offspring, and if she can get the two into one she will, but often if she can't she'll seek the genes elsewhere.<sup>48</sup>

The Internet and the media have provided a medium for the rapid circulation of inflated estimates of non-paternity. Fathers' rights groups and the paternity testing industry, especially brokers, are both active on the Internet and through the media. For its part, the media has been receptive to inflated estimates; not least, because a high non-paternity rate makes a more interesting and provocative story than a low rate.<sup>49</sup> Moreover, there are

no groups that actively promote a more realistic view of non-paternity rates, against the claims of fathers' rights activists, the paternity testing industry and sociobiologists. In this context, inflated estimates have had free rein.

### TIME TO GET REAL

As I was in the final stages of writing this article, I received an email that advertised a public lecture on the social implications of paternity testing in the wake of the Tony Abbott affair. The brief description of the lecture observed: 'In case you should think that these issues are not pressing, remember that research studies on random populations that involve genetic test have revealed undisclosed non-paternity in a startling percentage of cases (up to 1:5)'. It added that as more tests were done, more non-paternity would be revealed, and that the 'financial and emotional implications, especially for men found not to be the biological father, are enormous'. My first response was panic. Perhaps I had overlooked a groundbreaking representative study completed in the last year or two! I promptly emailed the speaker as to her sources. She replied, 'I got this figure from a press report that I am currently trying to find', and emphasised that this was a work in preparation.

The exchange exemplifies McIntyre and Sooman's point, made in 1991. The evidence on the extent of misattributed paternity is thin, but statements on the subject are made with so much authority. Yet we do know more now than we did in 1991. On the whole, the evidence suggests relatively low rates of misattributed paternity, at least in Western countries — perhaps between one per cent and three per cent. Although we have more evidence than we once did, inflated estimates of non-paternity get more currency



than ever. Such estimates amount to an urban myth, or a 'pseudofact'.

The media frenzy around the Tony Abbott affair highlights the fact that we are only now coming to grips with the social implications of paternity testing. This is a good thing. Paternity testing has profound implications and its regulation warrants careful attention. But this is not because misattributed paternity is rampant. The urban myth of high non-paternity rates is driven by the alienated fantasies of fathers' rights activists, the commercial interests of the paternity testing industry, and the ideology of sociobiology, circulated through the Internet and the media. This is not a

sound basis for good analysis or effective regulation. It is time to get real about misattributed paternity.

### Notes

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### References

- <sup>1</sup> See, for example, *The Age*, 23 March 2005, p. 2, and *Metro* p. 3; *Australian Financial Review*, 24 March 2005, p. 36.
- <sup>2</sup> *Sunday Mail*, 27 March 2005
- <sup>3</sup> *Australia Talks Back*, 'Paternity Testing', 30/3/2005, transcript at <http://www.abc.net.au/rn/talks/austback/index/AustTalksBackChronoldx.htm>, accessed 28 April 2005
- <sup>4</sup> S. Macintyre and A. Sooman, 'No-paternity and prenatal genetic screening', *The Lancet*, vol. 338, 5 Oct. 1991, p. 870
- <sup>5</sup> *ibid.*
- <sup>6</sup> Discussion: moral, social and ethical issues', in G.E.W. Wostenholme and D.W. Fitzsimons (Eds), *Ciba Foundation Symposium*, vol. 17, 1973, pp. 63, 66
- <sup>7</sup> C.M. Strom, S. Rechitsky, N. Ginsberg, O. Verlinsky and Y. Verlinsky, 'Prenatal paternity testing with deoxyribonucleic acid techniques', *American Journal of Obstetrics and Gynecology*, June 1996, p. 1849
- <sup>8</sup> *ibid.*; H. Silver (Ed.), *Probability of Inclusion in Paternity Testing: A Technical Workshop*, Bethesda, American Association of Blood Banks, 1982. I am indebted to Dr Rosemary Sparrow, Manager of Research, Australian Red Cross Blood Service, Melbourne, for information about tests available in the 1970s.
- <sup>9</sup> Discussion: moral, social and ethical issues', in Wostenholme and Fitzsimons, *op. cit.*, p. 66
- <sup>10</sup> Macintyre and Sooman, *op. cit.*, p. 870
- <sup>11</sup> *ibid.*
- <sup>12</sup> *ibid.*
- <sup>13</sup> *ibid.*
- <sup>14</sup> *ibid.*
- <sup>15</sup> A. Borém, F. Santos and D. Bowen, *Understanding Biotechnology*, Upper Saddle River, Prentice Hall, 2003, p. 127
- <sup>16</sup> D. Brock and A. Shrimpton, 'Non-paternity and prenatal genetic screening', *The Lancet*, vol. 338, 2 Nov. 1991, p. 1151
- <sup>17</sup> M. Le Roux, O. Pascal, M. Andre, O. Herbert, A. David and J. Moisan, 'Non-paternity and genetic counselling', *The Lancet*, vol. 340, 1992, p. 607
- <sup>18</sup> G. Sasse, H. Müller, R. Chakraborty and J. Ott, 'Estimating the frequency of nonpaternity in Switzerland', *Human Heredity*, vol. 44, 1994, pp. 337-343
- <sup>19</sup> R. Cerda-Fores, S. Barton, L. Marty-Gonzalez, F. Rivas and R. Chakraborty, 'Estimation of nonpaternity in the Mexican population of Neevo Leon: a validation study with blood group markers', *American Journal of Physical Anthropology*, vol. 109, 1999, p. 292
- <sup>20</sup> Macintyre and Sooman, *op. cit.*, p. 870



- 21 *ibid.*
- 22 R.T. Michael, J.H. Gagnon, E.O. Laumann and G. Kolata, *Sex in America: A Definitive Study*, London, Little, Brown and Company, 1994, p. 33
- 23 *ibid.*, p. 105
- 24 C. Rissel, J. Richters, A. Grulich, R. de Visser and A. Smith, 'Sex in Australia: selected characteristics of regular sexual relationships', *Australian and New Zealand Journal of Public Health*, vol. 27, no. 2, 2003, pp. 128-130
- 25 *ibid.*, p. 129
- 26 *ibid.*
- 27 F. McCoull, F., 'Research note — trends in family size', *Social Security Journal*, March 1993, p. 72; Australian Bureau of Statistics (ABS), *Births 2003*, Cat. no. 3301.0, pp. 43-4
- 28 *ibid.*
- 29 American Association of Blood Banks, 'Parentage Testing Annual Report 1991', typescript, p. 1
- 30 American Association of Blood Banks, 'Annual Report Summary for Testing in 2003', [www.aabb.org/About\\_the\\_AABB/StdS\\_and\\_Accred/ptannrpt03.pdf](http://www.aabb.org/About_the_AABB/StdS_and_Accred/ptannrpt03.pdf), pp. 2-3, accessed 28 April 2005
- 31 M. Gilding, 'DNA paternity testing without the knowledge or consent of the mother', *Family Matters*, no. 68, 2004, p. 70
- 32 In 2003 I interviewed senior and middle management from all of the paternity testing laboratories in Australia.
- 33 Australian Law Reform Commission (ALRC)/ National Health and Medical Research Council, 'Non-confidential submissions to the Inquiry into the Protection of Human Genetic Information', G245, 2003, available on application from ALRC
- 34 B. Sykes and C. Irven, 'Surnames and the Y chromosome', *American Journal of Human Genetics*, vol. 66, 2000, p. 1417
- 35 C. Soanes and A. Stevenson (Eds), *Oxford Reference Online*, Oxford University Press, [www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t23.e62291](http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t23.e62291), accessed 7 April 2005
- 36 R. Merton, 'Notes on problem-finding in sociology', in R.K. Merton, L. Broom and L.S. Cottrell (Eds), *Sociology Today*, Basic, New York, p. xiii
- 37 Quoted in L. Turney, M. Gilding, C. Critchley, P. Shields, L. Bakacs and K. Butler, 'DNA paternity testing: public perceptions and the influence of gender', *Australian Journal of Emerging Technologies and Society*, vol. 1, no. 1, pp. 12-13, [www.swin.edu.au/sbs/ajets/journal/issue1/a\\_paternity.htm](http://www.swin.edu.au/sbs/ajets/journal/issue1/a_paternity.htm), accessed 18 May 2005; M. R. Anderlik and M.A. Rothstein, 'DNA-based identity testing and the future of the family: a research agenda', *American Journal of Law and Medicine*, vol. 28, 2002, pp. 219-20
- 38 'Kitten News', [www.kittennews.com/kn\\_extras/l\\_magill.htm](http://www.kittennews.com/kn_extras/l_magill.htm), 28 April 2005, accessed 27 April 2005
- 39 In 2004 I interviewed 13 senior and middle managers of nine DNA paternity testing laboratories in the US.
- 40 Gilding, *op. cit.*, p. 71
- 41 A. Stanley, 'So, who's your daddy? In DNA tests TV finds elixir — to raise ratings', *The New York Times*, March 12, 2002, p. 1
- 42 *The Age*, 23 March 2005, p. 2. A senior manager made the same claim when he was interviewed alongside me on ABC radio on 22 March, the morning after the story broke.
- 43 See, for example, J. Diamond, *The Rise and Fall of the Third Chimpanzee*, Vintage, London, 1991, pp. 77-83; R. Baker and M. Bellis, *Human Sperm Competition: Copulation, Masturbation and Infidelity*, Chapman and Hall, London, 1995, pp.142-5; K. Hawkes, A.R. Rogers, and E.L. Charnov, 'The male's dilemma: increased offspring is more paternity to steal', *Evolutionary Ecology*, vol. 9, pp. 662-677; S. Gaulin, D. McBurney and S. Brakeman-Wartell, 'Matrilateral biases in the investment of aunts and uncles: a consequence and measure of paternity uncertainty', *Human Nature*, vol. 8, no. 2, pp. 139-151; R. Baker, *Sperm Wars*, Pan, London, 2000, pp. 58-89
- 44 Baker, *op. cit.*, p. 61
- 45 Diamond, *op. cit.*, pp. 77-9
- 46 Baker, *op. cit.*, p. 64
- 47 *ibid.*, pp. 63-4
- 48 *The Age*, 23 March 2005, p. 2
- 49 M. Bromley (Ed.), *No News is Good News: Radio, Television and the Public*, Pearson Education, Harlow; Roger Fry and Co., 'Handling the Media: Course Notes', Roger Fry & Co., Melbourne, 2001, p. 20