





MARGARET LOCK AND VINH-KIM NGUYEN

AN ANTHROPOLOGY OF
BIOMEDICINE



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4

Local Biologies and Human Difference

The previous chapters have situated biomedicine in historical and cultural contexts. As we have seen, when the human body became increasingly available for scrutiny, it was subject to inspection, classification, and ultimately “normalization” through statistical methods. “Normality” conflated matters mathematical and moral, and the growing power of biomedicine as an arbiter of human suffering became apparent in the “medicalization” of life and the mixed reactions it received and continues to receive. Social scientists have exposed moral assumptions underpinning biomedical interventions in their research, notably by demonstrating how a scientific understanding of health and disease is historically constructed and made “real” through biomedical practice, and how this approach often elides political and social realities implicated in the production of human suffering. Even so, an assumed biological universality of the human body has remained largely unquestioned – a position that we will challenge in this chapter.

We begin with a well-substantiated case about a universal biological phenomenon among women – the end of menstruation. This case shows how differences in individual bodily experience at the end of menstruation are not adequately explained as due to cultural “beliefs,” but rather must be understood as local entanglements among historical and cultural activities, technoscientific interventions, and the biology of individual aging. We then introduce the concept of local biologies to draw attention to the way in which dynamic biological change is inevitably implicated in this ceaseless entanglement, resulting in patterned variation in subjective bodily experience, and also geographical differences in the distribution of disease and illness.

This is followed by a close look at the history of the fatal neurological disease, *kuru*, associated with the Fore of New Guinea, in order to illustrate biosocial differentiation in action and the local biologies that result. This account graphically demonstrates significant differences among the scientific interpretations and speculations about the cause of this disease and those given by the Fore themselves. It also demonstrates how an ethnographic approach in which historicized accounts about local practices are taken seriously furnishes the only plausible explanation as to how this terrifying disease suddenly appeared among the Fore and then just as suddenly died out.

The third illustration discussed in this chapter focuses on an epidemiologically demonstrated association between the experience of racism and low birth weights. This is followed by a short discussion of the relationship between microbes and humans. As everyone knows, the activities of microscopic biological organisms affect humans. Less often noted is the ability of micro-organisms to spread differentially among human populations, resulting in specific symptoms associated with the “kinds” of bodies the organisms infect. Reciprocally, microscopic organisms are profoundly modified by human activity.

We conclude with controversies about the origins of the HIV epidemic. These debates show the political and epistemological difficulties that arise when explanations remain wedded to a dichotomous distinction between nature and culture, and do not adequately engage with the way in which the emergence of diseases is historically and biosocially embedded.

On the basis of these illustrations we explore the extent to which human bodies everywhere are inescapably entangled with evolutionary change, history (global and local), environments (natural and social), as well as political events and culturally informed values. Our position is that the material body is a priori contextualized and subject to endless change with significant implications for human development and for health and wellbeing. Our position has much in common with that of the philosopher Bruno Latour who, in seeking to create a symmetrical account of what he describes as the co-production of nature/culture, called for recognition of a hybrid “object–discourse–nature–society” assembly, whose networks of entanglement demand analysis.¹

The End of Menstruation

In the early 1880s, C. P. L. de Gardanne, a French physician, coined the word *méno-pause* in order to do away with the term climacteric, fashionable all over Europe at that time, that he found too imprecise. De Gardanne wanted the end of menstruation alone to signify this lifecycle transition and not the numerous non-specific symptoms commonly associated with the climacteric. Since that time, in both the medical world and among women in Europe, North America, and increasingly elsewhere, the idea of menopause has been conflated with the end of menstruation. It has lost its former association with aging in general, and is no longer associated with both women and men, as was the case for the earlier concept of the climacteric.² Received wisdom has been that menopause is a difficult time for by far the majority of women, associated with unpleasant symptoms, physical and psychological.³ In contrast, in many parts of the world, social changes associated with aging, such as becoming a grandmother, are regarded as more important than are individual biological changes that attract little or no attention. To think of the end of menstruation as *the* marker of female aging simply does not “fit” well with accounts about the meaning of growing old in many locations.⁴

The conflation of the concept of menopause with the end of menstrual cycling, combined with medical interest in the management of this lifecycle transition and interest of pharmaceutical companies in providing medication to counter menopausal symptoms, has meant that the dominant understanding of this midlife transition over

the past 50 years in Europe, North America, and Australasia, has been one of a disease-like condition. Because the focus of medical attention is above all on declining estrogen levels, being postmenopausal has been likened to having a deficiency disease, similar to an insulin deficiency that results in diabetes.⁵ This approach is supported by the mistaken idea that menopause is a recent phenomenon in human history. It has been suggested in many professional publications that because mean life expectancy for women until the turn of the 20th century was less than 50, virtually no women lived much past middle age until relatively recently. Postmenopausal life, it is often claimed, is a cultural artifact – the result of better health care and medical services.⁶

Such claims are very misleading. Until the first part of the 20th century infant mortality rates were high, and among those women who survived to reproductive age, many lost their lives in childbirth. If a woman lived through her own infancy and her reproductive years, then survival for several more decades was common. In order to take this effect into account when calculating age distribution in human populations, estimations of remaining life expectancy at 45 or 50 years of age are essential. These figures make it clear that living a long life is certainly not a recent phenomenon although, of course, more people survive to old age today than was formerly the case.⁷ As we saw in chapter 2, the professional literature on menopause often makes a second point about the way in which the very existence of postmenopausal women goes against nature because in the wild virtually no mammals live past reproductive age. Accordingly, in the mid-20th century the interest in menopausal women by drug companies and the medical profession shifted away from the relief of menopausal symptoms per se, to the presumed negative effects of reduced estrogen levels believed to place all middle-aged women at “increased risk” in later life for a variety of diseases including osteoporosis, heart disease, and other conditions.

It should be noted that biomedical knowledge about menopause was initially created in large part on the basis of symptom reporting of small samples of women, virtually all of them living in Europe or North America, who presented themselves as patients in gynecological clinics. The majority of these women had gone to visit doctors because of physical or emotional distress, and a disproportionate number had undergone hysterectomies. As a result, medical knowledge on that topic has inevitably been biased – until recently.⁸ Although data about increased risk for osteoporosis and heart disease in postmenopausal life were derived from more representative population sampling, only white women were sampled, even though WHO figures showed marked differences in the incidence of these diseases among countries. The belief in a standardized body led to the assumption that representative sampling of women everywhere was not necessary, although this assumption has recently been challenged with the introduction of the National Institutes of Health’s Revitalization Act in 1993 that requires research samples to include an appropriate number of cases from the major ethnic and “racial” groups present in the United States.⁹ Anthropological research into menopause prior to the 1980s was sparse, but it indicated that the meanings attributed to this experience varied cross-culturally and that negative associations were by no means always the case. In order to generate data on this midlife transition among non-clinical populations of middle-aged women, statistically comparable survey research was carried out in the mid-1980s with over 1,300 subjects in Canada, nearly 8,000 in the United States, and with over 1,300 in Japan.¹⁰ The

women in these studies were all aged between 45 and 55. The findings from this research indicated strongly that the menopausal transition is not a difficult time for the majority, whether in North America or Japan.¹¹

The Japanese word *kōnenki* is conventionally translated into English as menopause, but the meanings of these terms are not really equivalent. *Kōnenki* is closer to the older European concept of the climacteric, in that it is understood as a long, gradual transition, part of the aging process of both women and men, to which the end of menstruation (confined, obviously, to women) is just one contributing factor. There was no specific term in Japanese to express the end of menstruation until Japanese physicians deliberately created the concept of *kōnenki* at the beginning of the 20th century as a result of close contact with German colleagues. Most Japanese respondents in the study placed the timing of *kōnenki* at aged 45 or even earlier, lasting until nearly age 60. One quarter of the questionnaire respondents who had ceased menstruation for over a year reported that they had no sign of *kōnenki*. It is also of note that no word exists that refers *uniquely* to the hot flash in Japanese, even though this is a language in which very fine discriminations can be made in connection with bodily states.¹²

In the North American/Japanese study, women were asked to recall symptoms that they had experienced over the previous two weeks (research shows that longer periods of recall are inaccurate). Japanese reporting of hot flashes was low – approximately one third that of U.S. and Canadian women – and reporting of night sweats was extremely low, and not associated with menopausal status. Only 19 percent of Japanese women in this study had experienced a hot flash at some time in the past, and reporting of both frequency and intensity was much lower than amongst U.S. and Canadian respondents, nearly 60 percent of whom had experienced a hot flash. Reporting of sleep disturbance by Japanese women was also low, corroborating their reports about lack of severity of hot flashes.¹³ Follow-up interviews suggested that, if anything, Japanese women over-reported symptoms in their eagerness to cooperate fully with the researcher.¹⁴

The majority, when asked in face-to-face interviews to describe their experience of *kōnenki*, responded along the following lines:

I've had no problems at all, no headaches or anything like that ... I've heard from other women that their heads felt so heavy that they couldn't get up.

The most common problems I've heard about are stiff shoulders, headaches, and aching joints.

I get tired easily, that's *kōnenki* for sure, and I get stiff shoulders.

A small number when interviewed, 12 out of 105, gave statements that sound much more familiar to North Americans and Europeans:

The most noticeable thing was that I would suddenly feel hot; it happened every day, three times or so. I didn't go to the doctor or take any medication ... I just thought it was my age.

Results of the survey research indicated that shoulder stiffness was the most common symptom reported by Japanese informants followed by headaches, and Japanese

gynecologists noted that women when they came to see them complained most often of these symptoms.¹⁵ Some physicians did not cite hot flashes at all when asked to describe the typical symptoms of *kōmenki*. The biological anthropologist Melissa Melby has shown that Japanese men report many of these symptoms at the same rates or even higher than do Japanese women.¹⁶

The original research was done in the mid-1980s at a time when the end of menstruation was not medicalized in Japan. Since the 1990s articles about menopause started to appear very frequently in Japanese women's magazines, in which hot flashes are often described as the "typical" symptom of menopause (even though clinical encounters continue to indicate otherwise). A new phrase, *hotto furashu*, taken directly from English, is sometimes used to describe this symptom in both professional and popular literature, but among 50 Japanese women interviewed in 2005, most had not heard of it.¹⁷

Clearly Japanese doctors deal every day with middle-aged patients whose symptoms and experiences differ quite markedly from those that professional medical literature informs them are "normal" for menopause.¹⁸ One or two doctors, when interviewed by Lock, asked why Western women have such a bad time at menopause. As a result of attending international conferences and reading professional gynecological journals, some Japanese gynecologists have come to believe that low symptom reporting in Japan is due to the fact that Japanese women simply do not pay "proper" attention to their bodies. Alternatively, they believe that their patients still behave stoically as was formerly expected of Japanese women. In contrast, many choose to hypothesize that a sufficiently marked biological difference – due perhaps to environment, diet, genetics, or some combination of all three – results in physical and subjective experiences at the end of menstruation for many (but not all) Japanese women that is markedly different from that commonly experienced by women in North America.

Recently, Melby conducted three years of research in Japan using survey research and qualitative methods compatible with Lock's earlier work and, in addition, she collected biological samples from 140 participants.¹⁹ She found that hot flash prevalence was 22.1 percent.²⁰ This is nearly double that of 20 years earlier, but reporting of other symptoms had also gone up considerably, suggesting that these women may be in poorer health than those of the previous generation. It is also possible that they are now more adept at communicating with the medical profession than was formerly the case. Increased reporting of vasomotor symptoms is not surprising, given the extensive efforts at medicalization of middle-aged women by some prominent Japanese gynecologists, together with a great deal of media attention. There have also been significant dietary changes in Japan over the past two decades. Even so, this rate of symptom reporting continues to be strikingly lower than in North America.²¹ Moreover, few of the women who report vasomotor symptoms (notably hot flashes) find them troubling, and the majority state that these symptoms disappear after a month or so. Melby's findings from the biological samples point strongly to the significance of a lifelong exposure to phytoestrogens (primarily soy bean) in the Japanese diet, resulting in very high levels of plasma phytoestrogens²² that appear to be protective in many, but not all, women, at the end of menstruation.²³ Her conclusion is that this is only one among what are probably several contributing factors. She has also investigated the symptom of chilliness commonly reported by Japanese

women at *kônenki*; her hypothesis is that there may be differences in the thermoregulatory system at work that in turn can be associated with several other variables, biological and cultural.²⁴

Relatively few Japanese women seek out medication at *kônenki*, and the majority who do so prefer herbal medication.²⁵ Hormone replacement therapy (HRT) is not widely used, and relatively few gynecologists are eager to prescribe it, although there are some notable exceptions. When Lock talked to Japanese gynecologists in 2003, shortly after an important HRT trial (discussed in chapter 2) had been stopped in the United States, several of them stated that they did not intend to pay much attention to these trial results because the bodies of American and Japanese women are different, and therefore the findings are not relevant to their clinical practice.

Japanese accounts about the end of menstruation sound bizarre to most North Americans and Europeans and it is tempting to dismiss this discourse as an exotic anomaly. The danger, of course, is that the white Euro-American body remains the gold standard against which difference is seen either as statistical deviation or as due to cultural difference alone, leaving the medical model of a universal menopause intact. Among the considerable number of studies carried out in Hong Kong, Singapore, Taiwan, China, Korea, the Philippines, Thailand, Malaysia, and Indonesia, many reveal low reporting of hot flashes and night sweats.²⁶ Some of this research is methodologically weak, but the relative consistency of the results is nevertheless suggestive. Shea's work in China is particularly interesting because she found low reporting of hot flashes and sweats, similar to the Japanese study, but higher reporting of other symptoms that she attributed to stressful events the women had endured throughout their lives.²⁷ Beyene, in a comprehensive longitudinal study in the Yucatan, Mexico, found no reporting of the "typical" symptoms of menopause.²⁸ These differences are so far unexplained, and the phytoestrogen findings for Japan will not apply in all these locations. Similarly to Japan, no indigenous terms for the hot flash were found in Turkey, Indonesia, the Yucatan, and other locations. It is also of note that research in the Middle East suggests that symptom reporting may be similar to that assumed to be usual in the West, or perhaps a little higher.²⁹ It has been suggested that ambient temperature affects subjective experience and reporting of hot flashes, but that this only accounts partially for variation in hot flash frequency.³⁰

In common with a few Japanese doctors, the response of some Western medical researchers has been to suggest that the women in these studies in effect bias the research findings. They claim that because individual responses to menopause are culturally dependent, inattention to hot flashes is essentially learned behavior. For example, on the basis of research in seven Southeast Asian countries,³¹ Boulet and colleagues showed that headaches, dizziness, anxiety, irritability, and other non-specific symptoms were commonly associated with the menopausal transition by women recruited into their project. Symptom reporting was rather similar to that in Japan. Boulet and her associates argued that these symptoms should be understood as "a form of communication" on the part of women, and speculated that vasomotor distress may be "translated" by them into culturally meaningful non-specific symptoms associated with psychological distress. In making such an interpretation, the

assumption is that when subjective reporting does not coincide with the findings anticipated by Western physicians based on experience with patients attending clinics in their home countries, then it must be the case that “exotic” women are, in effect, being duped by their language and culture.

Our opinion is that these findings suggest that it is not appropriate to conceptualize the end of menstruation as an invariant biological transformation subject only to superficial modification by social, cultural, and psychological variables layered over an unchanging biological base. The experience of the end of menstruation, in contrast to the first menstruation, can only be assessed retrospectively; nevertheless it is undeniably “real,” and appears to be biologically programmed to take place in the majority of women between their late forties and mid-fifties; smoking and having no children apparently lowers the age somewhat.³² Even so, despite its ubiquity, it is a process in which biology and culture mutually fashion each other, as the findings above make clear. Adding weight to this position, WHO population databases and other sources have shown convincingly that not all postmenopausal women are equally at increased risk for heart disease, osteoporosis, breast cancer, and other late-onset chronic diseases, and it is agreed that much of this variation depends upon lifestyle factors and cultural variations in diet.³³

In a recent study with a sample of over 200 Mayan women whose average age at menopause was 44.3, endocrine changes at menopause were found to be very similar to those of American women of the same age, yet the Mayans, as noted above, reported no hot flashes (except very occasionally after migration to an urban environment).³⁴ It is known that plasma, urinary, and vaginal levels of estrogens do not correlate neatly with subjective reporting of hot flashes,³⁵ nor do measured rates of sweating, peripheral vasodilation, and deregulation of core body temperature.³⁶ Considerable mediation clearly takes place between measurable physiological changes, subjective experience, and the reporting of symptoms, some of which may be accounted for by as yet poorly understood biological pathways. It is reasonable to speculate, for example, that with urban migration and education women might experience hot flashes more frequently, perhaps as a result of dietary changes or due to a more sedentary lifestyle. From the perspective of women themselves, it must also be acknowledged that their primary concerns at midlife may be far removed from bodily symptoms (although this should not lead one to conclude that symptoms are simply ignored and therefore under-reported to researchers). For Japanese women, it is above all care of elderly relatives that occupies their attention at this stage of life, as well as such things as worries about their children, the current economic recession in Japan, and lack of job security.³⁷

These findings about the end of menstruation make it abundantly clear that top-down interventions, driven by an assumption of a standardized body and designed to affect the health and quality of life of both individuals and specific populations, can lead to interventions with unexpected and at times harmful effects. There is now compelling epidemiological evidence, for example, that hormone replacement therapy may increase breast cancer rates.³⁸ Clearly, a precautionary approach should be taken to the introduction of new drugs and other technologies for global use; but further, we suggest, it is imperative to recognize the ways in which historical, environmental, and social processes are entangled locally with individual biologies.

Local Biologies

The example set out above strongly suggests that the embodied experience of physical sensations, including those of wellbeing, illness, disease, and so on, are informed in part by the physical body, itself contingent upon evolutionary, environmental, historical, cultural, medically induced, and individual variables. Embodied experience is also informed, of course, by language, culturally informed knowledge and expectations, social context, and so on.

Lock created the concept of local biologies to account for differences in symptom reporting at menopause.³⁹ This concept was not designed to draw attention to the way in which the categories created by the medical sciences are historically and culturally constructed,⁴⁰ although this is indeed the case, as the example of menopause demonstrates so clearly. Nor was it used to refer to measurable biological difference across human populations, although such findings contribute to the present argument. Rather, local biologies refers to the way in which biological and social processes are inseparably entangled over time, resulting in human biological difference – difference that may or may not be subjectively discernible by individuals. When subjectively experienced by patients and reported to doctors, manifestations of local biology are liable to be set to one side, or even dismissed, but they also appear in the laboratory, and today systematic attention to biological difference is taking place in laboratories carrying out research into molecular and population genetics. Such differences are, of course, published in medical journals, and frequently appear in the media.

The entanglement of biological and social processes is at times purposive, as when eugenics are put into practice, or attempts are made at public health engineering, but for the most part, it is incidental, devoid of any teleological aim, and is the result, for example, of agricultural practices or industrial pollution. We use the term “biosocial differentiation” to refer to the continual interactions of biological and social processes across time and space that eventually sediment into local biologies. In effect, then, local biologies are artifacts – snapshots frozen in time of ceaseless biosocial differentiation. However, the functioning of local biologies, whether as part of individual genomes, micro-organisms, cholesterol levels, or tumors, is not necessarily available to subjective assessment; usually the physical body carries on without our cognizance, its activities taken for granted until such time as they are made visible through medical assessment or produce discomfort and pathology.

Individual genomes and bodily functioning are, then, aspects of local biology, and reflect changes that have taken place over the course of both evolutionary time and during the *longue durée* of historical change. These transformations are the result of interactions among human genes and the environments in which people have lived, their economic and social arrangements, including marriage patterns and other factors that affect reproduction, local diets, and behavioral styles. Individual bodies represent a microcosm of these ceaseless interactions. But embodiment is also constituted by the way in which self and others represent the body, drawing upon local categories of knowledge and experience. If subjective bodily experience is to be made social, then history, politics, language, and local knowledge – including scientific knowledge to the extent that it is available – must inevitably be implicated. In practice this means

that knowledge about the body is informed by social worlds and the social world is in turn informed by the reality of physical experience.

Today, the global reach of biomedical knowledge – disseminated by the media, markets, NGOs, and religions, as well as by governments – contributes to biosocial differentiation because individuals and collectivities increasingly resort to biomedicine to tame uncertainty and to better equip themselves to negotiate the future. The worldwide use of contraception, organ transplants, antibiotics, the training and practices of local health care professionals, and numerous other activities transform both the biological and the social aspects of these entanglements. Local biologies are thus inextricably situated in time and place, and emerge out of the ongoing dynamics of biosocial differentiation.

With the worldwide circulation and increasing adoption of biomedical knowledge, difficulties arise due to the largely unquestioned authority given to scientific knowledge. The example given above, of the effects of biosocial entanglement on the subjective experiences of the end of menstruation among women, does not correspond at all well to what is assumed in the medical world to be a universal event. Thus, although changes in ovarian and endocrine functioning are implicated in the mid-life transition of women everywhere, in consort with this biological reality, enormous complexity comes into play. This ranges from possible variations in endocrine functioning and the prevalence of osteoporosis across populations⁴¹ to the language used to describe female aging – the result of attention being differentially directed to various bodily sensations, depending upon the culture and language in question. Certain languages emphasize clusters of symptoms that in other languages go unmarked, and vice versa.⁴² Our argument is that such differences may in part be attributed to embodied experiences associated with local biologies, although it goes without saying that there is no simple relationship between biology and societies, nation states, ethnicity, communities, or even families.

Humans are unique with respect to both their genomes and their lived experience, and in this respect embodiment is personal. At another level of abstraction, many biological processes affect us all – pain, immunological responses to infection, the biological changes of aging, and so on.⁴³ However, individualized embodied experience of these processes is inevitably contingent, due to local biologies, language usage, and the social, environmental, and political contexts in which individuals live. Given the variables involved, inevitably certain of these experiences are relatively similar *across* groups of people living in shared environments, a good proportion of whom, until very recently, are likely to have shared biological ancestry – explaining why “race” is so often mistakenly confused with biological difference. Continuous migration from prehistoric times, accelerated dramatically today by globalization, ensures that people who have biological attributes in common are now widely dispersed, as was formerly not the case. Until the late 19th century, the majority of people, other than those living close to major historical trade routes, tended to live out their lives within a short distance of their birthplace.

Biological attributes are used by geneticists and others to ascribe people to populations that are, of course, not congruent with self-defined ethnic groups or communities. But the very fact that scientists are interested in documenting features of inclusion and exclusion based on biological attributes – formerly through anatomical taxonomies, blood typing, and so on, and now by means of DNA sampling – has

made it relatively easy for prejudiced commentators to decontextualize the always provisional typologies of population biology and conflate them with social groupings to reproduce and naturalize a rhetoric grounded in the unexamined assumption of race as a biological fact.⁴⁴ Under the circumstances, it is not surprising that recognition of biological difference, and therefore of local biologies, has been anathema to many social scientists. However, given that molecular genetics and genomics are currently very much focused on demonstrating the significance of biological difference for disease susceptibility, it would be singularly unwise to go on doggedly ignoring these findings; more generally, recognition of local biologies strongly suggests that the black-boxing of the biological, human body and its marked separation from historical, social, and political events is inappropriate.

Systematic investigation exposed differences in symptom reporting at menopause; by taking these differences seriously it was possible to critique unexamined assumptions in the dominant medical discourse. This is not to argue, of course, that subjective accounts are more accurate reflections of an underlying bodily reality than are scientific or other accounts, but rather to insist that subjective accounts should be given attention in connection with individual care and, further, should be thought of as phenomena having potential epidemiological significance,⁴⁵ especially when similar subjective accounts come up repeatedly in any given group of people. Above all, local biologies should not be tinkered with inappropriately in order to force their phenotypic effects into biomedical taxonomies believed to be of universal applicability.

Rethinking Biology in the Midst of Life's Complexity

Two more important points about local biologies must be raised. The first is a critique by the eminent biologist Richard Lewontin of the common assumption that biology is determined by laws of nature, in much in the same way as Newtonian physics. He states that living organisms

are composed of a number of parts with different properties that are in dynamic interaction with one another ... they change their shapes and properties during their lifetimes. ... In short: organisms are a changing nexus of a large number of weakly determining interacting forces.⁴⁶

Lewontin wonders if biology is inevitably a story of different strokes for different folks, a collection of exquisitely detailed descriptions of diverse forms and functions down to the molecular level – or, from “this booming, buzzing confusion” can a biologist perhaps derive some general claims that are freed from the “dirty particulars” of each case? Not laws, of course, but at least some widely shared characteristics?⁴⁷ He agrees with the historian and philosopher of science Evelyn Fox Keller that both history and epistemology seem to speak against this, and that, as far as making sense of life – of biology – is concerned, all our models, metaphors, and machines, while they have contributed much to our understanding, provide neither unity nor completeness. On the contrary: facing up to complexity is the order of the day, although many obdurate problems continue to be studiously avoided and – troubling and