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Abstract Two parallel debates, on cultural diversity and on diversity in animals and plants, are underway with insufficient meaningful contact, but a shared focus on declining diversity. Underlying the sharp decline in diversity in many human and non-human domains is cultural change, bringing about sudden contact between life forms with no previous experience of contact with one another. A common consequence of sudden contact is catastrophic evolution, involving a rapid and often fatal decline in the numbers of a particular life form; this is more likely for life forms low in both preadaptiveness and postcontact adaptation speed. Greater efforts are needed, particularly on the part of cultural researchers, to develop an integrative 'bio-cultural' policy to manage diversity, recognizing that cultural changes impact on diversity in all life forms, and that cultural diversity and diversity in animals and plants are inter-connected.

Key Words causation, literature, narratives, normative psychology, performance

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Catastrophic Evolution, Culture and Diversity Management Policy

Introduction

Although its goal is to develop a feeling of belonging to a shared culture, the EU is also keen to preserve the specific aspects of Europe's many cultures, e.g. minority languages. (European Commission, 2002, p. 5)

The expanding European Union (EU) has undoubtedly become one of the most vibrant and influential entities attempting to achieve a balance between, on the one hand, the powerful economic, technological, political and bureaucratic forces bulldozing over diversity in cultures, value systems and ways of life which include languages and religions and, on the other hand, a myriad of alternative and sometimes competing alliances fighting a rearguard action to maintain diversity in cultures. This struggle between forces impacting on cultural diversity has historically been documented by psychologists in the context of immigrant-receiving societies, such as the United States, Canada, Australia and New Zealand (Lambert & Taylor, 1990),

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but monumental changes in communications and transportation, as well as the movements of larger numbers of people around the world, has led to a need to consider diversity in a wider international context (Moghaddam, 1993, 1998, ch. 14). Diversity is not just a local issue, it is a major global challenge.

Alongside the debate on cultural diversity is an international debate about diversity in animal and plant life, driven by the realization that the rate of species extinction is currently about one every twenty minutes (Gorke, 2003). The general theme of discussions on species diversity and the plight of the natural environment on plant earth is captured by the title of Terborgh's book *Requiem for Nature* (1999). Despite valiant efforts to plan and implement practical and even financially profitable programs to maintain biodiversity (e.g. Daily & Ellison, 2003; Groves, 2003), the negative impact of the juggernaut of globalization seems to be unavoidable. The natural world we are passing on to future generations is much less diverse than the one we inherited.

The two parallel debates, the first on cultural diversity and the second on diversity in plants, animals and other non-human life forms, both start with the premise that decreasing diversity is detrimental for humankind. The idea that diversity in animal and plant life is beneficial is now part of the normative rhetoric in both scientific and lay discussions, as reflected in professional journals and the mass media. Even when looked at only from the overly narrow perspective of what benefits humankind, animal and plant diversity is seen to be beneficial because it provides a wider range of sources from which substances useful in medicine, industry and other arenas can be extracted. Also, with respect to our future survival, as environmental demands change, humans will need to look for new medical and technical solutions, which may well be found in plant and animal life, much of which remains unknown to us. The logic, then, is that different plants and animals have qualities that may well prove to be vital for humankind in order to meet future environmental challenges; the greater the diversity of plant and animal life, the greater the chances that they will provide the solution to new challenges confronting humankind.

Associated with the assumed benefits of greater diversity in animal and plant life are attempts to ensure that all humankind, rather than just the more affluent sectors of Western societies, benefit from research on plants and animals. There have been numerous cases involving the patenting of substances by Western businesses, when the substances were extracted from natural resources in a less developed country, but

not sold at a price affordable for most of the population of that country. An equally unjust situation is highlighted by my discussion with Shayna Ginsburg of the case of the ayahausca plant, which was taken from a domestic garden in Ecuador to the United States and patented in 1986 (Moghaddam & Ginsburg, 2003). This patent granted a corporation registered in California the exclusive rights to sell and develop new varieties of the plant, despite the fact that ayahausca has a long history of being used in traditional ceremonies and healing practices by numerous groups in the Amazon region of South America. Through a thirteen-year battle involving the mobilization of hundreds of tribal groups, and legal action in Washington, DC, the patent was eventually cancelled in 1999.

Some international efforts are underway to try to prevent cases such as the patenting of the ayahausca plant in the United States, by protecting indigenous knowledge and resources. For example, the *Convention on Biodiversity* adopted in 1992 at the Earth Summit in Rio de Janeiro calls on governments to, among other things, protect and support the traditional knowledge of indigenous peoples (see Moghaddam & Ginsburg, 2003). Although the United States was not one of the 150 countries that signed the treaty, the conservation of 'traditional knowledge, innovations and practices' of indigenous peoples had received endorsement from most countries on the international stage.

This implies that just as there is value to preserving diversity in plant and animal life, there is value in preserving diversity in traditional knowledge, and cultures more broadly—and perhaps for some of the same reasons. Environmental conditions are changing, and it is impossible to predict what environmental demands will be in the coming centuries. The solutions to at least some of the unexpected future challenges confronting humankind may be found in the minority cultures that are increasingly under pressure, and may soon disappear under the force of globalization.

There are also a number of arguments in support of diversity that are unique to human cultural groups, and not applicable to animal and plant life. For example, Gurin and others have presented arguments and empirical evidence in support of the view that participants in culturally diverse educational programs become better citizens for democratic societies (Gurin, Dey, Hurtago, & Gurin, 2002; Gurin, Nagda, & Lopez, 2004). Specifically, such participants are better able to adopt the perspectives of others, and in most cases also better able to develop a sense of community.

Bridging the Gap Between Two Important Debates

This article, then, is intended to serve as an introduction and an invitation to a discussion to help bridge two parallel debates, on plant and animal diversity and on cultural diversity. Terms such as 'ethnosphere' and 'ethnobotany' reflect an interest in communicating across the two parallel debates, but for the most part one set of experts, mostly anthropologists, linguists, psychologists and sociologists, have focused on cultural and linguistic diversity while, on a separate parallel track, another set of experts, mostly biologists, ecologists and veterinarians, have discussed animal and plant diversity. Neither has this gap been bridged by forays into linguistic ecology by Mühlhäusler (1996, 2003) and others. There is a need for conceptualizations that strengthen connections between the two parallel debates, perhaps in association with a larger program proposed by Ehrlich and Kennedy (2005): the *Millennium Assessment of Human Behavior*, intended to involve researchers from multiple disciplines in discussions of how human behavior needs to change in order to improve the chances of long-term survival for humankind.

There are important theoretical and policy benefits to be gained by forging connections between the two parallel debates. First, such conceptualization can lead to more comprehensive and dynamic accounts of diversity changes. Second, the inter-dependence of diversity in human cultures and animals and plants will become further clarified and highlighted. Third, those involved in the two parallel debates will be able to collaboratively develop a comprehensive common language, something urgently needed at present in discussions on diversity. Fourth, a more comprehensive account of diversity and inter-dependence presented in a common language will facilitate communication both among groups of researchers interested in diversity, and between researchers and policy makers and the lay population. This increases opportunities to develop and get adopted policies to minimize the detrimental impact of changes in one sphere, particularly human societies, on another, particularly animals and plants. Increasingly it is being recognized that diversity changes in one sphere can and often do impact on diversity in other domains (Millennium Ecosystem Assessment, 2003); but far more needs to be done to develop theory and policy based on this dynamic inter-dependence.

A Proposal and Some Qualifications

My argument is that there are common cultural factors underlying threats to diversity in both human and non-human life forms. My specific focus is on cultural change that suddenly brings into contact

life forms that have never previously had contact, and are not prepared for the consequences. Of course, I do not mean to negate the dangers of inbreeding. The benefits of cross-breeding and contact with 'out-groups' has been known for a very long time and highlighted by the monumental contributions of Darwin (1859/1993):

... both with plants and animals, there is the clearest evidence that a cross between individuals of the same species, which differ to a certain extent, gives vigour and fertility to the offspring; and that close interbreeding continued during several generations between the nearest relations, if these be kept under the same conditions of life, almost always leads to decreased size, weakness, and sterility. (pp. 385–386)

Thus, I am not denying the dangers of inbreeding, but pointing out that in order for contact to be productive, it has to come about under certain conditions.

Also, I do not mean to suggest that contact between animals and plants is the same as contact between cultural and linguistic groups. Cultural evolution has made humans unique in many important ways (Greenspan & Shanker, 2004), including their ability to bring about the conditions for sudden contact between life forms (including groups of humans) with no previous history of contact. This is in part made possible by a culture that supports expansion and domination over out-groups.

The Long Path to Imperialism

Almost five million years ago bipedalism launched our ancestors on a new evolutionary path, eventually leading to the ability to use tools, and to evolve complex languages. Knowledge from the science of genetics has enabled researchers to track humans from their origins in Africa to their dispersal around the globe (Cavalli-Sforza, Menozzi, & Piazza, 1994). The long migrations out of Africa dispersed humans widely, and tracking of the Y-chromosomes lineages reveals that humans were occupying all of the major land masses by 10,000 years ago (Wells, 2002, see particularly pp. 182–183). As groups of humans moved into new territories and adapted to new environmental conditions, they evolved a variety of different cultural practices.

Variation in human cultural practices is most obviously represented through examples of groups of people who lived for long periods of time in relative isolation. For instance, the Tiwi of Northern Australia lived on Melville and Bathurst Islands, with little contact with mainland aborigines before 1890 (Hart, Pilling, & Goodale, 2001). Thus, Tiwi culture evolved in isolation in the context of the Australian land

mass, already isolated from the rest of the world by vast distances of water. The Tiwi had little experience of collective warfare, and developed elaborate rituals for minimizing aggression. For example, when serious disputes arose, often involving an older man who believed one or several of his wives had been seduced by a younger man (in the traditional Tiwi social system, old men typically had many young wives and young men had either no wives or only older wives), the accused was forced to stand at some distance and allow the accuser to hurl spears at him until some blood was drawn. This public, often entertaining and even comical, spectacle rarely resulted in life-threatening injury, and allowed honor to be restored without large numbers of people being ensnared in the conflict. In contrast, the Yanomamo, who also evolved in relative isolation, cut off by the dense Amazon jungle where they live in northern Brazil and southern Venezuela, routinely engaged in collective violence, often resulting in serious injury and death (Chagnon, 1997). But such groups with hugely different behavioral styles, in aggression as well as in other domains, kept to their own territories and did not have the means by which to travel the huge distances necessary to have 'sudden' contact with dissimilar out-groups. They could not suddenly appear in the territories of other societies with vastly different cultures and technologies thousands of miles away. For example, the Yanomamo, with their strong traditions of collective aggression, did not have the opportunity to land on Melville and Bathurst Islands and suddenly overwhelm the relatively pacifist Tiwi.

The ability to bring about 'sudden contact' on a large scale with people who had evolved in relative isolation was made possible by the new technologies, as well as the new belief systems, that evolved in Western societies after the Renaissance. The Egyptian, Chinese, Greek and Roman empires of earlier epochs had a relatively minor impact on the global system compared to the impact of Western empires that emerged after the 15th century. The landing in America in 1492 by Christopher Columbus, in Australia in 1770 by Captain James Cook, and the 'discovery' of new territories in Africa and Asia by ever-increasing numbers of Western explorers was made possible by improved transportation systems and technologies. However, what made these 'sudden' contacts very different was the belief system of the new explorers. Marco Polo visited China in the 13th century with wonder and amazement at the rich culture and science of the locals; but when British ships sailed to China in the 19th century it was to bombard the ports and force the Chinese to accept British goods, particularly opium, in trade. The new belief system that justified

Western powers discovering, exploring and taking over peoples and territories around the world is captured in the writings of the influential journalist Harold Frazer Wyatt (1897/1965), who well reflected the 'imperial mood' of the British, and no doubt some other Western powers, in the 19th century: 'Like waves of the sea, so successive waves of invasion have passed over and submerged the territories held by weaker clans' (p. 163), and 'if we believe that the order and sequence of human beings tend ever upwards, we must see that it is necessary that the higher civilization should have power to dominate the lower' (p. 164). Like many others, Wyatt saw imperialism as the 'law of the universe', a fact of life that could not be changed.

Modern transportation and communications systems, as well as 21st-century variations on the imperialist 'law of the universe' (see Ehrlich & Ehrlich, 2004, p. 277), have forced contact and Westernization¹ on even the remotest and most isolated of non-Western societies. With the advent of what Wells (2002) calls the 'mobility revolution' (p. 185), no group on earth is immune from the impact of 'sudden contact'. Moreover, globalization has resulted in a dispersal of plants and animals, bringing about sudden contact between animal and plant species that had never before been in contact with one another. An important task is to develop a language that better captures these changes.

Catastrophic Evolution and Diversity in Life Forms

Common to declining diversity among plants and animals, as well as human cultural groups, are conditions that give rise to *catastrophic evolution*, which involves a swift, sharp and often fatal decline in the numbers of a particular life form. The point of departure for catastrophic evolution is the proposition that all life forms have a given level of *preadaptiveness* (after Ehrlich, 2000) for successful evolution in a given environment and in contact with given competitors. High preadaptiveness means a high probability of a life form increasing in numbers in a new environment, whereas low preadaptiveness means a high probability of a life form declining in numbers and even becoming extinct. An important component of preadaptiveness is the speed of change a life form can achieve.

Life forms vary considerably with respect to *postcontact adaptation speed*, how quickly they can adapt to new environmental conditions, and particularly in contact with other life forms that in some way or other are their competitors. The Darwinian tradition has emphasized very long time periods and slow speed of adaptation. However, there has accumulated a solid body of evidence (see, e.g., Palumbi, 2001)

demonstrating that adaptation can also take place very quickly; some life forms adapt with tremendous speed. *Sudden contact*, the swift coming together of life forms with no previous history of contact, poses less of a threat for life forms with high postcontact adaptation speed, but can be fatal for life forms with low postcontact adaptation speed.

The basic proposition of catastrophic evolution is that when a life form with relatively low preadaptiveness and low postcontact adaptation speed is suddenly placed in contact with competitors, the outcome is an immediate and sharp decline, or even extinction, of the life form. On the other hand, life forms with high preadaptiveness and high postcontact adaptation speed increase in numbers. To better understand and manage catastrophic evolution, more attention needs to be given to the speed of events, and particularly to sudden contact. In many cases sudden contact is a result of human activities, which could be managed differently to achieve an alternative outcome. This includes sudden contact between an enormous variety of life forms, from viruses to human language groups, some requiring little time to adapt and wipe out local competitors.

Catastrophic Evolution and Biodiversity

The introduction of exotic plants and animals to newly colonized regions of the world provides numerous examples of adaptation that requires little time. For example, the arrival of Maori and European settlers in the 13th and 18th centuries, respectively, brought to New Zealand many additions to the resident mammals (three species of bat). From the 55 mammals imported to New Zealand, 35 quickly adapted and have thrived in the wild (Baskin, 2002). However, many life forms introduced to New Zealand by settlers could not adapt quickly enough to local conditions and, more importantly, many life forms indigenous to New Zealand could not adapt quickly enough to the newly arrived competitors: the flightless birds known as moa were wiped out soon after the arrival of Maori settlers and their accompanying animals, and the arrival of Europeans and their imports have led to many indigenous species being wiped out in New Zealand.

Much of the damage inflicted by human activity has been brought about by the sometimes accidental transportation of life forms from one location to another. For example, the brown tree snake that was accidentally brought to Guam on military cargo after World War II thrived in its new environment and wiped out nine of Guam's thirteen native forest birds by the mid-1990s (Baskin, 2002). More and more such cases of sudden contact leading to extinction or sharp decline of life forms are being documented (Ruiz & Carlton, 2004). The rapid rate

of extinction of plant and animal species means that many disappear before they are identified and recorded. Some of this is a consequence of human activities leading to sudden contact of a life form that has low preadaptive readiness and low postcontact adaptation speed for survival in a given environment.

Catastrophic Evolution and Cultural Diversity

Some human cultural groups when confronted by some competitors also manifest low preadaptive readiness and fatally slow postadaptation speed, resulting in swift decline of the group. Such decline can range from complete annihilation, as in the case of Tasmanians, to drastic decreases, as evident among Native Peoples of the Americas over the last few centuries. The island of Tasmania was first discovered by Europeans in 1642. Sudden contact brought about a sharp decline in the Tasmanian population, and the last Tasmanian perished in 1876 (Ryan, 1981).² Most of the killings took place between 1800 and the 1830s. This upsurge in killings resulted from the arrival of larger numbers of European settlers 'needing' more territory and resources and viewing the Tasmanians as an obstacle to their progress. The sharp decline of American Indian populations after sudden contact with Europeans was in large part a result of diseases such as cholera, measles and particularly smallpox. The Indians had no experience with, and immunity against, the 'new' diseases. The population of American Indians living in the boundaries of the present United States declined from about five million (some much higher estimates are also given, see discussions in Mann, 2006; Thornton, 1987) in the 15th century to about 220,000 in 1910 (Josephy, 1991). The population of the valley of Mexico decreased from between 1,500,000 and 3,000,000 people in 1500 to about 70,000 in 1600 (Viola & Margolis, 1991).

Sudden contact brought devastating consequences for the people of Africa. The total population of Africa was probably around 47 million in 1500 (Caldwell, 1985). Even before the arrival of Westerners, slavery of Africans existed on a large scale, organized mainly by Arabs (Lewis, 1990). Western colonists increased the slave trade in Africa. The number of enslaved Africans who landed just in the Americas before the abolition of slavery has been estimated between 9 and 13 million, perhaps higher (Reader, 1998). Even after the abolition of slavery, tens of thousands of Africans were enslaved and sent abroad each year (Lovejoy, 1983). The enormously increased magnitude of the slave trade and mass killings of Africans after contact with Europeans severely and for the most part detrimentally impacted every key aspect of life in African societies.

The above statistics depict broad trends regarding the consequences of sudden contact, but there are also more detailed case studies that reveal what happens in individual cases. For example, sudden contact between Europeans and Africans led to the imposition of Western systems in Africa, such as national boundaries that created new barriers to the traditional lifestyles of nomadic groups. The Ik were a hunting and gathering group who became confined to a small area on the Kenya–Uganda border. Deprived of opportunities to hunt and gather food wherever it was to be found, and unable to adapt to confinement in one location, the Ik suffered total breakdown in social relationships and rapidly declined as a cultural group (Turnbull, 1972; this point is valid despite criticisms of Turnbull, see articles in *Current Anthropology*, 1975). At an even more micro level, there are studies that focus on the experiences of single individuals living through the consequences of sudden contact, such as the case study of Ishi, purportedly the last wild Indian in North America (Kroeber, 1961).

Catastrophic Evolution and Linguistic Diversity

Linguistic diversity is perhaps the most tangible and measurable aspect of a broader cultural diversity. Available evidence shows a strong trend of declining linguistic diversity (Crystal, 1997, 2000; Krauss, 1992; Nettle & Romaine, 2000). At about the time that Columbus landed on American soil, there were an estimated 15,000 languages in the world. That number has declined to about a half, and most of the 6,000 or so living languages are in danger of extinction. About 96 percent of living languages are spoken by only 4 percent of the human population. Over half of all humankind speak just ten languages (out of about 6,000!), the estimated number of speakers of the four most 'popular' languages being Mandarin Chinese (1 billion speakers), English (600 million), Hindustani (500 million) and Spanish (400 million). At the other extreme, in 2000 there were 51 languages with only a single speaker in the entire world, and hundreds of languages with only a small band of speakers. According to even conservative estimates, languages are being lost at the rate of at least two or three each month. If current trends continue, the majority of languages that were still alive in 2000 will be extinct by the end of the 21st century, and there will probably be only about 200 languages left by 2200 (Dalby, 2003).

The decline in linguistic diversity is associated with what Phillipson (1992) has termed 'linguistic imperialism'. The rapid rise of English as the universal language of science, commerce and diplomacy is an outcome of two imperial powers, first Great Britain, dominant in the

19th century, and then the United States, dominant since the early 20th century, both speaking English. Indeed, this is the only time in human history that one world power following immediately on the heels of another has used the same language as its predecessor. The dominance of English-speaking people on the world stage means that the rapidly expanding European Union is also adopting English as the common language of Europe, even though it may be decades before English becomes the 'official' language of the EU.

The loss of language has fundamentally important implications for group survival. First, and perhaps most importantly, language encompasses the world-view of a culture, and the death of a language wipes out or at least waters down the distinct nature of that world-view. Even if we adopt a weak version of the Sapir-Whorf hypothesis, it is clear that language has a profound influence on the forms of thought readily available to individuals (see Sapir, 1966; Whorf, 1956; and also Harré, 2002, pp. 144-145; Hunt & Agnoli, 1991). This does not imply that speakers of a particular language are incapable of thinking in ways that are non-normative for speakers of that language; only that some styles of thought will be more easily accessible to them than others.

Second, a group that maintains its own distinct language will have a more vibrant collective identity, which acts as a foundation for the emergence of personal identities of group members (Taylor, 2002). Without adequate linguistic vitality, the collective identity of a group will weaken and pave the way for the decline of the group. The end result could be the disappearance of the in-group and the complete adoption of the language and world-view of out-groups. This experience is being repeated by numerous linguistic minorities throughout the world, with language death being followed by an end to collective identity among group members (Matsumura, 1998). The gradual outcome of this process is a monopoly of world-views by a few major powers.

Of course it could be argued that although a small number of languages, such as English and Spanish, are becoming global, local populations are preserving their distinctiveness by developing their own unique usage of English, Spanish, and so on. From this viewpoint, there are many different 'Englishes' and 'Spanishes'. The English spoken by the working class in the Grand Bahamas (or Glasgow, Scotland, for that matter), one could argue, is very different from the Queen's English spoken in upper-class circles in the south of England. Similarly, the Spanish spoken in the slums surrounding Caracas, Venezuela, is very different from the Spanish spoken among the elite in Madrid, Spain. An additional point is that all languages are continually evolving, and that changes in both languages and language

groups are part of inevitable and natural developments. Although these are interesting points that have some validity, they do not negate the fact that a small number of languages are becoming dominant globally. Despite the argument that many different types of English are spoken, it is English rather than one of the thousands of already extinct languages that now serves as the global language of diplomacy, science and business. It is through English and a small number of other dominant languages that the elite, and increasingly the rest of the university-educated world population, communicate with one another.

These processes have profound implications for *interobjectivity*, the understandings that are shared within and between cultures about social reality (Moghaddam, 2003). The decline of minority languages and collective identities is associated with changes in interobjectivity, so that minority groups come to share social realities that reflect the interests of majority out-groups rather than the minority in-group. This is shown by a myriad of empirical findings demonstrating how minority group members come to manifest positive bias toward the majority out-group rather than the minority in-group (see, e.g., discussions in Philogéne, 2004). For example, in the realm of education and research, a strong bias is shown in non-Western societies for research training provided by Western academic institutions, even though in numerous cases the specialized training provided by Western universities is not appropriate for low-income societies of Asia, Africa and elsewhere (see Moghaddam, 1997, ch. 5). As a result of this bias, hundreds of thousands of individuals from Africa and Asia find that their 'advanced' and highly specialized training is of little practical use in the low-tech context of their indigenous societies.

Religious Diversity

Even before the tragedy of September 11, a number of authors highlighted the important role of religion in shaping modern identities and influencing conflicts in the global village (Huntington, 1996; Jackson, 1999; Seul, 1999). One reason for the continued and in some regions of the world increased importance of religious faith in defining who we are concerns the flexibility of faith. Individuals can change faith quickly, whereas changing ethnicity, gender and social class is far more challenging, even when it is achieved as part of a more long-term process. Changes in faith can come about through being 'born again' in one's own religion, and not just through a conversion to other religions. Thus, in the 21st century we have witnessed a resurgence of fundamentalism in Christianity, Islam and Judaism, among other religions (Antaun, 2001).

Globalization provides new challenges to traditional religions (Robertson & Garrett, 1991). On the one hand, major religions backed by the infrastructure of powerful business and political interests are able to use international transportation and communications systems to penetrate developing world populations in order to convert local people, resulting in indigenous religious belief systems either disappearing or being incorporated into larger 'world' religions. The growth of Protestant churches in Latin America and Africa at the expense of local 'religions' particularly since the late 20th century reflects this trend. On the other hand, globalization of a church leads to a re-assessment of authenticity. For example, Protestantism has a different face in Africa than it does in the United States, with continued debates (on issues such as gay rights) about the 'authentic' church. Thus, it could be argued that, on the one hand, the major 'world' religions are becoming more dominant globally, gaining monopoly status, and in this sense religious diversity is decreasing, but, on the other hand, the major churches themselves are becoming more diverse as they incorporate people from a wider range of cultures (thus, just as there is now a greater variety of 'Englishes', there is a greater variety of Protestantisms).

Propositions and Policy Implications

This final section begins with a review of the basic propositions of catastrophic evolution, followed by an exploration of some implications of a bio-cultural approach.

Review of Propositions

To review, then, catastrophic evolution puts forward four basic propositions:

1. *Cultural roots of decline in diversity*: The major driving force in the decline of diversity in both human and non-human spheres is cultural.
2. *Globalization leads to sudden contact*: Globalization and the associated spread of consumerism leads to increased sudden contact between plants, animals and human cultural groups.
3. *Sudden contact and selective extinction*: Sudden contact leads to the extinction or rapid decline of plants, animals and human cultural groups with low preadaptiveness and low postcontact adaptation speed.
4. *Only bio-cultural policies will prevent diversity decline*: The cultural

roots of diversity, and the direct link between diversity in cultural and biological spheres, means that policies adopting a bio-cultural approach will be more effective in preserving and increasing diversity in human cultures and animal and plant life.

Traditional policies for managing diversity have tended to focus either on animals and plants, or on human cultures. Greater efforts are needed to develop a more integrative 'bio-cultural' approach that, first, recognizes the cultural changes that are impacting on diversity and, second, views diversity in humans and diversity in animals and plants as directly and inextricably connected. Although a number of leading thinkers primarily concerned with plant and animal diversity, such as the biologist Paul Ehrlich (Ehrlich & Ehrlich, 2004), are forging ahead to develop a 'bio-cultural' approach to diversity, thinkers on the cultural diversity side have made little progress along these lines. Discussions on policies for managing cultural diversity have rarely shown concern for diversity in animals and plants. There is a need to re-cast some traditional debates on cultural diversity to make links with the topic of diversity in animals and plants, and I briefly consider this topic next.

Toward a Bio-cultural Approach

As an example of how a traditional debate among cultural researchers can be reformulated to link more directly with discussions on plant and animal diversity, consider the classic debate concerning assimilation vs multiculturalism in culturally diverse societies (Moghaddam, 1993). *Assimilation* involves the attempt to achieve a more homogeneous society through the abandonment of heritage cultures and languages, and the adoption of a common, shared culture and language in a society. *Multiculturalism* involves the maintenance and even strengthening of cultural and linguistic differences, toward achieving a cultural and linguistic mosaic in a society. Underlying these different policies are basic psychological assumptions in the context of both Western and non-Western societies (Moghaddam & Solliday, 1991), but in the present discussion I focus solely on the implications of these policies for plant and animal diversity.

Canada was the first major society to officially adopt a multicultural policy (in 1972), providing government support for the retention and sharing of heritage cultures and languages. Australia and New Zealand have followed a similar policy, and weaker variations of multiculturalism policy are informally being implemented in the EU, North America, as well as China, India, Latin America and other major

regions. In some cases so-called 'folk dance' multiculturalism is being practiced simply as an attempt to increase tourism in an area, by celebrating local traditions, festivals, handicrafts, and so on. But an aspect of traditional cultures that has been almost completely neglected is the relationship between people and the natural environment.

In many traditional cultures, the relationship between people and the natural environment is benign, in the sense that it results in relatively little negative impact on the natural environment. For example, in the case of the Maasai (of Kenya), Baxter (1990) has said, 'Maasai traditional practices, as has been demonstrated again and again of so many indigenous African agricultural and pastoral systems, are greener and more self-sustainable than . . . imported systems' (p. viii). The same conclusion holds for the traditional agricultural practices of indigenous people in most other parts of the world. Of course, this is in large part because of the generally small population size of traditional societies. For example, even when 'slash and burn' agricultural methods are used by a society, the detrimental impact on the natural environment will remain small as long as the population size is in the hundreds. But as population size increases, the impact of 'slash and burn' methods will become devastating, as abundantly evident in parts of contemporary Latin America. However, apart from small population size, other factors that lead to a benign relationship between traditional societies and the natural environment include the attitudes of people toward the natural environment, often treated as part of the sacred. This is the case in the traditional cultures of both Native People in North America and new immigrant groups. However, this aspect of heritage cultures is seldom highlighted in discussions of cultural diversity.

More broadly, in discussions of assimilation vs multiculturalism, the larger issue of the ideal relationship between people and the environment has been neglected. For example, in the context of the United States and the European Union, what is the larger ideal of 'becoming an American' and 'becoming a European' supposed to move toward with respect to ecological conditions? More specifically, what are the material manifestations of this ideal, and what implications does this have for plant and animal diversity? Does 'becoming an American' and 'becoming a European' (I focus on these two units particularly because of their economic clout and cultural influence) involve becoming more supportive of plant and animal diversity around the globe, taking greater care to develop a lifestyle that better safeguards the ecosystem? What kinds of ideals are being taught to young people in this process of 'becoming American' and 'becoming European', in terms of how

they should behave as consumers, as investors, as producers, and so on? These questions deserve much closer attention from cultural researchers.

A number of direct, low-cost policy mechanisms are already available to influence how people think about the natural environment as part of the process of 'becoming American'. For example, in the application process for US citizenship, would-be citizens already have to pass an elementary general knowledge test on 'US government'. This test could be expanded to include basic knowledge about people and the natural environment. More broadly, far richer information about environmental conservation could be included in the various information packages, films, and so on, used to inform applicants about the US immigration and citizenship process. Obviously, the same could be done for immigration and citizenship applicants to all immigrant-receiving societies. Similarly, in the EU context, the process of teaching Europeans about their 'shared' culture could include more in-depth and engaging discussions about the relationship between the shared European culture and identity and the natural environment.

Assimilation, Multiculturalism and Ideals in the World Context

Globalization is associated with pressures toward assimilation rather than multiculturalism. The world is becoming smaller and people in many countries are becoming more alike, at least in terms of the messages reaching them via the international media, the consumer products on offer in their national markets, and the like. What are the biological consequences of this cultural assimilation? My argument is that the current direction of cultural assimilation is diminishing biological diversity, because assimilation is toward the ideal of the Western consumer lifestyle: 'Today's new consumers no doubt feel they are participating in that same age-old tradition (of ever-greater consumption), especially since it reflects the holy grail to which all the new consumers aspire, a Western lifestyle' (Meyers & Kent, 2004, p. 4).

In their critical analysis of the impact of consumer culture on the environment, Meyers and Kent (2004) have noted that 'the biggest consumer boom ever known ... is not occurring, as might be supposed, in the long-rich countries, but in certain developing and transition countries where over 1 billion people now possess the financial muscle to enjoy a consumerist lifestyle' (p. 3). Five countries (China, India, Brazil, Mexico, Russia) alone have contributed about 650 million new consumers to the global economy. Very soon this figure will reach over one billion, as the share of these five countries in the global economy is expected to increase from about 24 percent in 2000

to 30 percent in 2010. This increased purchasing power translates into increased use of cars and other consumer products. In 2000 the twenty largest developing world economies accounted for 22 percent of the world's cars, and this figure is expected to rise to 31 percent by 2010. This increase is in part responsible for the rise in oil prices after 2000, as demand for limited oil reserves is rising.

Clearly, the current pace of increase in consumerism is unsustainable. Planet earth does not have the raw resources to support billions of additional 'new consumers'. Rapid decline in the diversity of animal and plant life is one early indication of the crisis to come. Technical solutions, such as more fuel-efficient automobiles, can influence the outcome in a limited way, but are not the long-term solution. The most effective long-term solutions will attend to the cultural basis of the decline in diversity.

Cultural researchers must play their part by entering the dialogue, introducing the language and concepts that will help guide debate and shape policies in the relationship between diversity in human and non-human spheres. Rather than throwing up our hands and declaring that 'the solutions are political', we cultural researchers can help to mold the discourse of politics, at both national and everyday levels. Perhaps our best messengers are our students.

Concluding Comment

Catastrophic evolution arising from sudden contact represents a common challenge to diversity in all life forms, including human cultures and animals and plants. In order to better understand and to develop more effective policies to meet the challenge of catastrophic evolution, there is need for more focused attention to the speed of adaptation achieved by different life forms, as well as human activities that bring about sudden contact. A bio-cultural approach to diversity encompasses both human and non-human life forms, and is grounded on the idea that cultural changes underlie catastrophic evolution experienced by all life forms. Greater efforts should be made to develop policies that incorporate the inextricable link between cultural/linguistic diversity and animal and plant diversity.

Notes

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1. Referring to the spread of Western values and lifestyle, particularly related to consumerism (see Meyers & Kent, 2004).

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2. The claim that the last Tasmanian perished in the 19th century is currently being disputed by a group claiming to be Tasmanians and holding legitimate land ownership rights in Tasmania.

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Biography

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