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Background

The physical and social environments encountered from preconception to birth exert powerful influences on physiological function and risk of disease in postnatal life. Epidemiological evidence gathered from a variety of sources have confirmed that lifestyle diseases; such as heart disease, cancer, gastrointestinal disturbance, diabetes and various neuro-behavioural anomalies, need to be understood within the contexts of family and community life, socioeconomic status and preconceptional/prenatal development (Gluckman et al., 2005). In basic terms, epigenetic influences (that is, all the external environmental variables that regulate gene activity) modulate normal developmental processes. Since epigenetic effects are operative at any time during the differentiation of the gametes, the wellbeing and living conditions of both parents from the time of gamete formation to the conception of the offspring are crucial, as is the mother’s situation during pregnancy and lactation. It is, therefore, important to highlight that the heritability of complex behavioural, dietary and other adverse epigenetic effects on development may permanently impose a vulnerability to mental and physical illness in the offspring, even to a second generation (Jiang et al., 2004). Manifestly, lower social standing provides fewer opportunities, less training and decreased flexibility in decision-making which, in turn, predisposes the body to stress-related physical and psychological disease. Being at the bottom of the social scale, whether provoked by poverty (lower income, lower education, poorer medical care, poorer housing), or advanced by harmful lifestyles (drug dependence, social disengagement, depression), is associated with high rates of morbidity and mortality (Singh-Manoux et al., 2003).

Numerous sources have established that the greatest effects on individual and community health result from environmental degradation and social injustice operating in concert. Lack of control over one’s life synergises harmful dynamics of marginalization, alienation, resentment, depression and environmental deterioration. Self-trust, on the other hand, is empowering as it provides confidence from the freedom to construct solutions suitable for life’s challenges (McEwen and Lasley, 2003). The present paper’s objectives are to highlight equity issues as they affect human reproduction across generations and to update recent insights that sustain, or otherwise, the health-wellbeing continuum, as recently reviewed (Pollard, 2005). In order to reach responsible ethical positions, accurate biological information must be intelligible and communally accessible. It is in this context that I invite the reader to access my web portal at http://www.bioscience-bioethics.org/ which provides free admittance to educational material in the area of stress physiology, reproduction, developmental toxicology and environmental science, and other useful links for those interested in bioscience ethics and bioethics.

Socioeconomic Disadvantage across Generations: The Situation

It is well recognized that events during gestation (as indicated by birth weight and placental weight) and infancy (as indicated by growth in the first year) are associated with the risk of lifestyle illnesses in middle and later life; however, equally compelling evidence that birth weight is associated with later socioeconomic disadvantage, is not so well publicized. For example, comprehensive surveys such as the 1958 national child development study, which correlated birth weight with social status in children resident in Great Britain (Bartley et al., 1994), provide us with challenges that demand just solutions regarding social deprivation and its consequences. The study established that children weighing under

2,721 g (6 lb) at birth were more likely, if they survived to ages seven, 11 and 16 years, to be living in overcrowded households devoid of possessions and without sole use of basic amenities such as an inside toilet, hot water supply, and a bathroom (Bartley et al., 1994). Importantly, the association between birth weight and socioeconomic circumstance was found to be graded; that is, the lower the birth weight the poorer the living conditions after birth (Bartley et al., 1994). More recently, interest has focused on the origin and development of lifestyle diseases according to race as a social, not biological, construct. Overall, significant relationships exist between ethnicity/race and failing health and, conversely, health-promoting behaviour is inversely associated with self-reported racism (Paradies, 2006a). Fourth world indigenous groups and African Americans reported that racism typically preceded harmful health behaviours and chronic physical and mental lifestyle diseases, rather than vice versa (Paradies, 2006ab). For those not familiar with the term ‘4th world indigenous groups’, it refers to all Indigenous peoples numbering about 250-350 million worldwide.2

In hindsight, it is patently obvious that if we are to address the combination of risks attributable to persistent developmental problems and socioeconomic disadvantage, experiences from preconception to birth through to adulthood, have to be taken into account. The following specifics relate to the Indigenous peoples of contemporary Australia but at the same time also expose the universality as described above.

Many Indigenous Australians experience levels of disadvantage and ill-health akin to the poorest nations on earth. Entrenched poverty, welfare dependence, social breakdown and unacceptably high rates of morbidity and mortality are reflected in intergenerational disparities in socio-economic wellbeing, lifestyle and access to health and other services. The current reprehensible situation, as commonly believed, is not only consequent on past inequities but also on present marginalization and neglect. Prior to the social upheavals caused by incoming Europeans, Aboriginal people lived in reasonable stability and enjoyed better health than that experienced in Europe at the time. As well as the loss of culture and land, the introduction into the country of infectious diseases such as smallpox, syphilis, measles, whooping cough, scarlet fever, tuberculosis and influenza has had dramatic impacts on Indigenous health and wellbeing. Despite progress being made, there’s still a very long way to go before the goals of social equity, equality of opportunity and fair division of resources are reached.

From the Australian Bureau of Statistics3 we can access the following figures. Fifteen percent of households with Indigenous person(s) are considered overcrowded requiring at least one extra bedroom, compared to 4% of other households. The level of infant mortality in the Indigenous population is three times the national average. Babies weighing less than 2,500 grams at birth are classified as being of low birth weight; and in 2001, babies of Indigenous mothers were twice as likely to be of low birth weight (13% of births) than babies of non-Indigenous mothers (6%). In early to middle age (25-64 years) the morbidity and mortality rates from hypertension, cardiovascular, respiratory, renal and metabolic (diabetes principally) diseases are six to ten times higher than that for the population at large. High kidney failure rates can be attributed to chronic systemic malfunction resulting from hypertension and diabetes (Hoy et al., 2005ab).

Drug and alcohol abuse and high rates of unemployment are severe social problems within the Aboriginal communities. The Australian population, like many Western societies, most commonly uses and abuses legal drugs, particularly alcohol and tobacco; these drugs are associated with more chronic illness, disease, accidents, social problems, unemployment and days off work than all other drugs together (Brown et al., 1986; Johnson and Ait-Daoud, 2000). Aboriginal people in Australia also mainly use legally obtainable substances: alcohol, tobacco, analgesics, solvents and kava, although illegal drug abuse among urban Aboriginals has also been reported (Brady, 1992). In remote areas, availability narrows the range of substances used, however, alcohol, tobacco, inhalants (particularly petrol), kava, and methylated spirits are regularly available, even in remote bush communities. For reasons of general availability, cheapness and lack of access to other substances, the practise of inhaling volatile substances, specifically petrol, is more prevalent in remote Aboriginal communities than in urban or rural populations (Brady, 1992).

In January 2005 British Petroleum introduced into the market a non-sniffable fuel called Opal designed to reduce petrol sniffing in remote Indigenous communities. Opal is useful in mitigating petrol sniffing as

3 http://www.abs.gov.au
it has low levels of aromatic compounds that generate the subjective feelings of pleasure and happiness - or “high”- pursued by the sniffer. The “high” is brought about by an artificially-induced imbalance of the brain’s neurotransmitters that normally control emotional stability and when disrupted syndromes of depression and mania may develop, particularly following regular abuse (Pollard, 2003). Reduced engine emission of toxic substances such as benzene and sulphur also has environmental benefit. Unfortunately, cannabis abuse is on the rise as previous petrol sniffers switch onto what is more readily available.

Drug rehabilitation in combination with the relative remoteness of a significant proportion of the Aboriginal population has serious implications for health and wellbeing. Twenty five percent of Indigenous Australians live in remote and very remote areas of the country compared to 2% of the non-Indigenous population. Access to preventative health programmes and services such as health clinics, hospitals, schools, nursing homes, is more difficult in remote and very remote areas. As a consequence of neglect by disengaged adults and basic preventative medicine, Aboriginal children are at a serious disadvantage at school where entirely preventable or controllable health problems such as simple eye and ear infections, asthma and diabetes become chronic conditions seriously affecting quality of life issues early on in life. The Australian Bureau of Statistics also reveals that education is a long-term casualty of the living conditions of Indigenous peoples. Aboriginal school retention rate is 25-50% less than for other groups and university attendance in 2001 was 5% compared to the general population’s 23%. As a result, Indigenous people are almost three times more likely than non-Indigenous people to be unemployed or employed in a casual, low-income capacity. Neglect of education automatically reduces employment opportunities, which in turn undermines socio-economic status and community health.

It’s no surprise, given existing conditions, that the average life expectancy for Aboriginals is 15-20 years below that of the general population. A comparative perspective shows that a person from Nigeria or Bangladesh can expect to live about ten years longer than an Indigenous Australian, or that a present-day Indigenous person has about the same life expectancy at birth as the whole Australian population had in the early 1920s (Howitt et al., 2005). Deaths from external causes such as accidents, suicide, homicide and assault, account for one in every six registered Indigenous deaths and this astonishingly high rate is considered a conservative estimate because of substantial under identification of Indigenous deaths (Howitt et al., 2005). Scandalously, suicide is two-to-three times more common among the Aboriginal and Torres Strait Islander peoples and five-to-six times more prevalent among Indigenous youths compared to non-Indigenous youths (Hunter and Harvey, 2002). Although Indigenous people constitute only 2% of Australia’s population, they account for 20% of the prison population. It’s not uncommon for young offenders to move through the depressing cycle from juvenile correctional services to imprisonment only to re-offend on release. The Royal Commission’s recommendations into Black Deaths in Custody have helped to reduce suicide rates of Aboriginals under arrest; however, the striking imbalance of incarceration remains unchanged (see section on ‘Circle Court for Aboriginal Punishment’).

Despite popular belief, it’s worth noting that victims of Aboriginal crime are mostly other Aboriginals. This was well substantiated when in May 2006 several hundred Aboriginal people were forced to live as refugees in their own community following gang violence on the streets of Wadeye, a remote Aboriginal community 250 km southwest of Darwin. “Soul-destroying living conditions experienced by Indigenous Australians in some outback communities has reached such hopelessness that even the Vatican began paying attention when Pope Benedict XVI urged the Federal Government to actively address “the deep underlying causes of their plight”. The Pope also expressed the opinion that the way to lasting reconciliation is through the healing process of “asking for forgiveness and granting forgiveness”.

Intrauterine Programming: A Mechanism for Conveying Epigenetic Determinants Across Generations

From the biological perspective, health and ill-health are not alternative states; rather they are part of the same continuum where genetic and epigenetic influences sustain, or derail, normal reproductive processes triggering lasting legacies in the next and subsequent generations. As described in the introduction of this paper, we inherit more than just our genes from our ancestors. Inadequate control over the decision-making in one’s life generates a destructive interplay of social, physical, economic and environmental (epigenetic) factors that undermines the determinants shaping the wellbeing continuum. Like all of us, foetuses have mechanisms by which they adapt to deteriorating environmental conditions brought about by parental distress, drug abuse, disease, nutritional deprivation and non-adaptive lifestyles. In essence, normal development is disrupted by harmful influences and for those surviving their prenatal challenges, the cost maybe a struggle with long-term health consequences. Adverse reproductive effects manifest themselves through reduced fertility, early miscarriage, foetal death, malformation, retarded growth and organ dysfunction together with the delivery of small, intrauterine growth-restricted, weaker, slower in development infants (Pollard, 2005). Growth-restricted infants also have a higher than normal risk of developing diseases of adaptation such as hypertension, ischaemic heart disease, diabetes, depression and increased vulnerability to drug addiction in adult life (Pollard, 2005).

The phenomenon whereby suboptimal intrauterine growth may alter foetal development is variously referred to as “foetal programming” or “developmental programming of adult health and disease” or just “programming” and occurs when the normal pattern of foetal growth is disrupted in response to unfavourable intrauterine conditions (Pollard, 2007). Transmitted via placental communication systems, particularly with glucocorticoid stress hormone involvement, adverse epigenetic influences impose foetal survival-enhancing trajectories in utero albeit at an increased risk of adult-onset degenerative diseases. Glucocorticoids can act directly on genes and indirectly through persistent differential effects on the hypothalamic-pituitary-adrenal axis which, in turn, influences the stress response throughout the course of postnatal life (Kapoor et al., 2006). Environmental stressors that cause permanent developmental dysfunction of the foetal brain are particularly disturbing. Intellectual and behavioural damage caused by prenatal exposure to poisons such as petrol, nicotine, alcohol, cocaine and marijuana cannot always be detected early in postnatal life with vital diagnosis being delayed until the children are expected to perform tasks involving attention processes such as learning and memory, and every day physical skills like eye-hand coordination essential in ball games and bicycle riding.

Foetal adaptation is subject to genetic resilience and if the limits of genetic adaptability are exceeded, foetal growth retardation and/or organ damage may result. Should epigenetic influences adversely affect the sexual differentiation of the foetal germ cells, then a changed genetic programme may be perpetuated in the offspring of subsequent generations creating a biological mechanism for the grandparents’ lifestyle to effect health and wellbeing of their grandchildren. It is sobering to note that increased intergenerational risk of preterm delivery and low birth weight has been documented in African-American third generation children born of parents of high socioeconomic status (Foster et al., 2000). The final severity of the developmental damage depends on individual genetic predisposition and whether the defect can be transmitted to a subsequent generation. It should also be noted that certain behavioural anomalies may take more than a generation to discover. Conversely, reproduction under good conditions creates a positive force in shaping human identity across the generations.

Critical periods in intrauterine development are those periods during the development of organs, or organ systems, when they are most sensitive to external influences. Exposing an organ to a toxic substance or other disturbing influence during its particularly critical period, results in maximum developmental damage. It took the thalidomide tragedy of the late 1950s and early 1960s for scientists to fully realize that not all congenital malformations have a genetic cause. Of pregnancies that proceed far enough to be detected clinically, about 15-20% are subsequently lost by spontaneous abortion or miscarriage, usually during the first three months or first trimester. The majority of all spontaneously aborted embryos and foetuses have chromosomal abnormalities. This contrasts markedly with a 5% chromosomal abnormality rate found in stillbirths, clearly illustrating the natural in utero selection process that eliminates the majority of chromosomal damaged conceptions. The aetiology of human
malformations at birth includes mutant genes, environmental agents and a large category labelled unknown. The causes of most human congenital anomalies at birth are unknown because these, as for the majority of common disorders such as heart disease, diabetes and cancer, are multifactorially or polygenetically inherited; that is, result from a complex combination of intrauterine programming strategies in response to genetic and epigenetic variables.

Prenatal drug exposure, low socio-economic status, marital and family discord, maternal depression and paternal criminality have all been cited as risk factors for physical, academic, social and emotional problems in childhood (Biederman et al., 1995; McIntosh et al., 1995; O'Connor et al., 2002; Conners et al., 2004.). In circumstances of heightened, prolonged stress and weakened means of defence, the sufferer may seek the escape that mind-altering, psychoactive substances can provide. Simply expressed, those who become dependent on alcohol or drugs are using these substances as a medication to calm feelings of anxiety, anger, alienation or depression. Differences in overall reproductive health often have their origin in early life. For instance, an association has been made between chemically-dependent women seeking counselling for problems related to substance abuse, and their childhood sexual abuse (Bensley et al., 2000). Similarly, men are more likely to seek help for the consequences of sexual abuse (depression, alcoholism) than for the abuse itself and secondary school students who reported higher levels of emotional distress subsequently had the highest rates of substance abuse (Tschann et al., 1994).

We should never forget that poverty itself delivers emotional blows to children: poorer children at the age of five are already more fearful, anxious, and depressed than their better-off peers, and have more behavioural problems - a trend that continues through their teen years. The stress of poverty corrodes family life resulting in fewer expressions of parental warmth, more depression in mothers (who are often single and jobless), a greater reliance on violent outbursts and reduced quality time with the kids, all perpetuating social inequalities in health and wellbeing (Kristenson et al., 2004).

**Challenging Social Discrimination and Health Disparity in Contemporary Australia**

**A: Government and Indigenous Communities in Equal Partnership**

The differential allocation of risks and benefits for growth between differing socio-economic groups is central to addressing transgenerational equity issues. Both a harsh colonial history and self-sustaining inequities are responsible for many of the contemporary problems of Australian Aboriginal children and young adults. We know that children who have experienced a good prenatal environment and were well nurtured in their early years have better outcomes throughout their lives. They do better in school, have higher self-esteem, fewer social, health and behavioural problems and are less likely to become teenage parents, abuse drugs or be involved in crime. We also know that lack of control over one’s life engages harmful dynamics symptomatic of marginalization, alienation, resentment, depression and environmental deterioration, and that these harmful dynamics are self-perpetuating across generations.

Persistent powerlessness in Australia’s Indigenous populations is a shameful consequence of the failure of political, religious, health and legal institutions to bridge the gap between knowledge and effective action. Many lines of research have made the connection between unwanted births and the offspring’s greater than expected risk of criminality (Levitt and Dubner, 2005) and that domestic violence and abuse is a strong motivation among women seeking an abortion (Glander et al., 1998).

Given scientific acumen and good will, it is possible to choose to prevent, postpone or skilfully control the worst consequences of poverty, depression, child neglect and drug dependence. The uneven distribution of common human (dare I say biological) rights has serious psychological, social and economic implications for the nation as a whole. We have the scientific evidence - what is required is the emotional intelligence to compassionately understand social and ecological systems. It is time to translate biological imperatives into ethical action and demand individual and collective commitment...
in eradicating the worst consequences of poverty. Public acceptance that health begins well before conception and that each of us is custodian of the next and subsequent generations, would be a good start in the development of effective bioscience-bioethics education programmes. Given a just standard of living, preconceptional care should significantly reduce the social and health risks to future generations of children. Governments must give special attention to the education of young people so that they can exercise a responsible attitude to themselves and their children. It is imperative that we as a nation develop a practical and satisfactory scientific framework activating the acceptance of reproduction as a privilege, rather than a right; a right all too often trivialized.

Importantly, the allocation of health and educational resources should be on the basis of need, and disadvantaged minority groups, whether Indigenous or other, must be involved in designing and implementing the solutions. Muting the Indigenous voice is counterproductive since, as we have seen, self reliance is the key to good health and well being. All societies provide special rights to specific groups to ensure equal outcomes for all. That is why we have wheelchair access and designated parking for disabled people and diesel fuel subsidies for farmers. Health and living standards of Indigenous Australians are the worst in the developed world, so special measures are required to address the underlying causes of such severe disadvantage. In order to destroy inequality there must be a “fair go” for all Australians. Reconciliation is possible only when people make it their concern and actively work for it. In particular, biomedical issues concerning health and well being of parents and children need to be addressed and the provision of health and health education expanded for all.

Since this paper was written, Prime Minister Kevin Rudd has made an apology to Australia’s Indigenous Peoples on behalf of all Australians. The statement was tabled in the Australian Parliament on Tuesday 12th February, 2008, and included for the first time the Indigenous “Welcome to [the] Country” ceremony as well as traditional British parliamentary rituals. The full statement read:

“I give notice that, at the next sitting, I will move: That today we honour the Indigenous peoples of this land, the oldest continuing cultures in human history.

We reflect on their past mistreatment. We reflect in particular on the mistreatment of those who were Stolen Generations - this blemished chapter in our nation’s history.

The time has now come for the nation to turn a new page in Australia’s history by righting the wrongs of the past and so moving forward with confidence to the future.

We apologise for the laws and policies of successive Parliaments and governments that have inflicted profound grief, suffering and loss on these our fellow Australians.

We apologise especially for the removal of Aboriginal and Torres Strait Islander children from their families, their communities and their country.

For the pain, suffering and hurt of these Stolen Generations, their descendants and for their families left behind, we say sorry. To the mothers and the fathers, the brothers and the sisters, for the breaking up of families and communities, we say sorry.

And for the indignity and degradation thus inflicted on a proud people and a proud culture, we say sorry. We the Parliament of Australia respectfully request that this apology be received in the spirit in which it is offered as part of the healing of the nation. For the future we take heart; resolving that this new page in the history of our great continent can now be written. We today take this first step by acknowledging the past and laying claim to a future that embraces all Australians.

A future where this Parliament resolves that the injustices of the past must never, never happen again. A future where we harness the determination of all Australians, Indigenous and non-Indigenous, to close the gap that lies between us in life expectancy, educational achievement and economic opportunity.

A future where we embrace the possibility of new solutions to enduring problems where old approaches have failed. A future based on mutual respect, mutual resolve and mutual
responsibility. A future where all Australians, whatever their origins, are truly equal partners, with equal opportunities and with an equal stake in shaping the next chapter in the history of this great country, Australia.”

B: Circle Court for Aboriginal Punishment

New South Wales authorities have been staging trial pilot programmes of Circle Court as an alternative means of sentencing. The Circle Court, designed for serious repeat offenders, is a court overseen by a magistrate but supervised by community elders. It aims to involve the whole community in the sentencing-rehabilitation processes. The Circle Court begins by seating the presiding judicial officer, the offender, the defence council, the victim and other participants; such as the family and other interested persons in a circle. The aim of the court is twofold: to set a sentence plan for the offender and to address the underlying causes for the offence. The facts of the case are presented to the circle by the crown, followed by the defence after which the whole circle is opened up for a comprehensive discussion. Importantly, the offender must also address the circle, perhaps after a statement by the victim about the impact of the crime is made. The bringing of offender and victim face-to-face has several beneficial effects not least increasing the programme's success rate. The circle then examines what must be done to heal the victim and the offender and, more broadly, underlying issues in the community that are causing serious problems and examine ways of addressing them. At the end of these deliberations, bail conditions are set for the offender such as curfew, work programmes, abstention from alcohol, cognitive behavioural therapy, anger management, and any other penalty deemed appropriate not excluding imprisonment. Some members of the circle, perhaps with the involvement of other community members, will take responsibility for seeing that the offender completes the sentencing plan.

The immediate good news is that circle sentencing has slashed recidivism rates in all locations since the scheme was first introduced in 2002. The strength of the Circle Court is the close kinship between the elders and the accused where the circle is built on trust and respect. Within the circle context it’s understood that to break the law you break the law of the traditional owners of the land as well as the Australian court. This excellent outcome reinforces the fact that the crime rate is not contingent on ethnicity but contingent on socioeconomic disadvantage and lack of control in one’s life (Goodman et al., 2005). As stated previously, transgenerational change has to be forged out of the entire life-death and renewal cycle; not from short-term fixes.

C: Healthy Country, Healthy People: Gaining from Aboriginal Adaptability and Creativity

As the reader has seen, the founding of white Australia was at the expense of Indigenous people flourishing, the loss of which is a major cause of social unrest, chronic ill-health and spiritual distress. Clearly, redressing Indigenous health is an ethical issue that demands special consideration. Indigenous Australians believe that they have been in Australia since “Dreamtime,” or “Creation,” when their land was shaped by their spiritual ancestors. These ancestors, or first people, journeyed across the country creating the landforms, plants, animals and diversity. They brought with them laws to live by: ceremony, kinship and ecological knowledge. They taught Aboriginal people how to live in the land and look after the country.

“If you respect the land, then you will feel the land, Your experience will be one that you cannot get anywhere else in the world.”

Brian Baruwei - Wurkbarbar clan, Aboriginal traditional land owner.

Although it will probably never be known precisely when the first human footprint was made on Australian soil, it is hypothesized that the first people migrated from the South East Asian region more than 50,000 - probably 60,000 - years ago. At that time much of the world’s water was frozen into ice sheets and the level of the sea was more than eighty meters lower than it is today. This made the passage
for the first boat people from Asia to Australia much easier. Since the Pleistocene coastline extended out so much further than it does today, most of the earliest camp sites are, regrettably, underneath the sea. Among Australia’s Indigenous peoples many cultures exist and Aboriginal people identify as both Indigenous and, whenever possible, also as a member of their language group; that is, coming from a particular place/country each identifiable by its own creation stories. It is estimated that at the time of Captain Phillips’s landing at Sydney’s Botany Bay in 1788, there was a population of about three million Aboriginal people speaking about 250 distinct indigenous languages, each with their own country and culture. Almost all of these languages - many of which have since been lost - are related indicating that they are descended from a single ancestral language spoken by the first settlers.

Most importantly, prehistory teaches us that the first Australians were some of the earliest representatives of Homo sapiens who, through millennia, were able to sustain fitness by adaptively evolving a holistic framework of country, community and appropriate conduct. At the same time as successfully adjusting to profound environmental and climatic changes (with accompanying loss of substantial tracks of their land as the polar ice caps melted and the seas rose), Aboriginal Australians also developed a rich and varied culture. This culture, over many thousands of years, supported thriving populations in some of the harshest areas of the world’s driest inhabited continent. Significantly, sustainable practices allowed them to exploit and survive in a wide range of environments where modern European land/water management practices bleakly failed. In modern times, scholars, increasingly, are warning us that the nature/culture dualism, which serves to separate humanity from the rest of the biosphere, is the primary cause of current ecological crises. We are warned to directly acknowledge that the natural environment is not an endless resource just for the taking and must figure out a better relationship that underpins an ecologically sustainable and just ethics. Just ethics, or eco-justice, implies challenging extant values and assumptions, particularly those that have supported ecologically damaging practices. It promotes living in harmony with nature rather than its conquest and exploitation. This is precisely where Australia’s Indigenous peoples can assist if we are to intelligently confront the oncoming challenges of climate change and global warming.

All over the continent thousands of archaeological sites and natural landmarks reveal in astonishing detail animated evidence of Aboriginal life. Prehistoric Australians had widespread trading networks, were skilled in understanding the laws of physics (note boomerang and didgeridoo technology), and devoted much energy to ceremonial life. Above all it was creativity of spirit, rather than material resourcefulness that prehistoric Australians excelled in. Home-grown society was organized to allow ample leisure time for matters of the mind such as art, ceremonies, music and dance. Their “written” prehistory can be “read” by marking out cultural sequences of engraved rock paintings, ornamental artefacts and ways of honouring the dead. For instance, the earliest burial site in Australia dates back 60,000 years ago, and includes ochre scattered over the corpse. Red ochre was the most highly prized pigment in prehistoric Australia, and pieces from deposits created by ancestral spirits were essential for use in rituals. Long expeditions were therefore made to these sites, or sometimes the special ochre was obtained by barter.

The earliest art predates the post-glacial rise in sea level and development of estuarine conditions and depict ancient geometric figures, concentric circles, animal tracks and lines that have weathered back to the same dark colour as the parent rock; a process that takes many thousands, even tens of thousands, of years. Great antiquity is also demonstrated by the dynamic representational style of art that resides in the World Heritage sites of Kakadu and the Kimberley in the Top End of the continent. Amongst these motifs there are realistic depictions of land animals, including the extinct Thylacine or Tasmanian tiger, pecked-out small, insignificant humans and imposing early spirit figures (Figure 1). Much better known, however, is the later estuarine art dominated by fish and crocodiles portrayed in a unique x-ray style in which the skeleton and internal organs of creatures are shown as well as the external features (Figure 2). The significance of these ancient galleries were not kept secret for they were prominently placed high up on rock shelters or on groups of massive boulders from which they could be seen from the vast plains below. Consequently, these natural landmarks percolated with spiritual significance provide us with a record of the evolution of the land and its people over the last 50-to-60 thousand years. To the reader who wishes to learn more about the prehistory of Australia and its people Josephine Flood’s book (Flood, 2004) is an excellent source of information.
As described elsewhere in this review, the coming of white people almost extinguished Aboriginal society; however, now the time is right to assess both ancient and modern insights with a view to integrating the essentials of healing and well being. Traditional wisdom supported by rapidly growing research-based understanding, particularly that of stress physiology, have identified key factors in the generation and maintenance of physical, psychological and social well being. By integrating contemporary biological insights with a sense of responsibility, we should be capable of harnessing our collective pool of flexible intelligence in order to further evolve our altruistic instincts already embodied in our genes.

Figure 1: Examples of some of the oldest surviving rock paintings in the Northern Territory done in red ochre (varieties of iron oxide minerals such as haematite) which when worked in water produces a strong pigment that penetrates deeply into the rock surface. In a dry climate and over thousands of years the silica in the rock forms a glaze on the surface effectively sealing the images. Top: images depict a black wallaroo with a joey in her pouch, small human-like figures and imposing spirit figures with too many fingers or exotic head dress (Katherine Gorge, Nitmiluk National Park; Jawoyn country). Bottom: part image of Thylacine long extinct on the mainland (Ubirr, Kakadu National Park; Binini and Mungguy country).

Figure 2: Ancient galleries of unique X-ray art record the traditional cultures and evolution of the land and its people over the last 40,000 years. On the right panel the human is insignificant compared to the animals (Ubirr, Kakadu National Park; Binini and Mungguy country).
Concluding Remarks

If society’s priority were to maximize avoidance of preconceptional prenatal and neonatal harm, the most efficient route would be through improvements to the general quality of life, by eliminating the worst environmental pollution and the stresses of poverty, which impair responsible parental care. The root causes supporting the cycle of domestic violence, drug and alcohol abuse, unemployment and juvenile detention demands recognition. In communities where the prevailing culture is such that violence is acceptable, change brought about by introducing the Circle Court innovation, for example, has provided hope for a new beginning. Change is not easy, especially in outback communities where typically everyone knows everyone else and the community has more often than not to deal with kin-based loyalties and a divided sense of obligation to their kin and to the protection of women and children. In these instances, the establishment of outside agencies dedicated to dealing with issues of sexual and physical violence can be a life saver as impartial service offers an opportunity, for women in particular, to lodge a criminal complaint without fear of retribution.

To focus on what is a safer, healthier place for families and children means engaging with these families as well as engaging outside services. That means to act proactively with the community in question rather than the usual reactive response once the situation has descended into crisis point. Immediate justice for victims of abuse is very important but justice is best extended with a view to the longer-term by promoting systemic change. What governments do profoundly affects the lives of people; therefore, we need to step back from short-term, poll-driven political goals and assess community values that guide aspirations for freedom, stewardship, ethics and justice. Programmes that have been found to be effective in reducing gang violence are anger management counselling, parental support through inter-generational mentoring involving respected elders, the establishment of men’s groups, bonding through meaningful activities such as team sports, and other community-based initiatives such as dry (alcohol free) zones and keeping children safe off the streets at night. The stumbling block, typically, has been funding to initiate and maintain successful community-based programmes; especially new initiatives geared towards lifting self respect and community empowerment.

Issues of stress reduction, environmental quality, housing and workplace safety and educational reform, do not need to be uniform; rather the framework should incorporate regional diversity and pluralistic problem solving in tune with ethnically diverse populations. Part and parcel of consciousness raising is that all voices are heard, acknowledged and valued. It seems fitting, therefore, to close with the words of one such voice “with respect comes attitude”.

References


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