

A Half Century of Maternity Care

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At the end of this session the participant will be able to:

1. Place current maternity policies and practices into a historical perspective.
2. Understand the difference between simple, complicated, and complex problems.
3. Recognize complex problems, and start to begin to commence a practical approach to solving them.

In my 80 plus years – that is lucky enough, just to have survived this long – I have seen a lot of changes in maternity care, some perhaps for the better, some for the worse. I embraced some of those changes, rejected and challenged others, including some that I had formerly embraced. Consistency is not always a virtue. Where the luck came in, is that the ideas that I challenged so often proved to be on the way out, and the bandwagons I jumped on often turned out to be on the way in.

I entered the maternity field in the 1940's, when twilight sleep was at its peak; when medical authority – medical hubris – reigned supreme. I chose to challenge both.

Lets start with **twilight sleep**, because that's where I came in. Twilight sleep originated in the early 1900's in Germany, by a Dr. Gauss, and 'perfected' by his colleague, Professor Kronig of the University of Freiburg. It might have quickly passed into oblivion like most obstetric fads, except that its time was right. It coincided with a major movement in the Britain and the United states, feminism. Women wanted their rights. They wanted the right to vote, and other rights too, including the right to painless childbirth. Twilight sleep hit a responsive chord in America, when two American women, Marguerite Tracy and Mary Boyd experienced painless childbirth in Freiburg, and demanded that American women should no longer be denied its benefits. They took their campaign to the public, first with a powerful 1914 article in McCall's magazine, then a book with a powerful title: *Painless childbirth : a general survey of all painless methods, with special stress on "twilight sleep" and its extension to America.*

So great was the desire for something, anything, to ease the pain of childbirth that the popularization of Twilight Sleep became a cause célèbre among suffragettes. One call to arms from 1915 read:

"The insistence of the American women that they shall have the benefits of the new method is bringing results. Keep on ladies! Hammer away with all your might. Emancipation day has come."

The New York Times joined in the cause with a series of editorials, accusing doctors who resisted the drugs of a callous indifference to women's needs and an exclusive preoccupation with their own convenience

The theory behind twilight sleep was deliciously plausible. It was known that morphine relieved pain, but the enormous doses needed to relieve the pain of childbirth could result in severe respiratory depression both for mother and baby. By using an amnesiac, hyoscine or scopolamine, a smaller and safer dose of morphine could be used, and although they might

still feel the pain, women would not remember it, so would be very happy. Medical opposition to its use was attributed to misogyny, and tied to the more general medical, social, and political subjugation of women.

Whatever the reason, medical opposition to twilight sleep was strong, but short lived. By the 1930's it was clear that there were many benefits to twilight sleep, to the medical profession as well as to the women. It brought the place of birth from home to hospital, and it placed childbirth firmly in the medical domain. It was a win-win situation, and everybody was happy. Well, almost everybody.

In **1947** I was an intern at the Vancouver General Hospital, a rotating internship, with two months on obstetrics, long enough to get the picture. Let me share it with you. There were two classes of doctors; specialists and 'only GPs'. There were two classes of patients too: private and teaching. Private patients went to their own doctor, either a general practitioner or an obstetrician, and had their baby the way he wanted her to. Teaching patients were looked after by the interns, who followed the orders of the residents, who followed the orders of the obstetrician. In either case, the woman had no say in the matter. Doctors, of course, knew what was best for women, and knew that every woman really wanted what really was the best, no matter what she thought, or said she wanted. (Sound familiar?)

When a woman went into labour, she went to the hospital, she was taken to her bed on a wheel chair, her husband or partner was sent away. She was put to bed and, after the obligatory pubic shave and enema, she got her medication. Of course all women needed twilight sleep. The only question was about which analgesic to use. This was determined by the standing orders of the doctor, which were the same for all of his patients. Most doctors used barbiturates in massive doses, so that women slept through their labours. Some doctors preferred rectal ether in oil, while others went for paraldehyde. Most used morphine, a few used the newfangled Demerol, and others still used heroin, which was still legal – and pretty effective, I might add. All prescribed the amnesiac, hyoscine. Twilight sleep was in.

No family members or companions were permitted during labour. This was probably a good thing. Hyoscine not only removed memory, it removed inhibitions. Women went wild, and had to be restrained. Interns and nurses soon became inured to the screams of the half-stuporous women, but to a loved one it would have been horrendous. Labour rooms sounded like a mediaeval torture chamber.

When the cervix was fully dilated, the woman was transferred on a stretcher to the delivery room, and given more profound analgesia with some inhalation technique. Nitrous oxide (up to 100%) was sometimes used, but more often open drop chloroform or ether was given intermittently with the contractions, until delivery was about to take place. At this time - let me quote our bible - Scott and Van Wyck, 1946 edition –

"a deeper, more continuous anaesthesia is necessary, to moderate excessive contractions, and to prevent too rapid expulsion of the child. The anaesthetic also prevents the patient's involuntary movements from interfering with the technique of the delivery."

Anaesthesia was not yet a respectable specialty in those days, and obstetrical anaesthesia was given by the intern, who was the lowest on the totem pole. I kind of enjoyed giving the anaesthetics for delivery. To the best of my limited ability, I made more use of verbal than

chemical analgesia, talking to the woman through her contractions, and using the smallest possible amounts of ether or chloroform that I could get away with without becoming the target of the obstetrician=s wrath. It was my first feeble attempt to buck the system.

The time was ripe. The natural childbirth movement, Grantly Dick Read's naïve approach and its more effective offshoot, Fernand Lamaze's psychoprophylaxis became stronger. Consumer groups like ASPO - *the American Society for Psychoprophylaxis in Obstetrics*; ICEA - *the International Childbirth Education Association* with its motto "Freedom of choice through knowledge of alternatives"; and the more radical NAPSAC – *National Association of Parents and Professionals for safe Alternatives in Chidbirth* sprung up all over. Like twilight sleep in its early days, the natural childbirth movement was strongly resisted by the medical profession.

But then, once again, wiser heads prevailed. If you can't lick them, join them. It became obvious that being 'awake and aware' was not only a good thing for women, it was a good thing for doctors too. With the rise of anaesthesia as a specialty, and the advent of epidural analgesia, twilight sleep became a relic of the past. Regional anaesthesia – usually given by specialists, of course – was in. Medical authority prevailed again. I knew something was wrong, but didn't know what to do about it. Very frustrating.

Frustration, a friend once told me, is a way of storing and conserving energy, until, suddenly the path opens – and you know that its time to move your ass.

Once again, a major stroke of luck, a serendipitous moment, the flapping of a butterfly's wing; a chance meeting at a Maternity Centre conference, with Iain Chalmers, an intense young Englishman, head of the tiny but prestigiously named National Perinatal Epidemiology Unit in Oxford. Iain had with him, and lent to me, a new book edited by Tim Chard and Martin Richards, called 'Benefits and Hazards of the New Obstetrics'. Something I had never heard of: randomized controlled trials. I stayed up all night reading it. Here was the evidence we needed to challenge the system, evidence to confirm what we intuitively knew. Evidence!

As the great Yogi Berra advised, "when you come to a fork in the road, take it". I did. I phoned Eleanor that morning, and asked her if she would like to spend a year in Oxford; asked Iain if I could spend a sabbatical year with him at the NPEU; asked the university for the time year off. All systems were go. There was no looking back.

Randomized trials. The new language, the path to knowledge. The first published randomized trial in health care was not published until the 1950s – long after I had graduated from medical school. Few trials were carried out over the ensuing decades. I, like most physicians at the time, was not aware of them.

Let me digress for a moment to review the background, the history of controlled trials. Although new to me, and to many of my colleagues in the 1970s, controlled trials have been around for a long time. In the bible, in the book of Daniel we read: Daniel purposed in his heart that he would not defile himself with the king's food nor with the wine which he drank... Then said Daniel to the steward 'Let them give us pulse to eat, and water to drink... Then let our countenances be looked upon before thee, and the countenances of the youths that eat of the king's food. And at the end of ten days their

countenances appeared fairer, and they were fatter in flesh than all the youths that did eat the king's food."

By today's standards, Daniel's trial was not a very good one. There were no precautions taken to avoid bias in the comparison groups, the number of participants was small, and the outcome measurements were not ascertained blindly. Follow up was very short. Nevertheless, the evidence was accepted. The findings were sufficiently dramatic to convince the sceptics. The Israelites got their kosher food, and the trial was published in what became an international best seller.

Clinical trials have come a long way since Daniel's time. It should have been obvious even to 20th century clinicians that in order to evaluate the real effects of any intervention, to compare those effects to the natural history of the condition being treated, we needed a comparison group, a control group. But it was not obvious, and the 'best evidence' for many many years consisted of case reports or uncontrolled case series.

Moreover, even when the need for controls was recognized, early comparative studies suffered from two major sources of error: random error, the play of chance, the luck of the draw, that could shift results from the truth in any direction willy nilly, so that our estimation of an effect lacks precision; and bias, a systematic deviation from the truth in one direction or another intentional or unintentional, from any cause, known or unknown, intentional or unintentional, so that our results could be seriously misleading..

It took a long time to realize that we can minimize the extent of chance error only by looking at adequately large groups of subjects. And we can minimize bias, of systematic error, only by randomly allocating participants to one of two or more alternative forms of treatment. The randomized controlled clinical trial.

The superior strength of the randomized controlled trial over biased authority is intuitively easy to grasp, but the approach was strongly resisted for a long time. Understandably, and perhaps validly, experienced clinicians felt threatened by the thought that they might be wrong. And something seemed vaguely wrong about letting treatments be decided by chance. Didn't doctors know best?

Some didn't think so. A voice in the wilderness was Archie Cochrane, a Welsh epidemiologist, who wrote:

"It is surely a great criticism of our profession that we have not organized a critical summary by specialty or sub specialty, updated periodically, of all relevant randomized controlled trials."

Cochrane went on to rank the various medical specialties by the extent to which they based their practices on valid evidence of effectiveness. He had no hesitation in awarding the first prize to the chest physicians, who introduced the antibiotics that so successfully combated tuberculosis, only in the context of carefully conducted randomized trials. He had more difficulty in ranking the other specialties, who were all pretty careless with their cavalier disregard for evidence. But he picked on obstetrics to win the booby prize, the wooden spoon. He justified his choice:

"The specialty missed its first opportunity in the sixties, when it failed to randomize the confinement of low-risk women at home and in hospital. Then, having filled the emptying

beds by getting nearly all pregnant women into hospital, the obstetricians started to introduce a whole series of expensive innovations into the routines of pre and postnatal care and delivery without any rigorous evaluation. The list is long” Cochrane continued “but the most important were induction, ultra-sound, fetal monitoring, and placental function tests. The specialty reached its apogee in 1976 when they produced 20 per cent fewer babies at 20 per cent more cost:”

Iain Chalmers had worked with Cochrane in Cardiff, and had come under his spell, just as I came under Iain’s spell. What started out to be a one year sabbatical turned into a 15 year trans Atlantic commute. I don’t know if Iain envisaged the exponential growth that was to occur of his fledgling National Perinatal Epidemiology Unit, or its international impact first on maternity care, then on health care as a whole. Certainly I didn’t.

Our work in Oxford was based on two fundamental principles: first, that the only justification for practices that restrict a woman’s autonomy, her freedom of choice, her access to her baby, would be clear evidence that these restrictive practices do more good than harm; second, that any interference with the natural process of pregnancy and childbirth should also be shown to do more good than harm. These seemed eminently reasonable to us at the time.

We began with the assumption that many widely accepted, firmly entrenched, perinatal interventions were based on the biased opinions of care providers, who sincerely believed that they did more good than harm, but whose belief was not supported by valid evidence. This was confirmed, we believed, by the way that practices differed so dramatically in apparently similar settings, cultures, and institutions, and among individual practitioners; a variability far greater than could be accounted for by differences in the available resources or by the populations served. We assumed that variability in practice reflected either inadequate evidence, or inadequate knowledge of the evidence. That assumption was probably wrong; things are usually more complicated than they seem. But more of that later.

Anyway, we set out with the simple plan of collecting all the randomized trials of interventions in perinatal medicine, extracting, analyzing, and collating the results of these trials, and disseminating those results for use by any one, providers and receivers of care during pregnancy and childbirth alike. Henceforth, care would be based on rational knowledge, and improve accordingly. Did I say ‘Simple’? No way. The concept was simple, but implementing it was not. It was amazingly complicated, much more so than we had anticipated. It required diverse skills and resources, and the help of a cast of thousands.

First we had to find the trials. No easy task. If we missed some trials we might get a biased estimate of the true effect of an intervention. We found that a Medline search only picked up half the randomized trials that we uncovered with a hand search of selected journals, so we had to hand search back issues of all journals that might contain reports of trials. Searching English language journals was not enough, because we could not assume that all properly controlled trials were published in English. We had to enlist an army of searchers in other countries, in other languages. Then we had to get the articles translated.

We knew some trials, particularly trials with negative results, might not have been published. We had to try to locate them. Iain wrote to some 42,000 obstetric and paediatric researchers around the world, asking if they had carried out any trials that had

not been published. It was an enormous job, particularly as he believed he would be more likely to get a response if he personally signed each letter requesting information. Then we had to find ways to access the so called gray literature, like conference proceedings, doctoral theses.

Once we got reprints of the trials, we had to read them all, and classify them by the population served (who the interventions to be tested would be used for), the details of the intervention, and the effects or outcomes that they looked for. For this we had to develop our own classification, a major feat in itself. We then had to extract the results of the trials, statistically combine the results of trials of similar interventions in similar populations, to give us large enough numbers to reduce the risk of chance error. Thus we would end up with statistically significant estimates of the effects of an intervention, which could then be used to rationally guide practice.

Finally, we had to disseminate the results of our efforts. We started out with a monograph on antenatal care ('Effectiveness and Satisfaction with Antenatal Care') which was to be the first volume of what was to be a series of monographs on the various stages of pregnancy and childbirth. Fortunately, by this time computers became available, which made our complicated job more feasible, and we settled for a regularly updated electronic database, (The Oxford Database of Perinatal Trials, **ODPT** to its friends). This in turn became the basis for our enormous, two volume encyclopaedic book, '**Effective Care in Pregnancy and Childbirth**'

Archie Cochrane was most gracious. Just before he died, wrote the foreword to our book, saying:

"The systematic review of the randomized trials of obstetric practice that is presented in this book is a new achievement. It represents a real milestone in the history of randomized trials and in the evaluation of care, and I hope that it will be widely copied by other specialties. I now have no hesitation whatsoever in withdrawing the slur of the wooden spoon from obstetrics."

Alison Macfarlane, as statistician at the NPEU objected, not to the project, but to the format. She said "your book is not only two volumes, it is too expensive for women to buy, too full of jargon for them to understand, and too heavy for them to lift". So we produce a condensed, paper back version, leaving out the references, and called it a 'Guide to Effective Care in Pregnancy and Childbirth'. It has been fairly popular, has gone through three editions, and has been translated into several languages.

Our work had a great academic impact. Reviews were hyperbolic: Some described it as 'must reading'. Others went further: 'the most important obstetric text of the 20th century'. 'the most important work in obstetrics since Smellie's 18th century treatise on midwifery'; How laudatory can you get? One went all the way, and called it "the new obstetrical bible". Daniel would have been proud of us.

It would be hard to pick up any issue of any obstetrical journal in those years without finding a reference to ECPC. The British Medical Association awarded the paper back version the prize for the best general medical book of the year. In 1991 the Milbank foundation convened a special meeting in Washington, to consider the impact of the work on the future

of obstetrical care in the United States. I think that half the members of congress attended, as well as heads of important government committees and obstetrical organizations.

One might think that with all that positive publicity, evidence based obstetrics would have a big effect on obstetrical practice. Not so. No way. Despite the widespread dissemination of the evidence that we had so carefully collected, and the accolades our work was receiving, its influence on practice was 'Diddley squat'. 'Gornisht fon gornisht'; Niente. Nada. Nothing.

What was going on? We couldn't understand it. The evidence was clear, it was available, it was known. Why wouldn't people listen? We didn't know, but other, wiser, more astute people knew.

- Jonathan Lomas knew the reason. He said "there are all sorts of things go into decisions about policy. Evidence is not one of them".
- Luella Klein, the president of ACOG, knew the reason. At the special Milbank meeting, while the academics were all raving about ECPC, she told the assembled meeting in no uncertain terms. "A \$450.00 book, written in another country" she said, "is unlikely to have an effect on American physician behaviour. But then" she went on "neither is anything else". How right she was.

Yet change was in the wind. Evidence based medicine, a term originated by Gord Guyatt in McMaster University in the early 90's, became an effective challenge to entrenched authority, to authoritarian practices. Sadly, there are still a lot of people who have not yet appreciated its immense contribution. It took a long while for those in power to realize that reliance on evidence was in their own interest, as well as the interests of patients. It replaced the art of medicine with the science of medicine, the healer with the scientist.

Unfortunately, in some circles, evidence based medicine has become a new orthodoxy, almost as inimical to human health as the authority it sought to replace. A lot of people have not yet learned to recognize its limitations, the linear, cause and effect relationship model on which it is based, its inherent reductionism; its assumption of other things being equal. They are not. Randomization can take care of bias in allocation, but nothing can control for the sometimes unmeasurable differences in context, or the effects of choice of outcomes examined. We can only measure what we look for. Evidence based is a necessary, but not a sufficient approach to improving maternity care.

Improving maternity care, or moving it in the direction that accords with our human values, is not a simple task, nor a complicated one. It is, rather, a complex problem, a problem which I would like to explore with you, historically, philosophically and pragmatically.

But first, I had better explain what I mean by simple, complicated, and complex problems, and try to explain the differences between them. And for this, I want to thank Sholom Glouberman, who has written so clearly about this, and who I unashamedly plagiarize.

Simple problems, like baking a cake, are – well, simple. You find a good recipe and follow it. It's not necessarily easy, but it's simple. You have to have the recipe, you expect the recipe to have been tested, and you replicate it. You don't have to have a lot of experience, although having some expertise will increase your success rate. Recipes produce standardized products, the best recipes give good results almost every time, and if you follow a good recipe carefully you can be pretty optimistic about the outcome. Like

antibiotics for infections, transfusions for blood loss, caesarean section for absolute obstruction to birth, narcotics for unendurable pain.

Complicated problems like, say, sending a rocket to the moon, are a lot more complicated, difficult, but inherently soluble. A simple recipe is not enough, you have to have exact formulae. You require a high level of expertise in a variety of fields. Successfully sending one rocket does not guarantee success with the next, but increases your assurance that the next will be OK. But most rockets are similar in critical ways, and if you have the precise methods, a good team with sufficient expertise, once again you can again be pretty optimistic about the outcome. Rockets can be sent to the moon. Obstetricians can deliver babies, caesareans can be fairly safe, and epidurals do relieve pain without putting the woman to sleep. And systematic reviews proved reliable evidence. Most of the time.

But **complex** problems, like, say, raising a child, are entirely different. Recipes, formulae, have a very limited application. Raising one child provides experience, but gives you no assurance of success with the next. Expertise as a parent can contribute to the child's development, but is neither necessary nor sufficient to assure success. Every child is unique, and must be understood as an individual. No matter how good you are, you can never be certain about the outcome. Nevertheless, you can, and should remain optimistic. Somehow your two year olds grow up to be students, and your teenagers become responsible adults.

Once, believe it or not, medically speaking, things were very **simple**. Problems were serious, but simple. When you got sick, you either got better or you died. In those good old days, the first half of the 20th century, obstetrical problems were simple, and we could address them with simple solutions. Magic bullets.

- Women giving birth were dying of haemorrhage; solution: blood transfusions.
 - They were dying of infection; solution: antibiotics.
 - Obstructed labour killed women. Solution: Caesarean section.
 - Giving birth was painful; solution: twilight sleep.
- Simple solutions to simple problems. All you had to do was to find and follow the recipe. It worked. Maternal mortality dropped from so many per 100 births to so few per 100,000 births, and women could sleep comfortably through their labour and delivery.
- My era, the last half of the 20th century was more **complicated**. It was a mechanical age, in which we looked on the body as an intricate machine, an age in which we developed the host of complicated mechanical solutions we needed to address the complicated the mechanical problems.
- Fetuses and newborn babies were dying; solution: a host of screening and diagnostic procedures to unearth pathology at any cost. A normal pregnancy became only a state of inadequate diagnosis.
 - Women didn't like sleeping through labour and missing out on the birth; solution: epidurals so they could be awake and aware;
 - GPs couldn't manage all these complicated interventions; solution: train specialists, anaesthesiologists, obstetricians; Maternal fetal medicine specialists!

Once again, we were successful. Our complicated answers yielded productive responses to our complicated problems, although we did run into some diminishing returns.

- Perinatal mortality dropped from about 16 per thousand to 7 or 8 per thousand, or, to phrase it more positively, a woman giving birth increased her chance of taking a live baby home from 98.4% to 99.2 or 99.3%.
- Obstetricians replaced family doctors as the usual attendants at birth, and obstetricians themselves changed from being primarily former GPs with special aptitudes in maternity care, to specially trained specialists. (specialist: a doctor who learns more and more about less and less, until he eventually knows everything about nothing).
- Twilight sleep was replaced by epidurals, given by specialist anaesthesiologists.
- authoritarian opinion was replaced by evidence from controlled trials. At least sometimes.
- Messy and inconvenient vaginal births were replaced by scheduled and efficient caesarean sections. We applauded – or watched in horror (you choose) as the caesarean rate rose from 2% to 25%, or even higher.

Anyway, enough of history. History is all water under the bridge, except, perhaps, for the lessons we may learn from it. One lesson, perhaps, is that evidence is not enough. Data are only the points we chose to observe, and sometimes they are not the really relevant points. And if you torture data long enough, they will confess to anything. Evidence is very useful, but we tend to use it like a drunk uses a lamp post – for support, rather than illumination.

Our hope for the future resides in our recognizing, and appreciating the complexity of the problems we face.

A couple of maternity care examples: Most of the controlled trials on nutritional supplements for pregnant women, even in chronically malnourished populations, showed no benefit in terms of maternal or perinatal mortality, of preterm births, of low for gestational age birth weights, of any of our measurable factors. Are we to draw from this the conclusion that we should not feed hungry or poorly nourished pregnant women? I hope not. We recognize the inherent complexity of the problem, we realize that there are a host of social and family relationships involved. Some of these we might recognize, such as a woman's tendency to share, perhaps to give her supplements to others in her extended family. Other factors, such as local or cultural customs that may influence her to reject the supplement, or to eat less of other foods so that more would remain for others, might not come to mind. For all our advances in nutritional science, nutrition is a complex phenomenon.

A more topical example might be the famous, or infamous, depending on your point of view, breech trial. A composite index of perinatal morbidity was reduced by caesarean section. So? Should we draw from this the straightforward conclusion that all babies presenting as a breech should be delivered by caesarean section? Some, no doubt, will say yes. Others among us may recognize that there is more to the problem, many other inter relating factors such as the meaning of caesarean to the woman, to the family, to society, effects on future pregnancies, effects on practitioner skills, the specialist/family doctor/midwife/patient relationships, on societal attitudes towards childbirth. An apparently simple, in reality very complex problem.

Despite the uncertainty associated with complex problems, they can be approached with optimism; we do look forward to raising a child.

We get into trouble when we mistake a complicated problem for a simple problem, or a complex problem for a complicated one, and try to employ linear, cause and effect,

solutions. Rational solutions are seductive. They provide some clarity, but can lead to investigations that are poorly equipped to address complex systems, that look in the wrong places. Sort of like looking under the street light for your lost car keys because the light is better there, even though you know that you lost them farther up the street where it is darker.

So. Maternity care, like all health care, is a complex issue. If a rational approach will not lead to improved maternity care, should we give up? Is it too dark to look in the right place? Then we have to provide more light, rather than continue to look in the wrong place. Once we recognize this complexity, and realize that we will not find the answers in simple ways, relying on authority, or in complicated ways by assembling large bodies of evidence, we can look for ways that might be more productive.

Our present system, imperfect as it is, has undergone constant changes over the years, the decades, and the centuries, and many of those changes have been for the better. Many of our practices are effective, and work well. We can work to strengthen and reinforce those practices. Others have not had the desired effect. We can work towards eliminating them.

Our job is to find what works locally, in our own community, with our own clientele, what accords with our own values. We should find the local providers and users of care who identify with our values, and legitimize their work by recognizing and supporting them. We should try to identify small, potentially solvable, problems, hypothesize solutions, and try them out. We should make small changes and constantly check whether or not those changes are in the right direction. Then go back and try again.

Dare we be optimistic? Rational thinking tells us no, tells us to be profoundly pessimistic. Maternity care, like all health care, reflects the values and orientation of our wider society. And our wider society, to say the least, leaves us very uncomfortable. We are faced with wars, terrorism, abrogation of civil rights. In our so-called democratic countries, we have elected short sighted and narrow minded leaders, and seem to have no viable alternatives. We have perpetuated poverty, intolerance and injustice. We are depleting our planet, self destructing our species. Mutual annihilation stares us in the face.

Dare we be optimistic? Rather, I say, dare we not? Having a baby is the ultimate expression of optimism, of facing, solving, and rejoicing in, a complex problem. And throughout the world, women continue to have babies.

I rest my case.