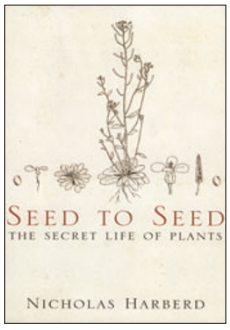
A weed for one year



Seed to Seed: the Secret Life of Plants

By Nicholas Harberd

Bloomsbury Publishing, 2006
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Reviewed by Alan Packer

"This is a book that attempts to show how science can enhance our vision of the world." So begins Nicholas Harberd's journal of one year in the life of a plant molecular biologist—his ideas, preoccupations, musings and, above all, the attempt to reconcile the reductionist nature of his science with his reverence for the natural world. Shot through with Proustian asides, *Seed to Seed* is held together by the author's intimate knowledge of the flora of the Norwich countryside in which he lives and works. While Harberd is writing in a recent tradition—Ursula Goodenough's *Sacred Depths of Nature*, Enrico Coen's *The Art of Genes*, Richard Dawkins's *Unweaving the Rainbow* and John Janovy's *On Becoming a Biologist* all come to mind—this is nonetheless a unique and unusual book for a scientist of a molecular bent to write. One's attention may drift from time to time in reading it, but at its best it's both an enjoyable study of the life of a scientist, and the kind of creative attempt to reach a broader readership that one hopes will be emulated.

Harberd's lab at the John Innes Centre is well known for its work on the regulation of plant growth, with *Arabidopsis thaliana* as its model. The book opens with Harberd explaining recent successes in establishing the DELLA-domain family of gibberellin signaling proteins as essential regulators of plant growth. These successes, he explains, have given way to "a sense of unease," owing to a dearth of new ideas. Hence, the idea for this journal, which he hopes will serve to get the intellectual juices flowing again. It takes flight in the decision to choose one *A. thaliana* seedling and to chart the natural history of its life and death. In so doing, he seeks to explain to himself, his young children and readers what he has learned about the molecules that, on one level, provide an explanation for the magnificence of the plant kingdom.

On a bike trip Harberd comes across a small group of thale-cress plants in a church graveyard. He picks one to follow, and visits the graveyard to chart its progress on a regular basis. Each stage of the life cycle is accompanied in the book by the illustrations of Polly Napper and by lessons in plant biology provided by the author. Not every visit to his pet plant makes for riveting reading, but I confess that the mid-spring revelation that part of it had been eaten by a rabbit engendered more sympathy on the part of this reader than I would have imagined possible.

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Like any journal, this one is composed partly of complete thoughts and partly of sentence fragments that pick up a thread only to leave it shortly thereafter. This unevenness of form does not preclude some lovely writing, however, which is abundant both in Harberd's descriptions of the fens of East Anglia and in the descriptions of his own states of mind. Eventually, close attention to the landscape pays off, and a new idea—that DELLA proteins may be involved not only in plant growth in the ideal conditions of the lab, but also in regulating growth in response to changes in environmental conditions—provides the impetus for a new set of successful experiments. This is a neat story about the origins of scientific inspiration ("walking worked its magic on the mind"), but it's only partly what Harberd is after, which is a view of the world "that somehow allows us to see life simultaneously at both the visible and invisible levels." He goes on:

"All over the garden there hangs this sense of excitement with the expanding juicy greenness. And there's delight in the knowing, the deep knowing that this expansion is a property of the protein we discovered. The GAI protein. That it is somehow a part of this beloved thing we call the spring. The trick is to keep the spring's beauty and the knowledge of the protein together in the mind at one and the same time."

And later:

"The scent of wood-smoke in the air this morning. It evokes thoughts of change, of transformation. Of progression, seasonal, autumnal almost, stubble-burning. And this is what scientific terms, for the most part, don't do. They lack resonance. Take GAI. An acronym. Gibberellic Acid Insensitive. Take DELLA, an acronym derived from the amino-acid code. These are pale terms, without potency."

And finally:

"The ABC model is wonderful. A remarkable insight. A product of substantial investment, the result of struggle. Although individuals made the crucial creative inputs, we have collectively as a culture or society, contributed to the effort to get to that certain place—to see that vision. The tragedy is that we don't collectively own the vision. The model isn't generally assimilated. It's boxed off, separate, something 'scientific'."

This is the underlying theme that animates the entire book—the need on the one hand for the scientist to keep his sources of inspiration in mind, and on the other the hope that such hard-won scientific explanations will be understood and appreciated by the broader culture. Harberd wonders if it's possible to see the world whole when so many of the layers of life can be perceived only "through a microscope, via the logic of genetics." At one point, attending a conference in Mallorca, and trapped inside a lecture hall, he notes "And although I think that what we're doing is right, a necessary human activity, I do wish we could somehow connect more strongly what is going on inside that room with what is outside of it."

This is not a small problem, and may be of real consequence when it comes to persuading young people that both scientific rigor and a certain amount of inspirational subjectivity can coexist in the laboratory: "Whilst wonder is what really drives us, and wonder is what we feel, we cannot admit of it. Little surprise, then, that non-scientists often do not understand us." The "relevance of astonishment," he calls it, and this engaging and memorable book is proof enough of that.