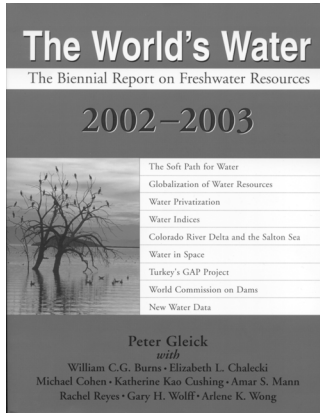


# ***The World's Water 2002-2003: The Biennial Report on Freshwater Resources***

By Peter H. Gleick with William C.G. Burns, Elizabeth L. Chalecki, Michael Cohen, Katherine Cao Cushing, Amar Mann, Rachel Reyes, Gary H. Wolff, & Arlene Wong  
Washington, DC: Island Press, 2002. 334 pages.

Reviewed by **Baruch Boxer**



Over the past decade, Peter Gleick's Pacific Institute-based publications have set the standard for comprehensive, accessible, and creative description and analysis of global water issues. They consistently offer fresh and authoritative perspectives on how disputes over shared water resources—disputes that are intensifying in many regions—have national and international security implications. These publications also suggest new ways of approaching interrelated policy remedies for water shortages, declining water quality, and discrepancies between water supply and demand.

In *The World's Water 2002-2003*—the third in “The World's Water” biennial series—Gleick incorporates single and multiple-authored contributions by Pacific Institute colleagues on diverse topics such as the effects of climate change on small, developing Pacific

island countries' water resources; economic, environmental, and water supply implications of the World Commission on Dams Report (World Commission on Dams, 2000); and transboundary water-management issues in the Colorado River delta.

Two of the major strengths of Gleick's surveys have been: (1) their balanced presentation of broad themes that link the technical, economic, and political dimensions of water studies with topical and place-specific assessments of problems; and (2) their review of difficult methodological issues relating to water-supply and -quality measurement, water use, and water conservation. *The World's Water 2002-2003* follows this pattern by maintaining a rough balance between topical and methodological issues.

This volume's mix of individual and collaborative contributions, however, slightly dilutes an important (and usually

underemphasized) point that the earlier and less-diffuse volumes in “The World’s Water” series put forward more directly: that a great deal remains unknown both about natural water processes and how cultures and societies adapt to them—adaptations that shape current and future responses to so-called “water crises.” Gleick’s previous volumes addressed the policy implications of these uncertainties especially well through chapter-length essays that underscored our shortcomings in knowledge about what “water supply” and “optimal water use” in many places really mean.

Indeed, there is at best only a marginal consensus among water scientists, managers, and policy experts worldwide as to how and to what extent nature and humanity constrain the global water supply for drinking, sanitation and health, agriculture and food supply, ecosystem sustainability, waste treatment, and industrial development. We are still far from accurately assessing all the interlocking dynamics of how the earth supplies, transforms, recycles, and redistributes surface and groundwater—both globally and locally. How should national and international water strategies take these uncertainties into account? Will we ever be able to effectively apply the idealized (but seldom-realized) concepts of “water-demand management” and “water sustainability” in diverse geographic and cultural settings?

The structure and content of *The World’s Water 2002-2003* help to clarify the many dimensions of water as a key focus of international attention and concern. Water issues are now a central element in the “sustainable development” dialogue. However, an ongoing series of international water meetings over the past decade has highlighted sharp differences over the efficacy of various engineering and policy solutions to water problems in both rich and poor countries. These meetings often indulge in tired accusations and disputes over institutional, economic, and technical strategies to address global water problems, but few new ideas and practical multilateral strategies have emerged.

In contrast, Gleick’s books provide clear, accessible, politically neutral, and reliable guidance to government and international agency policymakers as well as NGOs, the media, and academic researchers interested in understanding interrelations among

engineering, economic, and social aspects of difficult water problems. These books make a crucial contribution, since the quest for solutions to water issues is frequently distorted by national and international politics.

### ***Soft Paths and New Thinking***

To keep its research agenda lively and flexible, Gleick’s group must continually look at long-standing water issues from fresh perspectives while trying to shape substantive new ways of thinking about them. *The World’s Water 2002-2003* achieves this balance nicely.

Its first two chapters (“The Soft Path for Water” by Gary Wolff and Gleick, and “Globalization and the International Trade of Water” by Gleick, Wolff, Elizabeth L. Chalecki, and Rachel Reyes) explore the economic and political dimensions of international trade in water and convincingly appeal for a “soft path for water” in the 21<sup>st</sup> century. The “soft path” chapter builds on Amory Lovins’ work from the 1970s, which convincingly showed the human and environmental advantages of shifting from a supply-driven energy economy to one that relies more on energy-efficient production (Lovins, 1976). Gleick’s extension of this thinking to the water realm makes excellent sense. He advocates greater investment in decentralized storage, supply, and treatment facilities; in human capital; and in more effective water distribution, water use, and recycling technologies.

For example, investment in decentralized rainwater capture and storage facilities for agricultural irrigation (the largest consumer of water worldwide) is often more cost-effective and reliable than dependency on large dam-impounded reservoirs or expensive permanent distribution systems. Similarly, water needs in poor and rich countries can be better met by matching and efficiently providing water services for specific uses rather than trying to develop new, increasingly limited sources of fresh water. “Demand” (as opposed to “supply”) water management is becoming the rallying cry of wise, economically astute, and socially conscious water managers.

In emphasizing the necessity of a soft-path approach (which challenges the assumed superiority of “rationalized” and “optimized” engineered solutions to problems of water

shortage, surplus, and distribution), Gleick bravely confronts a mostly unconvinced international community of water professionals. His appeals, however, are gaining greater credibility, as the scale, scope, complexity, and intractability of interrelated global water problems intensify.

Next, in “The Privatization of Water and Water Systems,” Gleick, Wolff, Chalecki, and Reyes tackle the complex implications of the recent global interest in promoting market-driven initiatives and mechanisms in water policy development. Can the private sector translate the vague notion of water as an “economic and social good” into more equitable and efficient water supply systems for both rich and poor? The chapter’s thorough discussion of the perils and potential benefits of privatizing water systems is most welcome, since policymakers are only beginning to recognize and acknowledge an inherent, multidimensional conflict between traditional government responsibility to the community for providing clean water and the profit-making objectives of private firms involved in water development, delivery, and quality maintenance.

### ***The Need for Multisectoral and Indigenous Perspectives***

Following this foray into a murky and contentious policy arena, Gleick, Chalecki, and Arlene Wong (in “Measuring Water Well-Being: Water Indicators and Indices”) once again convincingly show that we cannot meaningfully assess economic or other strategies for water sustainability without first gaining a clearer understanding of how humans are affected by the availability and shortage of water.

Water indicators and indices provide essential insight into relationships between water availability, water use, and their implications for human and environmental health and well-being. Here, Gleick excels once again at showing how difficult it is to know where we stand in the water picture; he clearly points up the limitations even of common, generally accepted measures of water access and beneficial use.

The chapter also provides an excellent overview of the difficulties faced in constructing water-related indices. Despite

substantial efforts by governments, private groups, and international agencies over the past 30 years to come up with better, more precise definitions of problems and their impacts, we still are struggling to find a common basis for discussing the scope and implications of water problems. As Gleick points out, interconnections of “water well-being” with social, economic, and environmental aspects of the human condition make it difficult to use any single index of quantity or quality, at multiple scales, to facilitate integrated planning and response.

Multilateral efforts over the past thirty years to come up with solutions to global water problems have thus been stymied by two main factors. First, water engineering has achieved theoretical and practical sophistication (as well as relative success) in specific sub-sectoral areas such as wastewater treatment, domestic water supply, irrigation technology, and water-pollution control.

But these engineering achievements have outpaced policymakers’ attempts to implement comprehensive, integrated cross-sectoral water strategies—strategies that require major institutional and financial adjustments that are sensitive to social, cultural, and ecological demands in specific places.<sup>1</sup> Since the 1960s, it has become increasingly evident that environmental, economic, and social-dislocation impacts of large dam and irrigation projects often outweigh flood control, hydropower development, and other benefits.

Indeed, it has proven difficult to translate the benefits of rational structural engineering into programs of remediation and development that are sensitive to the political, cultural, and environmental constraints of different places and regions. Governments and the multinational water engineering community have applied universally accepted, Western-derived financial assumptions, institutional structures, and water engineering practices worldwide—a tendency that has deterred the growth of indigenous water regimes more responsive to local needs, especially in developing countries. Water policies in India, Egypt, and Brazil exemplify this, although China over the past twenty years has been making a strong and sincere effort to integrate foreign and indigenous

engineering, institutional, and water resource management approaches.

Gleick acknowledges the obvious contributions of water science and engineering, but he also calls for new, more humane and environmentally-sensitive ways of thinking about water—given expanding global population, a growing wealth gap between rich and poor, and increasingly severe shortages of clean water for drinking and sanitation, especially in developing countries.

### ***An Invaluable Resource***

Finally, the “World’s Water” series has always been distinguished by carefully compiled and very useful supplementary and documentary materials. The “Water Briefs” section of *The World’s Water 2002-2003* (about half the book) includes Gleick’s well-documented “Environment and Security Water Conflict Chronology Version 2002” compilation, which highlights (a) the centrality of water-related disputes in international and regional conflicts, and (b) the importance of recognizing water disputes as a key element in international “security” considerations.

The “Water Briefs” section also includes ministerial declarations from two recent international water conferences and a list of water-related Web sites. Amar S. Mann cites the inevitable harm to ancient archeological sites in eastern Turkey and northern Iraq by ongoing irrigation dam development under the Southeastern Anatolia water project. Chalecki’s piece on “Water and Space” anticipates the increasing value of water in space in support of human exploration. The “brief” provides useful information on potential water sources like “cosmic snowballs,” water-bearing meteorites, interstellar clouds, the moon, and Mars.

The volume’s “Data Section” is especially valuable because it includes twenty-two updated and carefully documented statistical tables on drinking-water access, sanitation access, number of dams, and freshwater supply and withdrawals for countries and national sectors. Each table is also helpfully prefaced

by carefully prepared descriptions of its content and missing information, as well as notes on the limitations of its data because of source inconsistencies, variations in national interpretation of data categories and measurement assumptions, and other issues.

Here, Gleick is emphasizing once again that our knowledge of total renewable freshwater supply is shaky and uncertain, mainly because it is based on national country reports that are notorious for inconsistent assumptions underlying their definitions and interpretation of data sources. Gleick’s assemblage and presentation of data

**“Demand” (as opposed to “supply”) water management is becoming the rallying cry of wise, economically astute, and socially conscious water managers.**

nonetheless provides an invaluable lens onto the global water situation.

The “World’s Water” series represents a unique contribution to international efforts to understand the extent and implications of pressing water constraints for societies and the global environment. Each of the series’ volumes has presented the most reliable descriptive information of the state of global freshwater; they have also offered restrained but trenchant questioning of the accepted wisdom concerning (a) the application of scientific and technical knowledge in water policy, (b) the viability of current and evolving national and international water-management strategies, (c) the critical role of water in the dynamics of global environmental change, and (d) many other dimensions of this critical topic. Let us hope that Gleick and his colleagues can continue indefinitely to produce their invaluable domestic and international water-related publications. **W**

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## Notes

<sup>1</sup> For example, large water resources development schemes around the world are still framed and justified as having “multipurpose” benefits, a concept first brought forth in the 1930s by governments and private engineering firms to meet multiple objectives: flood prevention and control; urban, industrial, and agricultural water supply; energy and fisheries development; and water-based recreation.

## References

Lovins, Amory B. (1976, October). “Energy strategy: The road not taken?” *Foreign Affairs* 56(1). [On-line]. Available: <http://www.foreignaffairs.org/19761001faessay10205/amory-b-lovins/energy-strategy-the-road-not-taken.html>.

World Commission on Dams (2000). *Dams and development: A new framework for decision-making*. London: Earthscan Publications.

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## **State of World Population 2002: People, Poverty and Possibilities**

New York: United Nations Population Fund (UNFPA), 2002. 80 pages.

*Reviewed by Tom Merrick*

Poverty reduction has moved to center stage in the international development arena, and today’s poverty agenda is multi-dimensional—it not only addresses income poverty, but it also recognizes that illiteracy, ill-health, gender inequality, and environmental degradation are aspects of poverty as well. The contemporary commitment of global leaders and international agencies to fight poverty is crystallized in the Millennium Development Goals (MDGs), through which the world’s nations have agreed to specific targets for reduction of both income poverty and other poverty measurements by the year 2015.

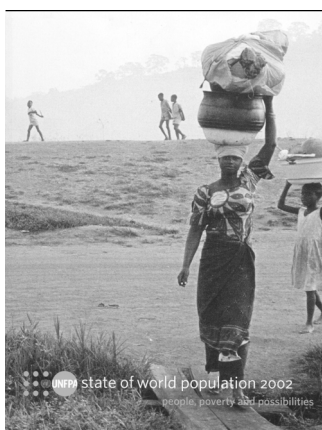
The 2002 edition of UNFPA’s annual State of World Population—*People, Poverty and Possibilities*—argues that poverty reduction and achievement of the MDGs will not be possible unless the world also effectively addresses population and reproductive-health issues. This focus is important: for while the MDG process consolidated agreements made at the major 1990s international conferences (Rio, Cairo, Beijing, and Copenhagen) into a set of measurable goals for each of the main dimensions of poverty, the Goals themselves exclude population and reproductive health.

The 1994 International Conference on

Population and Development saw the world set a goal of universal access to reproductive-health services, a goal that was reaffirmed five years later in the five-year ICPD progress review. But universal access to reproductive-health services was eliminated from the MDGs in a concession to a few opponents who found the concepts of reproductive health offensive. Nonetheless, two of the MDGs (reducing maternal mortality and turning back the HIV/AIDS epidemic) are directly related to reproductive health, and two others (gender equity and reduction of child mortality) are closely linked. *State of World Population 2002* spells out these connections and also goes on to show how population and reproductive health affect the other MDGs.

### **A Window onto World Poverty**

*State of World Population 2002* is brief, clear, and comprehensive. An opening overview maps paths toward achievement of MDGs and provides a succinct table summarizing specific links between reproductive health, family planning and population, and the eight Goals. Subsequent chapters fill out the story based on key research findings, data on progress toward MDGs, and a rich array of boxes illustrating successful



approaches and case examples. For example, one of the boxes gives an account of how UNFPA support for income-generation activities in Laos (such as cultivation of cardamom, an environmentally friendly and productive cash crop) was combined with reproductive-health information and services to break the cycle of poverty and poor health.

The report's chapter entitled "Characterizing Poverty" also provides a sobering reminder of the dimensions of global poverty—a billion people living on less than a dollar a day, and two more billion living on less than two dollars. Meanwhile, world population is projected to increase from six to nine billion during the first half of this century, with most of the increase occurring in poor countries. Reducing the sum total of poor people will thus be a major development challenge.

*State of World Population 2002* also goes beyond mere national averages to illustrate rich-poor differentials within countries for various MDG-related indicators. The report makes good use of a series of charts drawn from special tabulations of data from demographic and health surveys in different regions of the world. Educators may want to download these charts from the electronic version of the report available on UNFPA's Web site.

### ***The Importance of Being Multisectoral***

Another valuable feature of *State of World Population 2002* is the way in which it captures the multisectoral dimensions of poverty reduction and the roles that population and reproductive health play throughout those dimensions. The report's chapters on gender, health, and education look not only at the supply of reproductive-health services and information worldwide, but also at the interplay of factors at the household, community, and societal levels that shape development outcomes in specific contexts. For example, Bolivia's adult literacy campaign for the indigenous poor incorporated reproductive-health information in its training materials and, with a trained attendant (one of the key interventions required to reduce maternal mortality), contributed to a doubling of the proportion of deliveries.

Such a multisectoral focus is particularly

important when discussing the links between poverty and reproductive health—links which go beyond mortality and morbidity (although the disease burden of reproductive ill-health is also very high for poor women). Enabling women to decide when and how many children they will bear affects their own chances of escaping poverty as well as the chances of their children and other family members.

The report illustrates the essential multi-

**Two of the Millennium Development Goals are directly related to reproductive health, and two others are closely linked.**

sectoral approach to poverty reduction with examples of initiatives that empower women by giving them control over productive assets. For instance, Bangladesh's Grameen Bank provides loans to groups of women to enhance mutual support for each debtor; the process allows women to interact with the market and community at large and promotes basic literacy and family planning. Mexico's PROGRESA program also illustrates a successful approach to demand-side interventions aimed at reducing the financial and social obstacles that often prevent poor women from accessing basic social services. PROGRESA provides sustained financial support to poor families along with nutritional supplements, education grants, and a basic health package. As a box in the report notes, "[o]ne of [PROGRESA's] innovations is to provide money directly to women, putting additional resources under their control and giving them greater freedom in their own movements" (page 29).

*State of World Population 2002* gives particular attention to the devastating impact of the HIV/AIDS epidemic and its effects on poverty-reduction efforts. Again, the report's approach is multisectoral: the UNFPA authors detail how HIV/AIDS undermines not only health but human development and poverty reduction, especially through its impact on the health and education workforces. Reproductive-health programs—particularly those oriented to youth, among whom half of new HIV/AIDS infections occur—are key

to both prevention and the scaling up of treatment (including testing and counseling).

### **Conclusions**

The concluding chapter of the report focuses on the way forward toward achieving development goals. It reminds readers of the financial commitments made during the 1990s conferences and the disappointing levels of official development assistance actually attained. The chapter also emphasizes the importance of ensuring that population and reproductive-health issues are addressed at the country level in the Poverty Reduction Strategy of the World Bank and IMF process as well as in the monitoring of national progress toward MDGs.

Both these efforts require listening to and involving the community in poverty-reduction efforts and in reforming the way in which social services are financed and managed in order to get more value for the scarce resources invested. These efforts also require improved capacity to measure and monitor

outcomes, so that donors know that their funding is actually helping the poor to escape poverty—whether that poverty is measured in terms of income, health and education, gender equity, or protection of the environment.

Overall, readers will find *State of World Population 2002* a readable and timely review of poverty reduction and the important role that population and reproductive health will play in achieving the MDGs. Both paper and electronic versions of the report can be accessed through UNFPA's Web site (at [www.unfpa.org](http://www.unfpa.org)).



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## ***Six Billion Plus: Population Issues in the Twenty-First Century***

By K. Bruce Newbold

Lanham, Maryland: Rowman & Littlefield, 2002. 213 pages.

### ***Reviewed by Joseph Winchester Brown***

**S***ix Billion Plus* is an insightful and accessible book that provides an overview of global population issues from a geographical perspective. Though the book is a relatively small text, there are three reasons why I believe its impact on the field could be substantial.

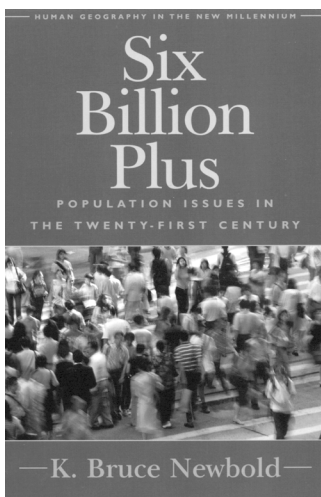
First, the geographical perspective emphasizes migration and population distribution, factors that often receive less attention than fertility and mortality. Second, the book offers an appropriately concerned view of the future without being alarmist. Third, author K. Bruce Newbold introduces to mainstream demography studies the literature on population, resource scarcity, and conflict.

### ***The Geographic Perspective***

For a demographer, the idea that

population dynamics occur across space is clearly fundamental. However, most introductory or survey textbooks in demography are built primarily around problems of conceptualizing, measuring, and explaining human fertility. The life table aside, mortality is a critical but usually somewhat secondary concern to the demography student interested in learning the core principles of the field. Migration comes in a distant third.

This hierarchy of content is exemplified in the excellent introductory to the discipline by John Weeks—the standard textbook over the past 25 years. In the 7<sup>th</sup> Edition of Weeks (1999), a total of 73 pages are devoted to introducing fertility, 45 pages are used to introduce mortality, and 39 pages to migration. Thus, for the social science student taking an introductory course in population studies, the enduring theoretical questions will



relate to demographic transition theory, the analytical tools will largely be based on understanding population projections and the importance of age-sex structure, and the policy questions will most likely be focused on issues of family planning and reproductive-health interventions.

Fertility is the key factor driving all three of these concerns. And while it is true that for most of human history the fate of a population depended more on mortality than on fertility or migration, “modern” population studies has been motivated by the problem of rapid population growth—that global declines in death rates were not immediately matched by global declines in birth rates.

However, in their search for a unifying theory of fertility decline, demographers have developed models that are often eloquent and useful in the general sense but that have serious limitations with respect to specific regions and cultures. Put differently, the role of *space* in population studies has not been a defining feature of the field.

This lack of attention to space contrasts with the geographic perspective, which draws upon an even richer interdisciplinary basis than demography and which goes deeper into the interactions of people and place in order to explain spatial processes. As Alice and Lincoln Day wrote thirty years ago about population density: “Although the inadequacy of population density as an indicator of social conditions has long been recognized by geographers, the concept is still being used for this purpose by various government officials, economists, journalists, and demographers” (Day & Day, 1973, page 1016).

Demographers, of course, have incorporated spatial analysis into their work. An excellent example is found in the Coale & Watkins (1986) summary volume on the landmark Princeton European Fertility Project entitled *The Decline of Fertility in Europe*. One finding from this study was that traditional demographic theory fell short of explaining the pattern and the pace of fertility decline across all provinces in Europe over the period 1870 to 1960.

Rather than attributing fertility variation to socioeconomic variables, *The Decline of Fertility in Europe* suggested that the timing of the decline was closely associated with

linguistic and other cultural groupings. Recognizing that a more integrative (read geographic) perspective was needed to address such cultural variation in fertility behavior, one of the volume’s authors proposed soliciting the help of regional experts in order to better understand the role of culture and context (Anderson, 1986, page 312).

A lack of attention to space and “place” has therefore been an important criticism directed at mainstream demographic theory.

**Newbold is right to point out that the apparent “good news” of the United Nations long-term population projections does not mean that we no longer have a “population problem.”**

But there is another reason why the geographic perspective, and in particular its emphasis on population distribution, is especially important for current students of population: the global fertility transition is nearly complete. With only a few exceptions, women in most countries of the world are having substantially fewer births than their counterparts in previous generations.

In the 21<sup>st</sup> century, the most pressing demographic issue will instead be rapid population *aging*. In this context, the role of migration will increasingly dominate difficult questions of social policy. This idea is supported throughout Newbold’s book through his effective use of not only the literature but (more importantly) of case studies.

More specifically, in six out of the seven chapters in *Six Billion Plus*, Newbold clearly and persuasively outlines how the movement of populations within and (especially) across national borders will be the key demographic variable influencing (a) the containment or spread of diseases, (b) the supply of young labor forces in increasingly aged societies, (c) the political reactions to immigrants among host nations, and (d) the extent to which migration could exacerbate environmental degradation. Without sufficient attention to each of these issues, demographers could be somewhat less prepared than their counterparts in geography for the challenges that lie ahead.



### **Focus on the 21<sup>st</sup> Century**

Throughout *Six Billion Plus*, Newbold emphasizes the extent to which population growth and population distribution create insidious multiplier effects on a range of social and ecological problems. The word “insidious” is important here: what differentiates the Newbold text from others in the field of population studies is that Newbold does not shy away from communicating his political

**Newbold’s ability to relate issues of population distribution to the potential for conflict takes *Six Billion Plus* to a new level for demography texts.**

or ideological point of view.

But rather than subject the reader to polemic or tiresome advocacy, Newbold has skillfully woven into his analysis the idea that demography’s overarching concern should be to better understand the root causes of inequalities in the world and, by doing so, help to alleviate them. Simple (and perhaps trite) as it may seem, such a “mission statement” is not present in other population textbooks. It is refreshing, for example, to read Newbold on how the richest country in the world (the United States) can have a system of public health and of medical care that is effectively off-limits for a large and growing population of poor and marginalized citizens. In fact, Newbold’s ability to constructively contrast the government programs of Canada and the United States throughout the book is a real plus. His use of political cartoons is also very effective.

Does such a tone constitute a lack of scholarly objectivity? My answer is “no.” Newbold’s discussions are well-informed and draw heavily from the mainstream journals and articles. In particular, Newbold explicitly frames the intellectual boundaries of an analytic issue by presenting a helpful, unbiased review of the relevant scientific debate.

For example, before providing an analytic survey of the relationships between population, resource scarcity, and the environment, Newbold traces the contributions to this complex issue of three different perspectives: (1) *the neo-Malthusians*

(e.g., Rachel Carson, Paul Ehrlich); (2) *the distributionists* (Marxists); and (3) *the economic optimists* (e.g., Ester Boserup, Julian Simon). This intellectual background lets the reader know that issues involving population are sufficiently complex to rule out their “ownership” by any one particular perspective. Moreover, by tracing the evolution of a scientific debate on such an issue as population–environment relationships, Newbold is implicitly pointing out the lack of objectivity that is inherent in any important “scientific” approach.

By the final chapter of *Six Billion Plus*, the reader is fully aware of how Newbold himself views the population landscape of the future, and is ready to accept this viewpoint because of the author’s balanced presentation of the data, of the intellectual debate, and of how particular issues are played out in the context of case studies. In this final chapter, Newbold proposes five demographic forces that will shape the world. The first of these forces is the idea that, despite dramatic declines in global fertility, the world will continue growing because of population momentum and the fact that in several critical countries (e.g., Nigeria and Pakistan) the decline in fertility has not kept pace with the rest of the world.

Whether the population of the world will ultimately reach 9 billion or even more than 12 billion is a question vigorously debated by formal demographers attuned to the methodology of population projections. In fact, the National Research Council’s Committee on Population published *Beyond Six Billion: Forecasting the World’s Population* (2000) to convince policymakers to trust the population projections of the United Nations and the World Bank. Newbold is right to question the assumptions behind the projections (of which the primary assumption is a continuing fertility decline in all countries) and to point out that the apparent “good news” of the United Nations long-term population projections does not mean that we no longer have a “population problem.”

The next demographic force is population decline, and Newbold illustrates the multiple problems that confront a society with a growing proportion of persons over age 65: debilitating economic problems through

larger dependency ratios and the concomitant cost of elderly medical care as well as potentially destructive social and political policies. Again, Newbold's use of the Quebec problem in Canada is effective in highlighting this issue. Newbold then turns to the HIV/AIDS epidemic, followed by international migration and the problem of refugees and internally displaced persons. While the demography of HIV/AIDS is now found in all basic population textbooks, migration and refugees have not—a critical shortcoming.

### ***The Potential for Conflict***

But it is Newbold's ability to relate issues of population distribution to the potential for conflict that takes *Six Billion Plus* to a new level for demography texts. The works of Thomas Homer-Dixon and the "Toronto School" have made inroads into mainstream training in demography and population studies, but these roads have not gone very far. To the best of my knowledge, there has yet to be a scientific panel devoted to population and environmental and/or political security at the annual meetings of the Population Association of America, the main conference for demographers. The subject is not found in the newest edition of the Weeks textbook, and one will probably have to wait a long time to see a report or publication on population and conflict/security from the Population Council.

In fact, I can think of only one population textbook that covers the issue of security and conflict: Leon Bouvier & Jane Bertrand's *World Population: Challenges for the 21<sup>st</sup> Century* (Bouvier & Bertrand, 1999). *World Population* is a book with similar designs on teaching basic concepts of population and articulating an agenda for what lies ahead. The difference is that Bouvier and Bertrand are demographers with strong ties to the policy and programmatic world of family planning and reproductive health. Their treatment of potential conflict is indeed linked to the projected increase in international migration, but they fail to cite Thomas Homer-Dixon even once. Instead, the conflict portion of *World Population* is solely based on the work of Samuel Huntington.

The extent to which the Toronto School and Samuel Huntington diverge on this issue

is beyond the scope of this review. However, at the risk of misrepresenting one or both points of view, it strikes me that Thomas Homer-Dixon has developed a strong research program in population-resource scarcity-conflict interrelationships that is inclusive, interdisciplinary, and has substantially furthered the intellectual discourse in this area.

On the other hand, while Huntington received a great deal of publicity for his views on population and security, a common complaint about his work concerns its overall pessimism and underlying conservatism (read: fear-based politics). If valid, this criticism of Huntington does not bode well for the cultivation of academic leadership in

**The role of *space* in population studies has not been a defining feature of the field.**

population and conflict studies. Future researchers in the area of population and conflict would do well to follow Homer-Dixon's lead.

Overall, Newbold's geographic perspective on population and society has allowed him to frame the discussion on conflict within a dynamic system of demography, migration, the environment, resource scarcity, public health, and economic development. Seen from this perspective, population and conflict is not a doomsday scenario, but rather one for which we can plan, using knowledge gleaned from a broad, multidisciplinary approach. I read this section of the book as a logical extension of the analyses and arguments presented in the earlier sections; the potential for conflict certainly appears to represent a valid component of any rigorous treatment of demography and population studies focused on the future.

I plan to use *Six Billion Plus* in my population studies course for students earning the master's of public health degree. I would supplement this text with a solid primer on demographic measurement (e.g., Palmore & Gardner, 1994) as well as a good deal more material on reproductive-health programs; neither subject receives much attention in the

Newbold text.

Other quibbles with the text involve the figures, which are small and difficult to read. (For example, one graph showing human mortality schedules should use a logarithmic scale for ease of presentation.) I would also like to see more material used to round out the discussion of population–environment dynamics. Perhaps more detailed discussion of Richard Bilborrow (e.g., Bilborrow & Hogan, 1999) and of Norman Myers (e.g., Myers, 1990) is warranted, and citing the work of Joel Cohen (1995) and Paul Harrison (1992) might also be helpful.

But Bruce Newbold has written an excellent text in *Six Billion Plus*, and I believe my students will echo this sentiment in the new academic year. **W**

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## References

- Anderson, Barbara A. (1986). "Regional and cultural factors in the decline of marital fertility in Europe." In Ansley J. Coale & Susan Cotts Watkins (Eds.), *The decline of fertility in Europe: The revised proceedings of a conference on the Princeton European fertility project* (pages 293–313). Princeton: Princeton University Press.
- Bilborrow, Richard E. & Daniel J. Hogan (Eds.). (1999). *Population and deforestation in the humid tropics*. Liege, Belgium: IUSSP.
- Bouvier, Leon F. & Jane T. Bertrand. (1999). *World population: Challenges for the 21<sup>st</sup> century*. Santa Ana, CA: Seven Locks Press.
- Coale, Ansley J. & Susan Cotts Watkins (Eds.). (1986). *The decline of fertility in Europe: The revised proceedings of a conference on the Princeton European fertility project*. Princeton: Princeton University Press.
- Cohen, Joel E. (1995). *How many people can the earth support?* New York: W.W. Norton and Co.
- Day, Alice Taylor & Lincoln H. Day. (1973). "Cross-national comparisons of population density." *Science* 181, 1016–1023.
- Harrison, Paul. (1992). *The third revolution: Environment, population and a sustainable world*. London: I. B. Tauris.
- Myers, Norman. (1990). "The world's forests and human populations: The environmental interconnections." *Population and Development Review* 16 (Supplement), 237–251.
- National Research Council, Committee on Population, Panel on Population Projections. (2000). *Beyond six billion: Forecasting the world's population*. Washington, DC: National Academy Press.
- Palmore, James A. & Robert W. Gardner. (1994). *Measuring mortality, fertility, and natural increase: A self-teaching guide to elementary measures*. Honolulu: East-West Center.
- Weeks, John R. (1999). *Population: An introduction to concepts and issues* (7<sup>th</sup> Ed.). Belmont, CA: Wadsworth.