

in other ethnic groups who might be seen for genetic counseling within Western society, and it is a reminder that the validity of a pedigree is always questionable unless all relationships can be confirmed.

Author Charlie Davison raises issues that are later developed in a chapter in *The Troubled Helix*, edited by Theresa Marteau and Martin Richards (Cambridge: Cambridge University Press, 1996). The repeated points highlight Western cultural idiosyncrasies, such as the fact that families often interrelate several characteristics that run through the family (e.g., temperament and personality, as well as traits more generally accepted to be genetic). *The Troubled Helix* covers a much broader spectrum relating to social and psychological implications of genetics, among which the debate about culture is only briefly touched on.

There is criticism throughout the book that clinical geneticists are not open to altering their perspective of culture. Author Ursula Sharma wonders how anthropological insight into ethnicity could be relevant to geneticists, and she suggests that simply expecting definitions of ethnic groups to *explain* or *predict* behavior could lead to "victim blaming." Instead, ethnicity should be accepted and seen "as one of a variety of factors that together produce the plurality of identifiable patterns of dispositions, constraints, and choices seen in the complex urban culture of contemporary Britain" (p. 78).

In the final section of the book, author Chris Goodey makes the point that culture refers not only to people of different ethnic background but also to communities of like-minded, like-bodied people forced together by society. For example, people with learning disabilities associated with genetic conditions (e.g., Down syndrome) could be part of a cultural grouping; those members of the community of deaf people who identify with what they call the "deaf culture" may serve as another example of a cultural grouping.

In the last chapter, author Evelyn Parsons offers a neat summary of the book and asks "Does genetics impose itself on society, or does culture shape genetics in a process of interaction?" (p. 252). Parsons discusses this conundrum in detail, providing evidence to support both views but ultimately allowing readers to make up their own minds. However, since many policy makers probably see genetics as a science based on the opposition of "good genes" versus "bad genes," they may not consider that genetics could be molded to serve society and culture, instead of the reverse. Unless social scientists can exert more influence on the thinking behind Western medicine, genetics may continue, in Parsons's words, to "impose itself" on society.

The title, *Culture, Kinship and Genes: Towards Cross-Cultural Genetics*, does indeed fit the text of this book. Much of the work has been published as individual papers elsewhere, but no other text brings together such a wide collection of perspectives on the central issues of culture with respect to genetics. The book can be read on different levels; it can be used for simple information and advice for improvement of services for different ethnic groups, and it recounts a complex academic debate about the interaction between culture and genetics. There is a much-needed insight into the positive side of cultural traits such as consanguinity, and there is a reminder of the value of treating patients as unique individuals rather than as stereotyped products of particular cultures. I would

recommend this book not just to academic anthropologists but also to genetic-counseling students with an interest in different cultural populations and to practicing clinicians or counselors who work with ethnic minority groups.

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The Centromere. By K. H. Andy Choo. Oxford: Oxford University Press, 1998. Pp. 320. \$85.00 (cloth); \$41.95 (paper).

The centromere, the specialized chromosomal domain that directs the movements of the chromosomes in mitosis, is different things to different people: the primary constriction of the mitotic chromosome, the origin from which recombination distances are measured, a DNA sequence, a specialized type of heterochromatin, a regulator of sister-chromatid pairing, a structure that attaches the chromosome to the ends of growing or shrinking microtubules, or a signaling device that monitors chromosomal alignment and tells the cell when it is safe to segregate either sister chromatids in mitosis or homologues in meiosis. In this book, K. H. Andy Choo covers most of these aspects of centromere structure and function, in an up-to-date and comprehensive fashion. This is a significant book that will stand as a very useful introduction to this interesting chromosomal substructure.

The book is organized into eight chapters. After a general introduction of terms and processes, Dr. Choo presents two chapters on the centromeres of budding and fission yeast. These are excellent and provide a fine introduction to the literature. I have only two quibbles to raise with these chapters. First, they tend to overstate the degree of homology between human and yeast centromere proteins. Second, in the chapter dealing with *Schizosaccharomyces pombe*, Dr. Choo has completely omitted any reference to the Yanagida lab's nomenclature for the organization of the *S. pombe* centromere DNA sequences. The latter should definitely be given the highest priority for correction in subsequent editions—it will leave readers confused when they attempt to read the many important papers from the Yanagida lab and is very unfair to one of the most influential and productive pioneers in centromere research.

Chapter 4 describes the organization of the higher-eukaryotic centromere, together with a number of other interesting points, including order within the nucleus, position effect, and holocentric chromosomes. This is a useful introduction, well written and well referenced, with the exception of the some-

what obscure source of the three-domain model for the centromere, which is the chapter "A Map of the Centromere (Primary Constriction) in Vertebrate Chromosomes," by W. C. Earnshaw and J. B. Rattner, in *Aneuploidy: Mechanisms of Origin*, edited by B. Vig and M. Resnick (New York: Alan R. Liss, 1989). Chapter 5 presents a readable and up-to-date description of the organization of human and murine centromeric DNAs. The only notable omissions here are Dr. Choo's own important work on the mar(del)10 neocentromere and the recent work, from the Karpen lab, on the *Drosophila* X-derived minichromosome. The discussion of centromeric DNAs from other organisms is encyclopedic.

The strongest chapter (and the longest, at 110 pages) is the sixth, which deals with the 37 known centromere proteins of higher eukaryotes. These proteins are grouped into the following categories: centromere assembly, M-phase and checkpoint control, cohesion, chromatid separation, chromosome movements, modulation of spindle dynamics, and other. This organization worked well for me and is useful, provided that the reader remembers that we do not know in detail the function of a single one of the 37 proteins. The book closes with brief chapters on chromosomal abnormalities and methods (FISH and mammalian artificial chromosome, or MAC, technology).

Time and again, Dr. Choo has extracted key points from

the literature and has presented them clearly. Overall, the views of the original authors are presented with a minimum of editorializing. This approach often works well for presenting the prevailing view in the field, although the beginner might benefit from a bit more guidance in certain instances where our understanding has progressed beyond the views of the original authors. One notable exception to this hands-off approach is a useful discussion of the arguments for and against CENP-D/RCC1 being a true centromere protein.

Without doubt, Dr. Choo has every right to be proud of this book. I warmly recommend it both to old-timers who have followed the field for years and to those younger colleagues whose forays into the regulation of chromosome movements may be just beginning. This is an excellent book and an important new resource.

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