

strations in both books. From Jih Jie Chang's RDS surfaces (in *Dialogues*, p. 156), to Roger Watt's pictures of the textures of a Scottish mountain (*Early Vision*, p. 61), to Ilona Kovac's closed snake curves (in both *Dialogues*, p. 126, and *Early Vision*, p. 253), the visual images enhance the text. However, I agree with you that the conceptual content of the RDS images especially is enhanced by their appearance. Julesz's work in particular makes important points visually and dramatically.

B: *Dialogues on Perception* is very focused on Julesz's interests and accomplishments. Occasionally this obscures why he worked on this or that problem because he doesn't tell us the context—what others were doing at the same time.

A: You have to understand that *Dialogues on Perception* is more of a review article, a very long review, of the work of Julesz and his "school."

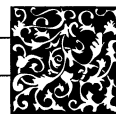
B: But my point echoes one of his own, when he discusses the theory of dynamical systems. To explain a complex dynamical system, one must include "the context-setting feedback"; this is applicable to a scientist's choice of problems as well as to perception.

A: I think you are as usual taking it too seriously. You have to enjoy a book in which Julesz lists 39 "strategic questions about visual perception" to guide the future of vision research and then compares his own questions explicitly with Hilbert's questions about the foundations of mathematics, and then adds six more mathematical questions! And then he goes on with many more good, unnumbered questions about attention and cognition. His energy and enthusiasm are infectious.

B: Perhaps you are right—his energy and ideas motivated much of the research that raises *Early Vision and Beyond* to such a high level. The best material in *Early Vision* is psychophysics related in some way to a question about brain mechanisms. The quality of the scientific results and theoretical background are very high throughout the book. It is difficult, perhaps unfair, to pick favorite papers in such an excellent collection.

A: I did have some favorites. There are two very interesting papers on perceptual learning, one by Dov Sagi and another by Merav Ahissar and Shaul Hochstein. Also, the papers by Jonathan Victor and colleagues and by Jack Gallant and colleagues interested me because they indicate that sophisticated image processing may be going on in primary visual cortex—that's very early in "early vision."

B: There are many excellent papers on every subject from stereo to texture, to motion, and then to attention. There is even an abbreviated review of recent work from Julesz's lab as an "afterthought." It is



Vignettes: Reconceptions

The myth of human exceptionality has been supplanted of late by the myth of biological continuity. Recent research efforts in the social and natural sciences seem determined to prove—indeed, presume to have already proved—that there is no essential, irreducible distinction between humans and animals. Each one of our prized facilities—language, cognition, megalothymia—is shown to appertain in one degree or another to other species. Precisely at the moment when we have overcome the earth and become unearthly in our modes of dwelling, precisely when we are on the verge of becoming cyborgs, we insist on our kinship with the animal world. We suffer these days from a new form of collective anxiety: species loneliness.

—Robert P. Harrison, in *Uncommon Ground: Toward Reinventing Nature* (William Cronon, Ed.; Norton)

Thinking in terms of bits has allowed us to develop the field of computer science, in which we learn how to represent the world with patterns of information. So successful are our endeavors that some physicists and computer scientists believe that perhaps information is not a human invention but something as real, as physical, as matter and energy. And now a handful of researchers have come to believe that information may be the most real of all. Simulated creatures would have no way of knowing they are simulations, the argument goes. And, for that matter, how do we know that we are not simulations ourselves, running on a computer in some other universe?

Nature, it seems, has honed us into informavores so voracious that some can persuade themselves that there is nothing but information.

—George Johnson, in *Fire in the Mind: Science, Faith, and the Search for Order* (Knopf)

a thought-provoking book.

A: The research in *Early Vision and Beyond* is well described by the last two words in the text of *Dialogues on Perception*. Do you remember them?

B: Of course: "great fun."

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