Equating Arthur Beetson or Polly Farmer with Einstein or Copernicus probably sounds far-fetched. But there's reason in this madness.

All sports undergo revolutions in technique not dissimilar to the revolutions in technique that shape different sciences.

Revolution is not too strong a word. In a much celebrated, much condemned book on the history of science, published in 1962, Thomas Kuhn described the development of sciences using just this term.

I have no idea whether Kuhn is or was a sports fanatic; I don't think it matters. His ideas have a great deal to offer an understanding of the way sports work.

Kuhn argued that scientists usually go about their business more or less in line with a particular 'right way of doing things', a particular dominant paradigm of technique. They judge their performances, and their performances are judged by others, in terms of this dominant paradigm.

Think of Rugby League before Beetson or Aussie Rules football before Farmer. The 'right way' of attacking as a front-row forward was to keep close to the ruck, run straight and hard and, especially, keep the ball tucked in close to the chest to avoid having it dislodged by either ground or opponent.

The paradigm for all Australian Rules players in the pre-Farmer era was to kick the ball long to position. Handball was to be used only as a last resort.

This was 'normal' Rugby League and 'normal' Australian Rules. Players, coaches, commentators and spectators alike practised 'normal' Rugby League or Australian Rules as a community of Rugby League and a community of Australian Rules, just as Kuhn described the practice of 'normal' science among different scientific communities.

But normal science, according to Kuhn, has a habit of breaking down every now and again. This is the crux of his argument.

The normal way of doing things, the dominant paradigm, begins to be openly challenged, perhaps because it's not doing too well at solving its own puzzles or perhaps because some mavericks working outside the dominant paradigm, on the edge of the community, using an alternative paradigm, start getting some spectacularly good results, or perhaps a combination of the two.

More or less quickly a scientific revolution occurs. An entire community starts doing things in the way of the mavericks.

The shockingly new way becomes the normal way, the alternative paradigm becomes the dominant paradigm. Anyone who stays loyal to the old way is left behind, a fool at best, a heretic at worst. Einstein's paradigm of physics taking over from Newton's is a good example, as is Copernicus' paradigm of astronomy taking over from Aristotle's.

Back to football. In the 60s, Beetson starts standing in tackles, at the edge of rucks, often approached at a stroll, actually holding the ball out (sometimes even one-handed!) for other players to run off him rather than clutching it to his chest.

In the same period Farmer (and Cable and others) start using the hand-pass not as a means of getting out of a tight spot, but as an attacking weapon.

In both Rugby League and Australian Rules a revolution occurred; a dominant paradigm of playing technique shifted very dramatically. Not quite overnight, but over only a few seasons, what was wrong became right and vice versa.

Only the 'old codgers' stayed loyal to the old ways. During the brief revolutionary period just about everyone was converted (or sacked) - players, coaches, commentators and spectators.

Now, only 20 years later, nearly every Rugby League forward is expected to have unloading skills at least approaching the Beetsonesque, and nearly every Aussie Rules player is expected to have handballing skills at least approaching the Farmeresque. Every coach is expected to teach these skills and every commentator and spectator is expected to appreciate them.

All this, I believe, is evidence of the worth of the 'paradigm shift' or 'technical revolution' theory of sports. An example, not from football, but from high jumping.

In the space of just a few days' competition - during the 1968 Olympics - everything about the 'right way' to high jump changed. American athlete Dick Fosbury's 'flop' technique - completely marginal before the Games - was so successful (Fosbury went from a world ranking of 56th in 1967 to gold medallist in 1968) it became dominant virtually straight away.

The straddle paradigm, which had dominated the scissors, eastern cut-off and western roll paradigms for years, itself became an alternative. The flop paradigm was completely 'in'. No one even had a chance to defend the old dominant paradigm.

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What exactly happened behind the scenes to make world tennis players opt for baseline play with double-handed backhands and massive topspin forehands in preference to the serve-and-volley game?

What exactly happened behind the scenes to make Bob McCarthy start running out wide in attack or to make Terry Wallace start kicking the ball so
quickly from the centre that its exact target didn’t really matter?

Surely these events didn’t happen without someone behind the scenes doing something?

We can usefully categorise these different revolutions in terms of the involvement of coaches and/or administrations.

Some revolutions in individual sports occur through genuine mavericks, individual playing revolutionaries, if you like, perhaps working quietly with a coach before bursting forth with their revolution at a public event, catching the administration of their sport completely off guard. The Fosbury revolution again provides a good example.

Some revolutions involve maverick play by individuals in team games which is either encouraged or at least tolerated by coaches but not necessarily directed by them. This category includes the McCarthy and Beetson revolutions in Rugby League and the Wallace and Farmer revolutions in Australian Rules. A bit of creative borrowing by players and/or coaches might go on, as in the way the Beetson revolution involved importing, modifying and perfecting a technique from English Rugby League but, where this occurs, there’s no need for a separate ‘behind the scenes’ category. These two categories - softly directed or non-directed maverick play in individual and team sports - involve flexible, aware coaching techniques and either flexible, aware administration or administration which doesn’t know what’s going on.

Another category focuses on individual coaching mavericks, coaches who stand alone as sporting revolutionaries. This category includes the ‘total defence’ and ‘total football’ revolutions in Rugby League. Jack Gibson - it’s hard to think of a better term than ‘coaching genius’ - was of course involved in both these revolutions. His ‘total defence’ paradigm changed the face of Rugby League in the 70s (when he coached St. George, Newtown and Easts). This paradigm introduced new patterns and new standards of defence.

The ‘total defence’ revolution was the basis for the ‘total football’ revolution. Gibson experimented with ‘total football’ - total defence combined with total attack (many more players running to create options, much more adventurous passing, use of the chip kick, and so on) in the late 70s and pushed it further in the 80s when he coached Parramatta. Gibson, of course, had a co-revolutionary in the total football revolution throughout the 80s in Warren Ryan (Newtown, Canterbury and Balmain).

This category - coach-directed revolutions - necessarily involves flexible, aware administrations. One unfortunate spin-off of this category has been the emergence of a cult of the ‘supercoach’, a situation where sports administrators (and spectators) are constantly on the look-out for the new coach who can solve all the performance weaknesses displayed by the players they administer (or follow). More sensible administrations will realise that coach-directed revolutions require careful analysis of the new paradigms involved, not mindless ‘super coach’ worship.

There’s still another category, one in which highly centralised administrations take the initiative and direct the revolution from the top. The tennis revolution is the ideal example. This revolution had its roots in the backrooms of European tennis, particularly in Sweden. Administrators decided, probably in the late 60s, that a European-style paradigm had to be developed to counter the serve-and-volley paradigm perfected in Australia and dominant throughout the world in the 50s and 60s.

Armies of coaches were trained in the new baseline paradigm and set about producing a ‘new breed’ of player. The success of this revolution barely needs mentioning. A string of tennis clones, from Borg to Lendl to Graf, have perfected the baseline game with double-handed backhands and topspin shots, fuelled by changes to racquet technology. The ‘Aussie’ paradigm and most of the Aussies have been left behind.

I think this example shows that revolutions can be manufactured by aware, powerful administrations. Whether this is the ideal type of sporting revolution should remain a matter for debate.

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Unification has been a cultural shock for Berliners. Mike Ticher reports that the ‘socialist’ East now seems in many ways more conservative than the West.

You know we have never really liked the Germans.” It’s a sentiment you might expect to hear in many parts of Europe in 1990, but perhaps not from Germans themselves.

But for young, leftwing Berliners, ‘German’ implies all the attitudes which they reject - it calls to mind the stereotype (which is so widespread outside Germany) of materialistic, dutiful, conservative, orderly and fundamentally dull people. Berlin has long been a centre for such non-conformist opinions, largely because of the large number of young men going there from West Germany to escape military service.

The self-consciously Left and alternative ‘counter-culture’ (a word which does not sound ridiculously dated in Berlin) which grew in the 60s and was an important impetus to the success of the Greens in Berlin, remains extremely strong among many young people, to an extent unimaginable in almost any other West European country, not to mention Australia. The signs are obvious even to a casual observer that West Berlin is one place where materialism and apathy have not overwhelmed grassroots political activity.

In Kreuzberg, the inner-city suburb which is the hub of alternative activity, the graffiti is ubiquitous and strident - anti-Nazi, pro-revolutionary movements all around the world, exhortations to solidarity among the residents and warnings to police not to raid squatted flats. In Berlin public swimming pools, there are signs urging women to report sexual harassment. The only national daily paper published in Berlin, the Tageszeitung (‘Taz’) is run as a co-operative, with equal wages for all, and broadly supports the Greens and others to the left of the SPD. The political manifestation of all this is the presence of the Alternative List (the Berlin equivalent of the Greens) in the ruling coalition on the municipal council.

Now, however, the German Left is going through a severe identity crisis, and nowhere more so than in Berlin itself. The catalyst, of course, was the opening of the Wall and Kohl’s subsequent rush to reunification which so dramatically seized, and still holds, the political initiative. For many Berliners, both East and West, the initial euphoria has rapidly given way to suspicion and antipathy.

In the East, as Westerners constantly tell you, “they want everything yesterday”. Threatened by growing unemployment, rising prices and no security of tenure in houses and apartments previously owned by people in the West, the East Germans have become rapidly disillusioned (although most certainly not to the extent that Kohl could possibly lose the election). In the West they talk of the ‘invasion’ by the Easterners which has made West Berlin intolerably crowded and dramatically worsened its already critical housing shortage.

Dorothea Hahn, a journalist on the Taz, explains: “It’s a completely prejudiced feeling [against the East Germans], but you have to understand how radical the change was. In the 1960s, my parents’ generation used to light candles in the eastern windows of their houses, in memory of their ‘dearly beloved brothers and sisters on the other side of the Wall’. Until 9 November there was this officially friendly attitude towards the East Germans, and no one had anything against them, but also hardly anyone had any actual contact with them. Then, all of a sudden, we are confronted with millions of them, most of whom I suppose have already visited West Berlin or West Germany. For Berlin it has been quite a cultural shock.”

For the Left in particular, the East Germans (or perhaps more accurately, the Prussians) represent everything archetypically German. What’s more, their ‘Germanness’ appears to have been exacerbated, rather than alleviated, by the experience of living under a nominally socialist government for 40 years. The experience of Claudia Rhein, a young West Berlin trainee video producer, is perhaps typical. She speaks of the “bad socialisation” of her boss, a 45-year-old Easterner, resident in the West for ten years. “His style is very authoritarian and aggressive, the women workers in particular find it hard to get on with him, because he has been unable to adapt to ideas of feminism and of democratic and cooperative ways of working which most young people in West Berlin are accustomed to,” she says. It is this ‘actually existing socialism’ which is now perceived to have fostered fundamentally reactionary social values.

Politically, of course, this has translated into a rejection of everything which the communists theoretically stood for and institutionalised, including feminism, internationalism and equality. East German racism, which has manifested itself in attacks on Vietnamese students and constant grumblings about the influx of Poles into the country, is viewed with horror by vehemently anti-racist West Berliners, accustomed to the constant reminders on the walls of “Never again fascism”.

For the Left in West Berlin, this realisation has produced a profoundly schizophrenic attitude to the East, described by Ralf Foeks, a former federal spokesperson for the Greens, as “a calamity for the Left-Green opposition”. On the one hand, the Left is concerned to retain whatever can be salvaged from the ex-communist state - social services, public transport, the right to abortion and so on. On the
other, they are shocked and frightened by the values of the people produced by that system.

As Dorothea Hahn puts it: "Many people in the West would have liked the East Germans to be different from what they are. Foeks is particularly critical of what he describes as the Left "wallowing in nostalgia" for the GDR, and especially of joint actions with the ex-SED (now renamed Democratic Socialist Party) against 'incorporation' of the GDR by the federal Republic.

Hahn echoes this failure of the Left to come to terms with the reality of the GDR: "I think very few of us knew the concrete dimensions of political repression, corruption, torture, social inequality - not because it was impossible to know, but because we simply didn't ask enough questions. We were far too convinced of the superiority of socialism."

The population of a unified Berlin is set to increase from 3.5 million to seven million before the end of the century (compared to 4.5 million before World War II).

This will put a huge strain on its physical resources. For West Berliners it will mean the end of their "splendid isolation", their subsidies from the federal government, their weighted wage packets and the special identity created both by the Wall and the vibrant alternative culture. The city will lose its fundamental function as a political symbol in exchange for a greater role in the German economy, particularly in such areas as government and the public service, banking, publishing and, perhaps, industry, of which it currently has very little. In other words, it will move into the real world and become more like any other large European city. It's easy to see how this loss of identity and privilege can help to induce the 'nostalgia'. "I think there will be very many social problems, there will be more crime in Berlin, lots of unemployment, lots of social inequality, more poverty and more homelessness," says Hahn. "In the long-term there will be underprivileged people, the underdogs of the future rich Germany.

"What was the GDR will become the economic 'south' of Germany, the slum of Germany. And who knows whether this will shift politics to the Left or the Right?"

MIKE TICHER, ALR's former advertising manager, is sojourning in Europe.

**Informing on infertility**

Romaine Rutnam reviews the meeting of feminist thought and the IVF controversy

I first began taking an interest in the conflicting issues raised by the development of In Vitro Fertilisation (IVF) technology when I attended the "Liberation or Loss?" conference in Canberra in 1986. Most memorable was the almost palpable hostility and distress I perceived among the audience at a plenary session, when an IVF client claimed: "I was born with the right to have a baby and nobody will take that right away from me if there is another way, including women's groups". Beatrice Faust wrote in Women, Sex and Pornography that 'the right to choose' sums up the women's movement. On the other hand, Robin Rowland's writings between 1984 and 1988 show her wrestling with the theoretical problems of balancing the value of that slogan in the campaign for women's access to save contraceptives and abortions, with her strong sense that women (and men) should not have the right to choose IVF, 'surrogacy', sex selection and other related eugenicist technologies. (See Corea et al, Man-made Women.)

Martin Golding's history of the notion of human rights notes the connection between the development of the idea of an individual's rights with that of capitalism "with the individualism it entails". He concluded by noting a problem for the concept of rights that emerged from the "inflationary" claims:

Perhaps we have had an inflation in our moral economy, an inflation in demands put in terms of rights, to the point that the concept of rights is beginning to lose its value as moral tender. We seem to need a new concept in order to be able to think clearly about these hard decisions. But what could this new concept be? (Bondman [eds], Bioethics and Human Rights, pp44-50.)

I'd like to suggest that the growing literature on feminist ethics can make useful contributions to the way we "think clearly about the hard decisions" on choices between reproductive (and any other) technologies. This literature offers not a new concept but a new perspective - norms by which we judge our choices and actions - on ethical values.

The basis of what has been called a distinctively feminist perspective on ethics is the germinal book by Carol Gilligan, In a Different Voice: Psychological Theory and Women's Development, which discusses her empirical research on moral development and decision-making.

She argued there were distinct differences in men's moral choices based on the language of autonomy, rights and justice. Women, by contrast, tended to be more concerned with other values like social interdependence, responsibility and non-violence in their decision-making. In a later essay, she prefers the terms "the justice perspective" and "the care perspective" to highlight the contrast in these two distinct means of reorganising our perception and changing our understanding of ourselves and our environments. These values arise from the daily activities which
women, primarily, have for centuries performed: caring and nurturing not only the powerful, menfolk, but also the powerless in societies - the young, the old, the disabled. Nancy Hartsock, for instance, suggested that this sexual division of labour could contribute to the fascinating distinction she found in the way male and female political theorists have talked about power. She notes in *Money, Sex and Power* that in the vast literature on power written by men, power is seen in terms of power over, or domination of others, while the very few women who have written about political power talk in terms of the power to, or empowerment of others. She suggests that the exclusion of men from intimate identification with others through childcare may explain why men have systematically privileged the intellectual habits of abstraction, compartmentalisation, and a denial of a role for the emotions in producing knowledge; why their values seem to protect the separation and opposition of individuals, which can so often lead to violence and a breakdown of human relationships.

No matter how these values arise, there can be no question that the skills and knowledges produced by women segregated into the private realm are constantly devalued by the organised “public” disciplines of ‘malestream’ science and medicine. Thus, age-old contraceptive, abortifacient and birthing techniques developed by women are devalued and set aside to make room for the modern “scientific” technologies, the dangerous effects of which the women’s health movement has catalogued for two decades now. (See Ehrenreich and English: *For her own good. 150 years of experts’ advice to women.*)

There are other important ways in which feminist ethics challenges traditional ethics. One is that ethics should be context-rich rather than ahistorical, should be concerned with judgments made in the full knowledge of power differences in particular situations instead of the balancing of abstract and timeless moral principles. So feminist ethics would judge IVF, for example, not in terms of abstract principles like the doctor’s duty to relieve suffering or the citizen’s right to health care or the right to life of the human embryo; they would also look at IVF’s effects on what it actually means for - the power relations within our society, between men and women, between rich and poor, for people of different races and so on. A related important distinction between traditional and feminist ethics is that while the former prides itself on developing universal categories like justice and rights, the latter argues for judgments which are embodied in distinct individuals. The ethical relevance of the fact that human beings have two different bodies, two sexes, has been developed by several Australian feminists, including Rosi Braidotti, Elizabeth Grosz and Moira Gatens.

The relevance of this insight to practical policy choices may be seen in the issue of career patterns for men and women. Using universal criteria like justice and equality, male policymakers who accepted the early feminist demands for equality in the workplace assumed, and acted upon the basis, that these patterns should be the same for both sexes. The tendency for feminists in the 60s and 70s to forget or postpone childbearing until their careers were well-established appears to have contributed to the increased demands for, and expression of rights to, infertility treatment (including IVF) in the 80s. An alternative policy, based on an acceptance of biological difference and limits, would encourage and support women to give birth at the healthiest physical time (in their 20s) and reorganise careers and other social institutions like childcare around that requirement. (See Anne Phillips [ed]: *Feminism and Equality.*)

It’s illuminating to note the differences between these feminist values and

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**Judy Horacek**

"Your government is on the verge of collapse - make a woman the premier" ... Yep, that’s all it says
those of Australia's IVF researchers. When Carl Wood, Australia's human IVF research pioneer, was interviewed by The Age the day after Candice Reed was born in June 1980, he was quoted as saying "This particular project is attractive in the sense that it serves two basic functions, the relief of human suffering - infertility - and the right to have children. But it is unattractive to health administrators because the percentage of success is so low". By portraying IVF as fulfilling basic human functions, and any opposition to it as thus inhuman, Wood courted and achieved public sympathy and financial support.*

From the early 1970s, the attitude of Wood and his colleagues was that it was their job to produce "more efficient reproduction and family planning", while it was a task for others to tidy up the ethical and legal aspects of their work after them. They suggested, for instance, that they could improve the efficiency of 'nature', women's bodies, by encouraging women in their 20s to have their eggs removed and frozen, and reimplanted years later (either in their own body or in that of a "surrogate") after their careers were well-established. This, of course, is "the medical model of health" at work, in contrast to the social view I used above.

It's possible that the supreme confidence Wood and his peers had in their benevolent efforts to enhance the mechanics of the human fertilisation process led to two notable omissions in their research practice, which I consider to have potentially harmful effects on the women who have chosen to try IVF. The first was Wood's failure to include any women in the group he set up around him to assist in developing his research protocol and procedures. This seems completely consistent with the general attitude of scientific experts that it is unnecessary to consult potential users (particularly those of the female sex) about how they might weigh up the possible risks and benefits of the procedure. In the case of IVF, this meant that no women were involved in the decision taken in the early 1970s that ovarian stimulation through clomiphene citrate was a lesser risk than repeated cycles of surgery under general anaesthetic. While this failure did not contravene the ethical standards governing medical research of that time (those found in the National Health and Medical Research Council's [NHMRC] Statement of Human Experimentation of 1966 and 1976), the second omission quite clearly failed to meet one of those explicit guidelines. This stated:

New therapeutic or experimental procedures which are at the stage of early evaluation and which may have long-term effects should not be undertaken unless full provision has been made for long-term care and observation [my emphasis].

In 1985 the NHMRC's Medical Research Ethics Committee noted of the Monash IVF program that there is no long term follow up of births, but made no further comment or recommendation on the matter. In 1989, two Melbourne IVF specialists were quoted in The Age as saying they knew of no research that had studied the long-term health effects on women of IVF. Thus, to date, Australia's IVF researchers and practitioners, as well as the guardian of their ethical practice - the NHMRC - can be seen to have failed to meet the standard of the feminist ethic of care or responsibility in this case.

The philosophical basis of this scientific hubris, what David Suzuki and Peter Knudsen have translated in *Genetics* as "a mix of bloated human pride and self-confidence", can be traced to the Biblical order for men to "have dominion over" and to "subdue" Nature. This task of controlling the natural environment and of pushing back its limits has been vigorously followed by European science since the time of Francis Bacon. The consequences have included the "miracles of modern scientific medicine" as well as the incredibly affluent and leisureed lifestyles of the rich in rich and poor countries alike, but at the cost of what is increasingly recognised as near-ecological catastrophe.

I began by noting that the conflict raised by some feminists by the slogan "the right to choose". Gilligan has noted the importance of the notion of rights in women's self-development in transcending the pervasive feminine ethic of self-sacrifice and responsibility to others, to include responsibility for themselves too. However, I agree with her view that our rights claims on society should be balanced by our sense of social responsibility to those who are the least powerful in our communities. Rowland has argued that the meaning of "the right to choose" is better expressed as "a woman's right to control". I find her substitution of the word "control" problematic, because it carries with it the connotation of the scientist's desire to dominate, have power over, nature. The problems are very real. I support Mary O'Brien's view that the chronological link between the flowering of feminism in the 60s and 70s and the greater availability of cheap, effective chemical and mechanical means of stepping over the limits of frequent childbearing in women's lives was no mere coincidence. It seems inconsistent for heterosexual feminists to choose to use existing science and medical technologies to minimise the risks to health of constant pregnancies and the pain of childbirth, or to become voluntarily and permanently infertile through sterilisation, but also argue that science needs to become "feminised", to become a process of knowledge-making that is not based on nature's domination.

Perhaps a way out of this dilemma can be found in the temporary restriction of medical research to priorities aimed at fulfilling the World Health Organisation's goal of reducing inequities in health through an empowerment of the least powerful groups in our national and global communities. Out of such an empowerment - the expansion of knowledge/power among women, aborigines, working class people, to enhance social solidarity and a balance of power between humans and our natural environment - may come a better understanding of what a sustainable scientific theory and practice might be.

ROMAINE RUTNAM is a Canberra academic who has completed a doctorate on aspects of IVF. This article is based on a talk she gave at the recent National Women's Conference in Canberra.

* In my PhD thesis I have documented how IVF was used by both Monash University and the National Health and Medical Research Council as a brilliant example of Australian scientific achievement.