



Planetary Pediatrics: The Next Generation

Susan Bennett, MB, ChB, FRCPC, DTM&H, DRCOG, DCH, DipPsych

From the Department of Pediatrics, Faculty of Medicine, University of Ottawa, Canada

The author has no conflicts of interest to disclose.

Address correspondence to Susan Bennett, MB, ChB, FRCPC, Department of Pediatrics, Children's Hospital of Eastern Ontario, 401 Smyth Road, Ottawa, Ontario K1M 8L1, Canada (e-mail: Bennett@cheo.on.ca).

Received for publication April 22, 2019; accepted April 22, 2019.

ACADEMIC PEDIATRICS 2019;19:483–486

FIRST, I WOULD like to acknowledge that we are on the historical territory of the Haudenosaunee and the Huron-Wendat and, most recently, the Mississaugas of the New Credit First Nation.

Sometime between the ages of 15 and 24 months, children take a large step in self-awareness. In the Mirror Self Recognition Test, a caregiver places a red mark on the nose of the child and places them in front of a mirror. Before 15 months, children see a red spot on the nose in the mirror but don't realize the red spot is on their own nose. When children are between 15 and 24 months, they point to their own nose, indicating that they recognize the image in the mirror as their own. This is a huge developmental transition in the recognition of self and other consciousness, as well as a period of rapid social and emotional growth and the development of empathy, that is, concern and understanding of another's feeling—the very basis of compassion.

Ten other groups of animals have measurable degrees of self-awareness on the mirror test, including chimpanzees, great apes, elephants, and dolphins, and interestingly, Eurasian magpies. I am suggesting that as pediatricians one of our developmental challenges is that of a global consciousness, which was significantly stimulated by the first images of our planet earth home, from outer space in 1968. The photograph of the blue marble earth was taken in 1972 by Apollo 17. This beautiful planet in all its glory is well celebrated in the BBC series by David Attenborough: "Planet Earth."

It is also celebrated by the extraterrestrial, the other Mr Spock (vs the pediatrician Dr Benjamin Spock, who incidentally was a former George Armstrong awardee) from the Star Trek Series, who "boldly went where no man had gone before" and who was actually made an informal mascot by NASA.

In a rare image taken in 2013, the wide-angled camera on NASA's Cassini spacecraft captured Saturn's rings and our planet earth and moon in the same frame as a tiny dot, 898 million miles away. We can recognize that all of the things we need to survive are provided under a thin

layer of atmosphere that separates us from the uninhabitable void of space.

In March this year, we lost one of the brightest and most creative minds on the planet—Dr Stephen Hawking, a British astrophysicist, who had devoted his life to understanding the mysteries of the universe. He had been diagnosed with amyotrophic lateral sclerosis at the age of 21 and was given 2 years to live. He died aged 76. His famous computerized voice/synthesizer was activated by a mouse that was controlled by his cheek muscle, and he was able to write one word per minute, showing the ability of the human mind to transcend all boundaries.

He predicted the unimaginable and the possibility of time travel. He broke new ground on black holes and the origins of the universe, but his public legacy was to awaken others to the mystery and beauty of science, and he inspired generations to look beyond our own blue planet. However, he predicted that humans will need to colonize another planet within the next 100 years to survive.

Our planet is in crisis. A recent report shows that 60% of all wildlife on the planet has been wiped out by humans, since 1970. We are all wildlife and a threat of mass extinction is a threat to us all and for all those to come.

In October 2018, the United Nations (UN) Intergovernmental Panel on Climate Change urged policy makers to keep global temperatures from rising to 1.5 degrees above preindustrial levels, keeping to the 2015 Paris Accord, and they painted a dark picture of what will happen to the planet if we fail even by a very small increases of 0.5 degrees. We are already at 1 degree above preindustrial levels and on track to see up to 3.4 degrees by 2050, risking irreversible and catastrophic changes.

Within hours of this UN report was the announcement of the Nobel Prize in economics, awarded to William Nordhaus. His work shows that a universal tax on carbon is the most efficient way to lower greenhouse gases and that there is a need for urgency to get the economic incentives right to drive the innovation required for a sustainable and growing economy.

A total of 40% of the plastic we make is used just once. By 2050, the total mass of ocean plastic will exceed that of fish: 1% floats on the sea surface, 5% is washed up on beaches, and 94% sits on the sea floor, with devastating effects on marine life. Recent studies are finding plastic nanoparticles penetrating the blood–brain barrier of fish with movement through the food chain into human cells and organs with unknown effects. Already studies are showing widespread contamination of tap water with microplastics in countries across the globe.

Drawing on the growing understanding of the range of critical relationships between the state of the natural world and health, the Rockefeller Foundation and the *Lancet*, in their 2015 Commission, defined a new concept of Planetary Health, which reports that the degradation of ecosystems often leads to negative public and child health impacts.

It is undeniable that human activity, such as energy generation and food production, is rapidly transforming the earth's natural systems. The global health impacts of accelerating climate change, land degradation, growing water scarcity, fisheries degradation, biodiversity loss, and pollution threaten the global health gains of the last several decades and are likely to represent the dominant global health threats of the next century.

This is a new framework to approach and solve problems and define the safe environmental limits within which humanity can flourish. We need to decouple economic growth from degradation of nature. We need to measure wealth beyond economic indicators. Gross domestic product only goes so far.

Children are 27% of our 7.6 billion global human community. The statistics are grim. Children, because of their immature developmental status and dependency, are the most vulnerable to the global threats of climate change and conflicts and their direct and downstream effects: food insecurity (world hunger has risen in 2017 for a third consecutive year), violence in all its forms, populations on the move, and new epidemics.

Around the world, the rules of war are under attack. So are millions of children. We have long witnessed the indirect price of conflict on children, by way of malnutrition, disease, and trauma, as innocent victims caught in the crossfire, but today's children are coming directly under attack. Deliberately targeted, abducted, and attacked in hospitals and schools and used as human shields.

We now know that health is more determined by social, cultural, and economic determinants than by access to health care services, the so-called social determinants of health. These are the conditions in which children are born, live, and age.

Sir Michael Marmot, the lead on the 2008 World Health Organization Commission on Social Determinants of Health stated "Poor social policies, unfair economics and bad politics are killing people on a grand scale." Dr Marmot highlights the unfair disparities or inequities of health and that some groups are more likely to not have their basic needs met: including indigenous, newcomer/refugee, minority and rural populations, the

lesbian, gay, and gender diverse community, and those living in poverty, in foster care, and with disabilities.

Mahatma Gandhi stated that the true measure of any society can be found in how it treats its most vulnerable members, and children are certainly vulnerable. The moral case for better child health is self-evident but, this aside, there is a powerful economic case, too, for placing child health as a priority. Governments need populations that are healthy and economically active and not crippled by chronic disease in old age.

We have an exciting new science of early childhood and brain development from a convergence of evidence from neurobiology, epidemiology, epigenetics, adverse childhood experience, and toxic stress studies, and we now understand how the environment interacts with the genome and the developing brain and stress systems and the short- and longer-term health impacts in adulthood and future generations. Intervention early in the child's life is important during the period of rapid brain development and that includes prenatal growth, so we need to have a life cycle perspective. I always talk about the social, environmental, and political determinants of health because it is the long-term leadership and political will that is crucially important.

The 17 UN Sustainable Developmental Goals (SDGs) were adopted by the global community in 2015 to address challenging and interrelated global issues over a 15-year period, and they replace the more limited 7 Millennium Development Goals launched in 2000. They are a universal call to action to all countries to end extreme poverty and to protect the planet and ensure that all people enjoy peace and prosperity. A genuine policy of peace and disarmament could and should release additional resources that could be devoted to peaceful aims and in particular to the acceleration of social and economic development, and universal health care is an essential part.

UN member states will be expected to use the 17 goals to frame their agendas and political policies over the next 15 years. For children to count, they need to be counted, and there are 44 child-related indicators integrated across the 17 SDGs, which aim to assess the situation of children everywhere.

And now I would like to highlight the work of several visionary pediatricians who through their service to the most vulnerable in society and their advocacy as individuals have made a significant impact in promoting the development of the full potential of the child through a human rights approach and how we might be inspired to action through their example.

Dr George Armstrong has been called the father, founder, and patron saint of pediatrics, child health, and preventive medicine. He was born in 1719, in Scotland, and he truly understood the primary social determinant of poverty, as contributing to the deaths of one quarter to one half of all infants within a year of their births, and he advocated for prevention of disease and support for breastfeeding and good hygiene.

In 1767, he published one of the first textbooks on children's diseases, called *Diseases Most Fatal to Infants*, based

on his scientific observations, including controlled studies, and this marked the birth of the science of pediatrics.

He was also a pioneer in children's rights, recognizing the inherent value of infants and their rights to survival and optimal health, when there was, at that time, a general neglect of infants in society, as they were "not thought to be of sufficient consequence to be attended to, and left to the care of old women."

In 1769, he opened the first dispensary, or hospital, in the world, for sick and poor children, and provided his services free of charge and he made home visits. The Great Ormond Street Children's Hospital in London is mistakenly celebrated, as the first pediatric hospital in the world, but it actually opened its doors 80 years later, in 1852. The charitable model of funding, much from his own pocket, was not sustainable and, after 12 years, he had to close after treating 35,000 children. Soon after, he suffered a stroke and had to retire.

He would be thrilled today to know of our flourishing profession of pediatrics, and indeed the United Kingdom's National Health Service, which was established in 1948, as one of most comprehensive and high-quality universal health care services in the world, despite presently being in a crisis with severe budget constraints, rising demand outstripping resources, and the impact of Brexit.

Dr Janusz Korczak was born in 1878 into a prominent Jewish family in Poland, and he was an advocate for improving the lives of children living in poverty. He founded orphanages (or as he called them children's republics) in Warsaw, Poland, and devoted the end of his life, by moving with the children to the Warsaw ghetto in 1939, after the invasion of Poland by Nazis.

He was a champion of human rights and recognized children as full human beings, not just human becomings. He contributed to a cultural change as to how we view and raise children, respecting their dignity, their individuality, their evolving capacities, and their participation and contribution to society.

He remained true to his ideals when he boarded the train from the Warsaw ghetto to the Treblinka Extermination Camp with nearly 200 children of the orphanage. He was offered sanctuary several times by the Nazis but stayed with the children. He is the only individual to whom there is a monument at the Treblinka camp. Whilst he is best remembered for this selfless act, his biggest legacy is that his teachings continue to permeate society and influence educational practice. He left future generations a challenge, "that it is inadmissible to leave the world as one finds it."

Steps to atone for the atrocities against humanity, and especially children, have been made. After the defeat of Hitler and the Nuremberg trials, the Universal Declaration of Human Rights was passed by the UN in 1948, in which the basic rights, such as the right to life, liberty, and security of person were guaranteed.

There are presently 9 core UN Human Rights Treaties. The UN Convention on the Rights of the Child, 1 of these 9, was informed and inspired by Dr Korczak's theories, and his native country of Poland was a lead nation in the drafting of the Convention. It was adopted by the UN

General Assembly in 1989 and built on the biological, psychological, social, cultural, economic, and spiritual needs of the child, which were translated into rights. It recognizes children as rights-holders: active participants with evolving capacity to make decisions about their lives. It has been ratified by all countries in the world apart from the United States. It is built on global consensus and is a blueprint for the care of all children everywhere.

Human rights principles recognize the inherent value of each person regardless of what we look like, what we think, and what we believe and are based on the principles of dignity, equality, and mutual respect. Human rights are inalienable or natural from birth and cannot be taken away, universal in that everyone is born with and possess the same rights and indivisible because all rights are interdependent such that realization of one right requires fulfillment of all the others and none take priority.

The 4 General Principles of the UNCRC are nondiscrimination, and includes all children, and in all matters affecting them decisions must be made in their best interests, and they are entitled to be heard and their views taken seriously and the goal is for their optimal health and development. A human rights framework is very compatible with a public health, ecological, and economic framework and contributes a legal and an accountability framework for governments.

Previously, children were considered passive and incompetent objects of charity in need of adult protection versus now being acknowledged as subjects having their own rights. All children (by definition younger than 18 years) everywhere worldwide have rights. The child is at the center of the framework of the Convention supported by the family, community, society, government, and the Convention, in order for the child to reach their fullest potential.

The UN Committee on the Rights of the Child is based in Geneva and monitors how well governments are meeting their obligations under the Convention. The Committee gives their recommendations in their Concluding Observations, which are accessible on the UN website. They also review alternative reports from civil society and from children and young people themselves.

What has been the impact of the global child rights movement? The Convention has been domesticated into national laws of many countries. The principals and standards of the Convention have been implemented into child-serving organizations like Baby Friendly and Health Promoting Hospitals, Rights Respecting Schools, and Child Friendly Cities. New Brunswick is the first province in Canada to implement a child rights impact assessment on all government policy and legislation before they are passed. Independent Children's Ombudsmen or Commissioners strengthen accountability to children. In Canada, there are child advocates offices in 9 provinces and 2 territories, but as yet there is no federal coordinating body across ministries and provinces and territories.

Dr Abraham Jacobi (1830–1919) is considered the Father of Pediatrics in the United States and was well aware of the social and environmental factors at a time when the focus was in the biomedical aspect of disease.

In 1904, he stated “It is not enough however to work at the individual bedside in the hospital. In the near or dim future the pediatrician is to sit in and control school boards, health departments and legislatures. He is the legitimate advisor to the judge and jury, and a seat for the physician in the councils of the republic is what the people have a right to demand.”

Topics such as poverty, toxic stress, resiliency, legal advocacy, and underserved populations are now common themes within academic pediatrics. Pediatricians are witness to the harmful and health-promoting impact of factors on children’s lives, and we have a key role in informing governments and advocating for necessary changes to laws, policies, and practices.

In the United States, the work of the Academy of Pediatrics and Academic Pediatric Association related to poverty and the social determinants of health at the macro level is being translated into rights and equity-based initiatives by Dr Jeff Goldhagen, incoming president of the International Society for Social Pediatrics, and his colleagues in Jacksonville.

They are implementing the first Child Friendly City in the United States and have already established a city-wide Baby Friendly Hospital initiative, the first 2 Rights Respecting Schools in the United States, the only children’s ombudsperson in the United States, with development of a unique 2-year fellowship in Community and Societal Pediatrics.

This work is connected to our pediatric colleagues in South America and in Canada, and the International Society for the Prevention of Child Abuse & Neglect, the International Pediatric Association and the International Society for Social Pediatrics and Child Health.

Dr Gilles Julien is a pediatrician based in Montreal, and he was the winner of last year’s Canadian Jan Korczak’s

Association prize and he has, par excellence, translated the principles of the UN Convention on the Rights of the Child into pediatric practice and he is the founder of the community based social pediatric model in Canada.

We have recently introduced the first social pediatric hub in Ontario, based on Dr Julien’s model, in an underserved, high-needs, and richly diverse neighborhood just down the road from the parliament buildings in Ottawa, our capital city. The Hub provides welcoming, culturally safe, trauma informed, rights respecting, holistic, comprehensive and coordinated multi-sectoral, integrated, health, and social care to children, youth, and their families, in order for them to reach their fullest potential and their hopes and dreams.

I will ask you all today what can we, as privileged individual pediatricians and our collectives, do more to serve the needs of the infants, children, adolescents, and young people within our communities, and particularly those most in need?

In conclusion and this is a quote by Nelson Henderson, a second-generation, Canadian-born farmer. “The true meaning of life is to plant trees under whose shade you do not expect to sit.” To do things in this life that will benefit people far after the time we have passed. It resonates with Janusz Korczak’s challenge to make this world a better place for generations to come.

Many indigenous people around the world live by the ancient philosophy of the seventh-generation principle, in that in all our deliberations, we must consider the impact of our decisions on the next 7 generations. We are all so privileged, to be pediatricians, to embrace this true meaning in our daily lives, by caring for children, our most prized possession, and who represent our future and our legacy; indeed, they are the very future of our civilization.

Thank you et merci.