

# P R E F A C E

Over the past decade, the Glion Colloquium has established itself as an influential resource in addressing both the challenges and roles of the world's research universities. Launched in 1998 by Professors Luc Weber (University of Geneva) and Werner Hirsch (University of California), the Colloquium brings university leaders and influential participants from business and government from around the world to Glion-above-Montreux, Switzerland, every two years to consider the future of higher education. Topics have included the rapidly changing nature of research universities, university governance, the interaction between universities and society, collaboration between universities and business, and the globalization of higher education. The papers presented and associated discussions at each colloquium have subsequently been published in a series of books available through publishers or downloadable in full-text format on the Glion Colloquium website at <http://www.glion.org>.

Although the early colloquia primarily involved participants from Europe and North America, in recent years the event has been extended to achieve a true global participation involving university leaders from around the world. The VIII Glion Colloquium was held in June 2011 to consider the roles that could be played by the world's research universities in addressing the various challenges of global sustainability in the broadest sense, e.g., climate, environmental, economic, health, poverty and geopolitical. Of particular interest was the degree to which the imperatives of global sustainability were driving change in higher education around the world. This included considerations

not only of how research universities were adapting to the imperatives of global sustainability (e.g., social diversity, resource management, academic programs, research and scholarship), but also how they could develop new curricula, student experiences, research paradigms, social engagement and international alliances to better address the challenges of global sustainability, while producing globally identified citizens. The Colloquium also considered longer-term possibilities that might pose even greater threats to global sustainability and how universities could prepare their graduates for such eventualities.

While history has always been characterized by periods of both change and stability — war and peace, intellectual progress and decadence, economic prosperity and contraction — today the pace and magnitude of such changes have intensified, driven by the powerful forces of globalization, changing demographics, rapidly evolving technologies and the expanded flows of information, technology, capital, goods, services and people worldwide. Economies are pushing the human exploitation of the Earth's environment to the limits; the military capacity of the great powers could destroy the world population many times over, business corporations have become so large that they can influence national policies, the financial sector has become so complex and unstable that it has the capacity to trigger global economic catastrophes in an instant, and corrupted regimes leading to failed states still appear in all parts of the world. Many believe that the impact of human activities, ever more intense, globally distributed and interconnected, threatens the very sustainability of humankind on Earth, at least in terms that we currently understand and enjoy.

While the fruits of development and modernity are indisputable, the negative consequences of these recent developments appear to be increasingly serious. For example, there is compelling evidence that the growing population and invasive activities of humankind are now altering the fragile balance of our planet. The concerns are multiplying in number and intensifying in severity: the destruction of forests, wetlands and other natural habitats by human activities, the extinction of millions of species and the loss of biodiversity; the buildup of greenhouse gases and their impact on global climates; the pollution of our air, water and land. We must find new ways to provide for a human society that presently has outstripped the limits of global sustainability.

So, too, the magnitude, complexity and interdependence (not to mention accountability) of business practices, financial institutions, markets and government policies now threaten the stability of the global economy, as evidenced by the impact of complex financial instruments and questionable market incentives in triggering the collapse of the global financial markets that led to the "Great Recession" of the past two years. Again, the sustainability of current business practices, government policies and public priorities must be questioned.

Of comparable concern are the widening gaps in prosperity, health and quality of life characterizing developed, developing and underdeveloped regions. To be sure, there are some signs of optimism: a slowing population growth that may stabilize during the 21st century, the degree to which extreme poverty appears to be receding both as a percentage of the population and in absolute numbers, and the rapid growth of developing economies in Asia and Latin America. Technological advances such as the “green revolution” have lifted a substantial portion of the world’s population from extreme poverty. Yet it is estimated that one-sixth of the world’s population still live in extreme poverty, suffering from diseases such as malaria, tuberculosis, AIDS, diarrhea and others that prey on bodies weakened by chronic hunger, claiming more than 20,000 lives daily. These global needs can only be addressed by the commitment of developed nations and the implementation of technology to alleviate poverty and disease.

The world’s research universities have for many years been actively addressing many of the important issues associated with global sustainability. The “green revolution” resulting from university programs in agricultural science has lifted a substantial portion of the world’s population from the ravages of extreme poverty. University scientists were the first to alert the world to the impact of human activities on the environment and climate, e.g., the impact of CFCs on atmospheric ozone depletion; the destruction of forests, wetlands and other natural habitats by human activities leading to the extinction of millions of biological species and the loss of biodiversity; and the buildup of greenhouse gases, such as carbon dioxide and their impact on the global climate. University biomedical research has been key to dealing with global health challenges, ranging from malaria to Nile virus to AIDS, and the international character of research universities, characterized by interactional programs, collaboration and exchanges of students and faculty, provide them with a unique global perspective. Universities are also crucial to developing academic programs and culture to produce a new generation of thoughtful, interdependent and globally identified citizens. These institutions are evolving rapidly to accept their global responsibilities, increasingly becoming universities not only “in” the world, in the sense of operating in a global marketplace of people and ideas, but “of” the world, accepting the challenge of extending their public purpose to addressing global concerns. To quote from the 2009 Glion Declaration:

*“The daunting complexity of the challenges that confront us would be overwhelming if we were to depend only on existing knowledge, traditional resources, and conventional approaches. But universities have the capacity to remove that dependence by the innovations they create. Universities exist to liberate the unlimited creativity of the human species and to celebrate the unbounded resilience of the human spirit. In*

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*a world of foreboding problems and looming threats, it is the high privilege of universities to nurture that creativity, to rekindle that resilience, and so provide hope for all of Earth's peoples."*

The opening session of the colloquium considered the unusually broad range of global sustainability issues. While most attention is focused on the changes humankind is forcing upon the natural world, one must also question the sustainability of human societies themselves (Weber). This requires broader considerations than the natural sciences. The arts and humanities help us to define sustainability. The social sciences are essential to the study of social organizations and communities. Key to this broader understanding is the ability to accurately estimate values of different practices and options (Cohon). For example, how do we value the welfare of future generations and hence our intergenerational responsibilities? Here our traditional social and economic organizations, such as governments and corporations, tend to come up short in weighing the full range of externalities that should influence policy development and economic decisions (Biersteker). Even our schools and universities fall short because of the degree to which considerations of values and ethics have largely disappeared from our academic programs, particularly in professional schools such as business administration (Morand). At its core, the theme of global sustainability implies a sense of equity and hence depends upon the mediating power of the law (Leroy). Here research universities can work with international development agencies such as the World Bank to provide innovative approaches to the legal challenges of sustainable development.

The particular complexities of global sustainability issues were the topic of the second session. Despite the increasing confidence on the part of the scientific community that the activities are changing the climate of the planet, there remains substantial public opinion that denies the reality of both climate change and human impact. Part of the challenge in shaping both public understanding and policy concerning global climate change issues is the difficulty of conducting rational discussion of concepts such as severity of consequences and probability of occurrence (Vest). In those rare instances in which both public understanding and scientific agreement have converged, effective policies have been developed, such as the Montreal Protocol addressing depletion of the ozone layer by limiting the emissions of CFCs. Yet today, we have a difficult time in engaging in open discussions on issues such as global sustainability when a substantial part of our population denies the reality of the consequences of human activities on global climate. In part, this may be due to the difficulty we have in comprehending the timescales, magnitudes and paradigm shifts characterizing such processes (Duderstadt). We tend to think of climate change on geological timescales and policy on political election

cycles. Furthermore, the magnitude of investment required to transform our carbon-dependent energy economy is staggering, amounting to tens of trillions of dollars. Finally, we lack the international policy forums and governance structures necessary for decisive action (Harayama and Carraz). Clearly, universities have important roles in conducting the research necessary to address uncertainties, serving as an honest broker providing impartial scientific information, and as role models in fostering sustainable campus environments (Eichler and Aebischer).

The implications of these characteristics for university teaching and learning formed the topic of the third session. Today, sustainability is more than a state of mind. It has evolved into a core value and strategy (Katehi). It was noted that the current generation of college students — the Millennials — was much more inclined toward social engagement (Munroe-Blum and Rueda). Social entrepreneurship would become an increasingly important theme at both the local and international level. We must prepare our students for both the unpredictable and the unknown. This requires a sustainable university, a multidisciplinary curriculum, and a research-based education (Beretz). Yet, it was also noted that since, even in developed nations, only a small fraction of the population benefited from college education, the real focus to achieve greater public awareness and global citizenship must begin at the primary and secondary school level (Johnson). The most essential element of a solution to global sustainability is our youth.

The fourth session focused on the research contributions of universities. Although we are rapidly developing the research tools to address global sustainability challenges, there is a mismatch in the cadence between their evolution and our evolving state of readiness to respond (Killeen). Universities around the world are evolving to address many of these issues. European universities are facing many changes: more autonomy and less bureaucracy; the harmonization of degrees through the Bologna Process; stimulated competition (e.g., the German Excellence Initiative); region-wide competition for research grants; and the challenges of “massification” — increasing the fraction of college-educated citizens from 5% to 45% of the population or greater (Huber). Furthermore, European universities continued to face the challenges of limited mobility of faculty, students and ideas that would drive a contemporary renaissance. It was suggested that grand challenges were needed to inspire scholars (Winckler and Fieder). Yet, the university cannot confine its activities to traditional education and research, since these must be translated into policy recommendations and action before we are overtaken by the consequences of indecision.

The fifth session concerned the capacity of research universities to adapt to the challenges and needs of their broader societies. The evolution of Mexico’s Tecnológico de Monterrey System into a truly “citizen-oriented” university,

deeply imbedded in the society it serves, provided a profound example of how a university could (and must) focus on the needs of its society to thrive (Rangel), embracing a new paradigm of University 2.0, based on growth and intimate engagement with society. So too, IIT Madras provided a provocative example of how a university can achieve a dynamic equilibrium with its social, ecological, and economic environment while evolving to serve a rapidly growing nation (Ananth). The challenge of meeting the extraordinary demographic change in which Europe's population is declining (with a loss of 42 million over the next 20 years), with very significant implications for immigration (Nazaré). This would require many research universities to develop a broader portfolio of academic programs, including more applied disciplines similar to those of the "Fachhochschulen" and polytechnic universities.

The theme of the sustainability of universities themselves and their changing relationship with government, students, the public and other stakeholders was also explored in this session. The globalization of higher education is a major force driving change, since it is no longer good enough to achieve leadership in one's own country. Furthermore, there has been an important paradigm shift in which the traditional role of government to provide for the purposes of universities has been inverted to become the role of universities to provide for the purposes of government (Newby and Flett). Governments increasingly regard universities as delivery agencies for public policy goals. It was stressed that universities had to remember the very serious nature of the current global financial crisis (Niland). In the same way that globalization would continue to reshape the landscape for the sustainability of the research university as we know it today, such a severe and enduring financial crisis could well attack the "DNA" of research universities and threaten to hollow out its academic core.

In addition to the colloquium sessions focused on global sustainability, a special panel discussion was organized involving the leadership of university organizations throughout Europe (Huber, Newby, Rapp, Schiesser and Winckler). The evolution of the European University Association was reviewed, illustrating its growing influence on the Bologna Process of integration and enhancement of higher education in Europe. The roles of smaller organizations of research universities, such as the League of European Research Universities and the Russell Group (U.K.) in addressing particular challenges such as massification, demographics and mission profiling were also discussed.

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