

Genetics and Bioethics: The current state of affairs*

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► ABSTRACT

In order to help Global Bioethics to be integrated fully into genetics, science, and a broader range of disciplines, it is necessary to look for a common topic among them. The broad collective notions expressed by Global Bioethics promise to appeal to and benefit from the input of a variety of communities. Not many people are likely to oppose a call to create a sustainable future, yet different communities will probably have their own ideas about how the call applies to them.

► Key Words

Global Bioethics, communities, sustainable.

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RESUMEN

Con el fin de ayudar a la Bioética Global a integrarse completamente a la genética, la ciencia, y a una amplia gama de disciplinas, es necesario buscar un terreno común entre una y otras. Las extensas nociones colectivas, expresadas por la Bioética Global prometen apelar y beneficiarse de las entradas de una variedad de comunidades.

No mucha gente está dispuesta a oponerse a la llamada de crear un futuro sostenible, es más, diferentes comunidades tendrán probablemente sus propias ideas de cómo el llamado se les aplica a ellos.

Palabras Clave

Bioética Global, comunidades, sostenible.

Today we have a common cause; we have to look out for the life coming - for your children, for my children. We are accountable; they will hold us accountable...

But it's a lot of work. We have to set aside our differences, and we have to work together as one people, one family, for the future . . .

- Oren Lyons, Faithkeeper, Onondaga Nation, North America¹

The pursuit of genetic knowledge has such emotional, social, scientific, and financial importance that it been compared to the divine quest for the Holy Grail², and to the calamity of opening Pandora's Box³. Therefore, it comes as no surprise that the recent announcement of a completed blueprint for the human genome has fueled calls for both increased research and increased precautions. This new era, which holds the potential promise of advances in medicine, agriculture and other areas, also requires the careful investigation of a myriad of issues.

Some issues, such as informed consent, patenting, privacy, and confidentiality, have been explored in at least some detail. Others, such as equity, mutual respect, empowering education, consensus building, and planning for long-term survival, have not been as fully examined, nor have they been as comprehensively integrated into mainstream thinking. To facilitate this, we need to implement an ethical approach that leads us to ask critical questions about the appropriate use of our new tools. The demand for proper investigation into the issues surrounding genetics is particularly important given current conceptions of the role that deoxyribonucleic acid (DNA) plays in defining ourselves, our environment, and the relationships between them.

Human beings' conception of who we are and how we relate to our environment is as varied and complex as we are. In many instances, our concept of self has been linked to our physical bodies. In some European-based traditions, the heart was of vital importance to the self, as it was believed to dictate love and perhaps even provide material shelter for the soul⁴. The concept of a heart transplant during those times would have been almost inconceivable. Chinese tradition teaches that a person's center, or dan tien, is an area located just a few inches below the navel⁵. This energy reserve must be maintained, as it is central reservoir of an individual's life force, or chi.

In the United States presently, there seem to be two physical locations in the body that are given extraordinary weight in defining an individual's personhood: one's

brain and one's DNA. This notion can be exemplified by considering what the public's reaction to a brain or DNA transplant would be. Would the recipient maintain his or her identity, take on the identity of the donor, or perhaps emerge as a new hybrid of both donor and recipient? Without regressing into a paradigm of genetic determinism or reductionism, we must recognize the power of the pervasive idea that a life form's DNA contains the blueprint for its physique, its health, and perhaps even its behavioral tendencies. We must act using caution and sensitivity when deciding how to proceed in the arena of genetics.

Genetic Promise and Pitfalls

I study the beautiful, the living, the individual bird, and to my scientific brothers,

I leave his skin, his bones, and his place in the temple of fame.

- Olive Thorn Miller, 19th c. ornithologist

In light of all of our modern advances, it is almost impossible to imagine that as recently as 1988, when the Human Genome Project (HGP) was announced, the tools to make it happen had not yet been invented.⁶ Now, in the year 2000, the HGP has been completed years ahead of schedule.⁷ The genetic technologies in place, and those being developed ever more rapidly, are robust devices and methods that have the potential to be used for both positive and negative ends.

Predisposition to disease

In the medical arena, genetic technologies provide diagnostic possibilities, often allowing the prediction of disease either prenatally, or in children or adults before its onset. Huntington's Disease and breast cancer are two maladies that have an identified genetic component. People who believe that they may be at risk for Huntington's, a terminal deteriorative disease for which 36 is the average age of onset, can now effectively predict in childhood whether they will develop the disease. Those who have a family history of breast cancer can use similar measures to discover whether they carry a gene associated with an increased risk. Genetic diagnostic tests are currently being developed for a range of conditions.

Using genetic information in order to help predict the likelihood of disease for an individual may prove to be both beneficial and burdensome. Many of the patient-oriented clinical ethical legal and social issues, while not

decisively resolved, have been addressed in numerous settings. These issues include informed consent, genetic counseling, handling of tissue samples and medical information, privacy, confidentiality, and others.

However, even if we assume that the above set of issues has been adequately handled, other larger issues still remain. In the United States, we struggle with a health care system inaccessible to many people in need. Due to that system, revolutionary genetic diagnostic techniques remain out of reach of the uninsured and underinsured, making many of them irrelevant to a large portion of the population. Due to that system, children diagnosed early in life may find themselves unable to procure health care for the very conditions that affect them. These counterintuitive realities make sense only if we recognize United States health care and insurance companies as functional businesses, which are sometimes at odds with consumer interests. It is a problem that is likely to remain until we reshape health care and insurance systems as mechanisms for sharing the necessary cost of health care across society.⁸

In developing nations, the health care systems may not be able to provide genetic diagnostic services at all. The gulf between wealth and poverty is further widened across international lines. We need an ethic that will allow us to remain sensitive to those in need, facilitating research where it is helpful to them, while prompting us to address the larger equity issues.

Research and Clinical Assistance

Genetic information, when coupled with clinical records, can be useful for selecting appropriate treatment plans in medicine. Since 1989, soldiers in the United States Military who are infected with the Human Immunodeficiency Virus (HIV) have had the opportunity to have their DNA analyzed regularly by gene chips and correlated with their medical records, both of which have been key coded for privacy protection.⁹ A clinician treating an HIV positive member of the armed forces can now send the patient's tissue sample and other pertinent information to a research office. Medical researchers then analyze the information, employing a combination of gene chip technologies and correlated anonymized medical records.

Using this technique, within a matter of days the clinician receives information advising him or her of which treatment options are the most statistically promising for that individual¹⁰. From the resulting data, scientists then

gain insight into the disease process, work to develop HIV vaccines, design and test prevention and education plans, create new diagnostics, and evolve therapies to account for drug resistance.¹¹ Endeavors similar to the US Military's HIV Research Program have been contemplated in the civilian world addressing diseases such as cancer. Some such projects are already underway.¹²

In order for these types of undertakings to be successful, long-term patient participation is essential. Incredibly detailed gene expression arrays, which are currently generated by gene chip technologies, are of little use without clinical data to correlate with them. While the goals of research scientists and patients are not necessarily at odds with one another, the resulting data warehouses that the scientists and their sponsoring organizations come to own are tremendously valuable. Though information contained in them can no longer be linked back to individuals, imbalances in equity can rapidly arise. Populations who contribute their own personal medical information to the warehouses are traditionally excluded from receiving benefits, other than the potential to purchase the resulting improved medical care. We need an ethic that prompts us to infuse our research efforts with respect, equity, and a call to give back to the communities that make such efforts possible.

One example of how equity might be shared between groups of participants and researchers is available in the form of a Prototype Ordinance,¹³ presented by Robb Hunter, lead litigator of the Conference Salish-Kootenai Tribes. The document was received at the 1998 Biopiracy Conference of the Indigenous People's Council on Biocolonialism. The Prototype Ordinance would create a tribal Research Review Committee (RRC) to review and comment on, and form a Proper Research Agreement between a tribe and a researcher.

In its review, a tribe's aim would be to "fulfill the responsibilities that Tribal people have to the natural world to promote the health and survival of the sacred web of life for future generations."¹⁴ Some of its more novel provisions call for cultural sensitivity training, equity sharing, comprehensive consent, empowerment, tribal benefit from intellectual property rights, and data ownership and archiving by the tribe.¹⁵ These provisions articulate a respectful partnership model in which researchers and participants act together for their mutual benefit, and to sustain the web of life for future generations.

Use of the Prototype Ordinance would be appropriate for organized groups with identifiable leaders, however similar agreements are not likely to emerge in studies conducted with less united, less organized populations. Nevertheless, preservation of the sacred web of life is a goal to be considered in all situations for our collective survival. Therefore, we need an ethic that requires us to examine the long-term effects of our actions on ourselves and on the systems that support us.

Therapy

Genetic engineering and related technologies provide the potential to create new cures for genetic and gene-related conditions or diseases. In France, a couple of young boys, aged 8 and 11 months old, were apparently cured of a rare disease called severe combined immunodeficiency (SCID).¹⁶ SCID "is caused by a single defective gene in T-cells that disables the immune system, leaving the victims unable to fight even minor infections. Thus, SCID victims must live their lives inside sterile bubbles."¹⁷ The gene therapy provided the boys with a copy of a non-SCID-causing gene, and was reported to have enabled the boys to return home to a life outside their bubbles.

The ability to shift a person's genetic makeup, providing him or her with relief from a painful and/or alienating condition is marvelous to fathom. Yet some ethical questions do arise as a result of these new types of tools.

The same issue of equity must be reexamined. Concerns regarding the availability of somatic cell therapies to some and not to others plays out much the same way as those outlined in the section on testing for predisposition to disease. By contrast, the selective availability of germ-line therapies (which may affect the offspring of the person receiving treatment), have the potential to create physical barriers between people with different income levels. In the future, privileged children may inherit not only estates, but also gene-therapy produced disease resistance from their parents. We need an ethic that prompts us to work to end class differences, not to entrench them.

Another more difficult question highlighted by gene therapy technologies centers on our treatment and views of vulnerable populations. Does the fact that we strive to "fix" a malady have implications for the self-image of those who might not seek a cure? For instance, many members of the deaf community do not feel disabled, and take pride in their culture and in the beauty of sign

language. If we have the potential to affect some types of deafness with genetic manipulation, we run the risk of alienating the portion of the deaf community that opts not to change. This is not to say that we should deny therapies for people who desire them, but rather that we should be mindful about our assumptions and prejudices when we create policy surrounding their implementation. We need an ethic that allows research to be guided by those likely to be affected by it, and one that reminds us to value our diversity.

Forensics and Heritage

Genetic technologies have been used in forensics by prosecuting and defense attorneys in order to identify criminals and also to free wrongly convicted inmates from prisons. In some dramatic cases, death row inmates who have long claimed their innocence have been exonerated with the assistance of DNA technologies.¹⁸ Forensic scientists have also used genetic tools to help identify the otherwise untraceable remains of both war and accident victims.¹⁹ Similar techniques, when applied to mitochondrial DNA (which is inherited completely from one's mother), can be used to trace one's maternal lineage, and have even connected some modern-day people to the remains of an Incan mummy.²⁰

These types of technologies, which have linked people to physical locations and ancient ancestors, have also caused some concern. This is the case among some groups in which rights are based on lineage. For example, Brett Shelton, tribal attorney and former policy analyst for the National Indian Health Board in North America, noted that "Tribal sovereignty is based on a definition of Indians and tribes as 'distinct peoples' which is used to determine whether a group of people is a tribe... I am not saying that the scientists have these bad intentions toward indigenous peoples, but rather that the science creates new, very serious risks for tribes."²¹

Similar concerns arose around control of ancestral human remains. Marla Big Boy, tribal attorney for the Confederated Colville Tribe in Washington State, was involved in the Tribe's efforts to repatriate the ancient remains of the one called "Kennewick Man". He was found in July 1996 on the Columbia River, and estimated to be at 9,300 years old. Ms. Big Boy explained:

The burden of proof should be on the scientists to prove there were Europeans in the area at that time. (Instead, to the contrary, we) have to discuss how many grams can be taken from his body, who can be in the

room, and who can see him. The Ancient One is no longer whole; he is missing a finger which was taken for DNA testing. This is causing the elders much distress, but the authorities do not understand... To us, he is an ancestor; to the scientists he is a specimen.²²

To adequately address these types of issues, we need an ethic that allows research to be guided by those likely to be affected by it, and one that reminds us to value our diversity.

Agriculture

In agriculture, genetic advances enable the creation of hybrid forms of foods, increasing the nutrition of rice²³ or creating sheep that produce pharmaceuticals in their milk.²⁴ Other efforts are aimed at creating edible plants that can thrive in climates where more traditional varieties of plants would perish.²⁵ These types of advancements may be used, in turn, to help reduce or even end hunger and malnutrition.

While farming and genetic manipulation have taken place outside of the laboratory for centuries,²⁶ the pace and direction of genetic manipulation has caused concern for several reasons. One stems from a worry that the use of genetic technologies will cause and/or increase humans' objectification of other life forms, facilitating the perception that living beings are mere tools, rather than valuable entities in and of themselves. This sentiment is expressed by many people who oppose medical and cosmetic experimentation on animals.²⁷ Medical studies conducted on animals are commonly required as phase of research that must precede human experimentation.²⁸ The ethic that we use to evaluate genetic research should cause us to ask how we can be good siblings, or at least good stewards, to the other inhabitants on the Earth, as we are all interdependent.

Another set of concerns is rooted in equity issues, which are illustrated by the following example:

In a village in the Eastern Province of Kenya, some individuals [came] to... collect barks and leaves of the acacia nilotica trees. These trees belong[ed] to the farmers, they [were] growing in their fields. Many months after, the same individuals, claiming to be researchers, [came] back to the village, with some final products like lotions, ointments, etcétera. They [said] that these products [were made] from the bark and the leaves of the Acacia nilotica trees, and they [were] now their products, and in the process of being patented.

The story is very common story about what is happening in the fields. The farmers were shocked. Who are the owners of the final product[s]? Is anybody allowed to collect what he wants in the fields belonging to the farmers, or even in the natural reserves, in the wildlife spaces? Where do the rights of the local communities begin?... Research, to achieve its goal, must take into account indigenous knowledge, draft with local communities the criteria for research, and together, farmers and researchers propose the conclusions of research.²⁹

In order to balance the rights and needs of indigenous populations with the goals of the research community, we need an ethic that will allow us to remain sensitive to those in need, facilitating research where it is helpful to them, while prompting us to address the larger equity issues.

One final set of issues that arises in agriculture has to do with concerns about genetic modification's effects on ecosystems. There have been some reports indicating that genetically modified corn may endanger Monarch butterflies, and that genetic drift may release genetically modified crops into the environment.³⁰ How do we help to ensure that we are using biotechnology in a responsible way? We employ an ethic that prioritizes our ecosystems' sustainability, helping to ensure our collective future.

In agriculture, genetic advances enable the creation of hybrid forms of foods, increasing the nutrition of rice or creating sheep that produce pharmaceuticals in their milk. Other efforts are aimed at creating edible plants that can thrive in climates where more traditional varieties of plants would perish. These types of advancements may be used, in turn, to help reduce or even end hunger and malnutrition.

A threshold question: Where should we commit our resources?

We routinely choose to indulge our own generation at the expense of all who will follow. We enshrine the self as the unit of ethical account, separate and distinct not just from the natural world but even from a sense of obligation to others -not just others in future generations, but increasingly even to others in the same generation; and not just to those in distant lands, but increasingly even in our own communities. We do this not because we don't care but because we don't really live our lives. We are monumentally distracted by a pervasive technological culture that appears to have a life of its own, one that insists on our full attention, continually seducing us and pulling us away from the opportunity to experience directly the true meaning of our own lives.

-Albert Gore, *Earth in the Balance*

The question of where to commit our resources is as daunting as it is important; it is the proverbial elephant in the middle of the room. Genetic research can help us to understand many disease pathways, predict the treatment efficacy of traditional medicines on individuals, craft targeted vaccines, understand how environmental factors are likely to interact with specific people, and more. Still, we have come to understand that many diseases, such as cancer, appear as a result of interplay between one's environment, nutrition, lifestyle, genotype, and other factors. Given that, should we expend our resources on genetic research when we may be able to do more good spending the same money to clean our water and air, produce and promote healthy foods, and teach ourselves and our children to relax?

Although this question should be answered before the preceding issues are raised, it is the last subject to be covered because it is the most difficult to address. It requires a decision-maker equipped to make a macro-allocation determination in the best interests of everyone on the planet, the systems in our biosphere, and future generations. To be justly weighed, it requires the input and/or consideration of multiple communities, nations, humans and other life forms. To be appropriately implemented, it requires the buy-in of those who control our natural resources and direct large financial expenditures.

I am not prepared to answer this question today, only to ask it. It would be hubris for me to do otherwise. Instead, I propose that we make a commitment to prepare ourselves, community leaders, scientists, pharmaceutical

When all of these clinical, therapeutic, agricultural, and other genetic tools are coupled with the burgeoning technology industry, it becomes clear that even more developments will soon be on their way. This is a time with the potential for rapid change, dramatically shifting our capacity to affect ourselves and the world in which we live. Genetics and the emergent technologies are themselves neither good nor bad, however we must be cognizant of fact that they have arisen and are employed in distinct cultures and circumstances. While factually grounding our discussions, we should seek to develop and employ an ethical framework that prompts us to ask the best set of questions at this pivotal time.

manufacturers, professionals and lay people to work with one another in an earnest search for the solution. We can do this by acting with and teaching mutual respect and a basic set of values that acknowledges the ways in which we are interconnected and interdependent. We can do this by encouraging a search for simplicity in our questions and answers. We can do this by building bridges among polarized communities, and initiating meaningful dialogues where all are welcome.

Choosing an Appropriate Ethical Framework

...now we are as one: earth, sky, all living things, the two legged, the four legged, the winged ones, the trees, the grasses. We are all related, one family.

- White Buffalo Woman, Lakota and Sioux legend

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One large body of bioethics has focused on clinical and research applications of new technology and its results. It emerged in the wake of the Nuremberg Trials, when medicine was shifting from a paternalistic model to a more patient-centered one.³¹ The major concentration of this area has been on protection of human subjects from research risks. Thanks to this set of bioethical frameworks, revolutionary notions such as the need for informed consent³², external review of research protocols³³, and appropriate separation of research and clinical medicine³⁴ have been introduced, codified, and periodically updated.³⁵

The human-subject-oriented line of bioethics and associated legislation have proven to be essential for the protection of human subjects. As the Human Genome Project developed in the United States, publications providing some ethical guidelines followed. These largely focused on researcher / subject issues such as privacy³⁶, and layered informed consent.³⁷ While these protections

have been tremendously valuable, several greater realms of inquiry have remained largely outside the scope of human-subject-oriented bioethics.

Ancient Wisdom and Global Bioethics

Ideas such as those expressed in the Tribal quotations contained earlier in this paper reflect some basic understandings about humanity, nature, balance, and planning for a sustainable future. In 1988, a type of bioethics emerged, featuring a focus resonant with the ancient Tribal teachings: Global Bioethics, expressed by Dr. Van Rensselaer Potter in his book *Global Bioethics: Building on the Leopold Legacy*.³⁸ Since that time, the same ideals have been reflected elsewhere, in the Statement on the Principled Conduct of Genetics Research³⁹, in the publication *Ethics and Equity: in conservation and use of genetic resources for sustainable society*,⁴⁰ in the Universal Declaration on the Human Genome and Human Rights⁴¹, and the Bioethics Declaration of Gijon⁴², among others.

Global Bioethics represents an interdisciplinary, cross-cultural movement, that calls for the examination of new technologies, proposals, developments, and existing systems with the goal of creating a shared future with equitable outcomes across the biosphere. Presently, in order to strengthen and advance the Global Bioethics movement, a couple of steps are necessary: education and consensus building.

Education

The tenants of and reasoning behind Global Bioethics should be incorporated into the curricula of our educational systems in an interdisciplinary manner. Students and professionals should be encouraged to discuss topics with respect to Global Bioethics. Discussions should help participants to become conversant in it, guiding them to envision themselves as part of a global community, each with a responsibility to the whole. At all levels of education, students should be taught to recognize an ethical issue when it appears, think and decide where they stand, explore and transcend their own views, and be motivated to act as a result to "be good and do good".⁴³

The education of the populace about genetic technologies is also important. This step will serve the purpose of dispelling some unfounded fears, like those demonstrated anecdotally by a woman who admonished a scientist, telling him that she did not want to "eat or serve to

her children any food with DNA in it.”⁴⁴ Education of the populace about genetic technologies should allay some of popular mythical worries, and will likely also highlight legitimate areas of concern. This, in turn, should lay the groundwork for a meaningful conversation regarding our collective fate.

In research, other specific education should take place before and during a project. First, researchers should learn about the populations they are likely to affect, seeking the expertise of potential research subjects, tribal communities, indigenous farmers, or the like. Second,

to simple conversations that encourage them to think, listen, collaborate, and learn. By design, bioethics generates questions, highlights concerns, and calls us to act. By design then, bioethics can easily give way to mistrust, anger, and accusations.⁴⁵

These types of consequences are polarizing, and are also counterproductive to the larger goal of working collectively toward a sustainable future. This is not to say that we should turn a blind eye toward injustice, but rather that we should recognize that we can accomplish much more working side by side than we can by working

In order to help Global Bioethics to be integrated fully into genetics, science, and a broader range of disciplines, it is necessary to seek common ground with one another. The broad collective notions expressed by Global Bioethics promise to appeal to and benefit from the input of a variety of communities.

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researchers should invite those who are likely to be affected to learn about their proposed research. If those two steps are taken, then all parties can work together to create a mutually beneficial research protocol with equitable and meaningful results. Throughout all of the educational processes, all parties should arrive ready to listen to, respect, and learn from one another.

Consensus-Building

In order to help Global Bioethics to be integrated fully into genetics, science, and a broader range of disciplines, it is necessary to seek common ground with one another. The broad collective notions expressed by Global Bioethics promise to appeal to and benefit from the input of a variety of communities. Not many people are likely to oppose a call to create a sustainable future, yet different communities will probably have their own ideas about how the call applies to them. In order to facilitate that process and effect actual change, we must work together, shedding light, not heat, on the issues.

Doubtless there are some individuals, and perhaps some companies, motivated by greed and other less than noble forces. But most people in the scientific community do not intend to do harm, and respond remarkably well

to undermine one another. We need an ethic grounded in respect, in which all parties have a voice to speak, and all parties lend an ear to listen.

Current Endeavors in Global Bioethics

Groups of individuals interested in Global Bioethics are now in the process of organizing. Dr. Van Rensselaer Potter has facilitated the development of a Global Bioethics Core Group and a Global Bioethics Productivity Network. These evolving groups presently call for appropriate sustainability with Global Bioethics as follows:

1. A secular understanding of science including the acceptance of the general concept of biological evolution as the true explanation of who we are. In other words, advocating evolution over creationism.

2. A respectful relationship with organized religions that seek ecumenical progress and the idea of stewardship.

3. The courage to develop intuitive moral philosophy and to seek facts in support of reasons given.

4. An unabashed search for the conditions necessary for the long-term survival of the human species in a decent civil society.

5. A demand for widespread dissemination of information in spelling out the known steps that must be taken.

6. Support for the U.N. Millennium Declaration by the General Assembly approved September 8, 2000 and a recommendation that they call on a consortium of National Academies or of Nobel Prize Laureates to draw up an outline of priorities in time and place.

7. The understanding that making world-wide human health/education/employment a priority will generate a widespread demand for the needed actions.

8. Support for independent formulations of what Global Bioethics is about.

9. A mission statement as follows:

First, the mission of Global Bioethics remains what the original new word, Bioethics, proposed in 1971 in the book *Bioethics, Bridge to the Future*: namely, "survival". By 1988 in the book *Global Bioethics, Building on the Leopold Legacy* the concept of "acceptable survival" was discussed and, more recently, "sustainability and" "appropriate sustainability" have been considered.

Secondly, the mission of Global Bioethics should include support and effort on behalf of the UN Millennium Declaration of September 8, 2000, in detail, from beginning to end.⁴⁶

Dr. Hans F. Schweinsberg has spearheaded a complementary effort, the creation of an International Council of Global Bioethics. The ICGB Mission Statement is as follows:

1. To foster Global Bioethics as a morally progressive scientific world humanism, an evolving education for understanding that advances not only a scientific-technological, but also an environmentally and culturally literate human resource base with a deep concern for the future.

2. To advocate a greatly enhanced appreciation for planet Earth by promoting wisdom and foresight in the application of knowledge towards the conservation-preservation-restoration of the Earth's ecosystems in order to provide a healthy biodiversity for the benefit of sustainable development, and of all life forms and future generations.

3. To advance transformative education, i.e., transdisciplinary alliances among the disciplines of the specialized sciences that improve life and the disciplines of the humanities that sustain social thought, ethics and universal values that recognize the oneness of human society and at the same time are attentive to the significance of the plurality of cultures and to the ways people live, think and feel.

4. To communicate across ideological domains and recognize that moral progress does largely depend upon

a system of education which raises the level of individual consciousness to an understanding of the social and historical forces that have created the existing society and determined an individual's place in that society, i.e., the growth of our factual knowledge both of human nature and of the world in which we live. To seek new avenues for progress which transcend "ideology" in order to diminish conflict within and between societies.

5. To encourage the formation of Regional Associations of Global Bioethics, facilitating forums, interpersonal meetings and involving young people, boards and faculties of education and the general public. The aim is to harmonize and unite by identifying common values, to seek the common ground on which progress can be built while observing regional cultural, religious and political differences; and at the same time bridging them into the larger conceptual framework of Global Bioethics through understanding and viewing the world as a morally undivided whole in which life and the environment, biological, psychological, social and economic phenomena are all interdependent.

6. To regard human knowledge and experience as a collective consciousness, a global project to which peoples of the most varied backgrounds and beliefs can commit themselves to cultivate humanity.

7. To take additional, appropriate measures to recognize and promote principles towards the emergence of a Universal Code of Ethics for the Future, as set out in UNESCO's Declaration of Principles on Tolerance (1995); the Universal Declaration on the Human Genome and Human Rights (1997); the Declaration on the Responsibilities of the Present Generations towards Future Generations (1997); and the Declaration and Programme of Action on a Culture of Peace (1999).⁴⁷

Doctor Peter J. Whitehouse framed similar synergetic concepts in the Introductory Statement of the Global/Environmental Bioethics Affinity Group at the American Society and Bioethics and Humanities.⁴⁸ Many others too numerous to name are currently involved in the Global Bioethics efforts as well.

If you are interested in becoming involved in Global Bioethics efforts, groups are currently organizing in many places around the globe. Only by working together can we create a shared sustainable future for ourselves, for the biosphere, and for our future generations.

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