There are some quarter of a million species of flowering plants. If one is studying quadrats on a university campus, the flora may be restricted enough that one can easily use names, but as the scale of the study increases this rapidly becomes impossible.  (Even Darwin did not try to identify plants collected on his voyage, but left the task to a generous botanist.)

Consider then the problems faced by earlier biogeographers and more recently by ecologists who have tried to model global vegetation. Species names become useless and simplification becomes the challenge.

Plant ecologists have been forced to resort to classification based on functional types.

There were three questions that I wanted answered by this book. First, how has the discipline relating to plant functional types evolved over the last century? I wanted treatment of early systems such as that of the plant geographer von Humboldt, to make sure that contemporary workers were not passing off old ideas as new ones. Second, what traits are best for such a system? Early workers like von Humboldt had already identified traits for growth form and Raunkiaer systematized this using only one trait: the placement of winter buds. So long as we use morphological traits alone, we are forced simply to re-sort the traits used a hundred years ago. Over the past few decades, Phil Grime has introduced a whole new approach by introducing the method of screening large numbers of species simultaneously for physiological traits. This has the potential to revolutionize the designation of functional types, but morphological traits continue to dominate many schemes. Third, what systems currently exist and is there consensus on which is best? How does the best current system compare with earlier ones, is it a real improvement and, if so, how does it relate to more recent work?

In one of the introductory chapters, Gitay and Noble ask ‘What are functional types and how should we seek them?’ They begin ‘In recent years [my italics] ecologists have placed increasing emphasis upon the use of non-phylogenetic classifications of organisms when describing the structure and functioning of systems.’ They then launch into work mostly from the 1980s – with the exception of a passing remark about Theophrastus. Apparently von Humboldt, Raunkiaer, Du Rietz and Dansereau neither existed nor had anything useful to say. In the second introductory chapter, Shugart begins with the importance of simplification in order to study systems. This too is an important idea, but again there is a gap between theory and practice.