

Mark Garner

LANGUAGE:  
AN ECOLOGICAL VIEW



PETER LANG

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*To Sarah, Claire, and Amy*

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## Preface

This is a book for a large and varied group of people for whom there is no name.

I have met many of them in the course of teaching and supervising undergraduate and postgraduate courses and theses. Their number includes: teachers of foreign language and mother-tongue, literature, and academic and literacy skills; speech pathologists; education policy makers; writers of dictionaries; translators; counsellors; advertisers and marketing people; linguists; historians; psychologists; lawyers; poets; book editors; communication officers in emergency services; journalists; philosophers; theologians; medical practitioners; even one painter of urban streetscapes. What they have in common is that, for one reason or another, they all felt that their professional activities would benefit from a thorough and systematic study of how language works. Reading through the list, it should be obvious why that is the case (although to explain the last-mentioned would take an unjustifiable amount of space).

These people constitute an august body, and represent a remarkable range of recognized professions in the modern world. To avoid having to repeat this list time and again throughout the book, I have given them a name. I have called them language practitioners, a loose and informal label that some of them may be surprised to find applied to themselves. For convenience I would also apply the term to a number of students from other walks of life, whose reasons for studying language arose from purely personal interest.

Some of those in my list had previously turned for help to theoretical linguistics, but discovered a spring whose waters failed. Looking for a greater understanding and appreciation of that quintessentially human activity, language, they found themselves examining an abstraction from which all of the things that had first excited their interest had been drained, and which bore little resemblance to the language they worked with in their professional lives. Despite the

considerable amount that the scientific study of language (as linguistics frequently styles itself) has contributed to our knowledge of some aspects of communicative interaction, it has too often defined the very things that are most interesting and important to such language practitioners as beyond – even beneath – its concern. In an age in which the technological capacity to communicate is growing exponentially and an understanding of language and knowledge of languages is at an unprecedented premium, there is a vital need for an approach to studying language that rests upon what makes it a human phenomenon. The book attempts to outline such an approach.

This brings me to another term I use in the book. There is no satisfactory label for all of the various fields of study, which focus on some aspect of language. 'Linguistics' is, in academic circles at least, generally confined to the theoretical study of language structure, so much so that even 'applied linguistics' is regarded as a quite separate activity. Several language-related disciplines which deal with language embedded in human communication have developed a variety of names that contrast their concerns with those of linguistics: sociolinguistics, pragmatics, psycholinguistics, discourse analysis, conversation analysis, and so on. Without wishing to obscure their differences, it has seemed to me that it would be useful to have a convenient way of denominating all of these fields. I refer to them loosely as the 'language sciences', in which I mean to include any disciplines and sub-disciplines whose sphere of interest overlaps with, and therefore can contribute to, our understanding of the ecology of language. Focussing on what language practitioners have in common rather than seeing them as having quite separate professional interests, and by seeing the language sciences as a whole, may help to contribute to developing shared knowledge, practices, and perspectives that can only benefit everyone in the field.

I am aware that very little that is discussed in the following pages is new. The idea that ecology affords a revealing perspective on language was put forward several decades ago; it also, as we shall see, illuminates many of the things that matter most to language practitioners. Many of the insights that come from taking an ecological perspective have been urged, although usually from different starting points, by writers in various disciplines before now; sometimes a very

long time before. I have arrived on many occasions at particular conclusions through pursuing the implications of an ecological view, only to discover that precisely the same things had already been said by others. This is gratifying, as it attests to the value of language ecology as a way of thinking. It has also encouraged me to propose that language ecology can provide a coherent framework within which insights from many different standpoints, some of them in disciplines quite removed from contemporary linguistics, can be integrated. If there is any original contribution this book makes, it may be in outlining that framework sufficiently to inspire further theorizing and research to develop language ecology into a systematic, applied, and testable theory. Time will tell.



## Acknowledgements

In writing this book, not only have I drawn extensively on the writings of others; I have also benefited greatly from the personal advice, help, and support of a number of people. The tenor of my ideas has been tremendously influenced over many years by three people who have been valued friends and colleagues at various times: Bernard Newsome, Edward Johnson, and John Martin. Students and fellow academics at La Trobe University, Bendigo, Australia, helped me in refining language ecology by their willingness to adopt some of its principles in their research and practice, and to confirm or disagree with them accordingly. The School of Arts and Social Sciences of Northumbria University in the United Kingdom has generously provided me with research time and financial assistance. Peter Sercombe and John McKenny, colleagues within the English Language Centre at Northumbria, read and commented on the manuscript. I owe all of these people a great debt of gratitude for in one way or another making this book possible.

Finally, my wife Jill Francis has been a critical discussant and an unfailing source of information and theories from the perspective of social psychology. Her constant encouragement, support, and friendship have made not only the writing of the book, but life itself, a delight.

## Chapter 1

### Thinking ecologically

#### Introduction: new perspectives

When I was young one of my favourite toys was a kaleidoscope. This consists of a long tube with one end closed by a plastic disc that allows light through; in the other end is a small eyehole. When you look through the hole, you see a lot of coloured shapes of plastic – red triangles, yellow circles, blue crescents, and so on. They are made into a regular pattern by mirrors. Every time the kaleidoscope is shaken, the coloured shapes form a wonderful new pattern, so that from a small and fixed number of pieces of plastic it is possible to make an infinite number of patterns. We see new things: we notice, perhaps, that the red pieces are not only red, but interestingly shaped; that the colours of the triangles are subtly different; that a blue crescent fits neatly around a yellow circle. Each pattern is different and reveals new things.

Knowledge in the language sciences is a little like the view through a kaleidoscope. We already have the fixed ‘shapes’, the bits and pieces of language that have been examined and described over some thousands of years of language study. These constitute what can be described as our tacit knowledge of language; they are the things we speak and write with hardly a moment’s reflection. The English essayist, G.K. Chesterton, once commented that we know an enormous amount about anthropology simply by being human. We might add that we also know an enormous amount about language simply by using it. In this sense, whilst in many of the physical sciences new discoveries are constantly being made (astronomers discover new stars; biologists discover new species), the human sciences, including the language sciences, have nothing to discover. It is all there in our daily collective experience of life. But, if we know it all, we are often unaware that we do know it, and we understand it very little.

Understanding develops when we shake the shapes around, as it were, to form different and interesting patterns. Each new theory is, following this analogy, actually a different way of looking. It is a way of shaking things around rather than discovering new things. It creates new patterns, and enables us to discover something we had not noticed before. Advances come from new ideas about what is already familiar. They arise from changes in perspective and perception. They do not follow the classical scientific pattern in which hypotheses are formulated, tested, and modified or rejected as new information is discovered. In the language sciences we advance by finding new ways of reconstructing our thinking: by questioning what we had taken for granted, by making connections between things we had not thought of as related. Progress is not linear or cumulative: it cannot be described in terms of gradually getting closer and closer to an ultimate truth, or piling up more and more knowledge to make a bigger and bigger picture.

In the human sciences, new theories are embraced, not because the old ones have been proved wrong, or because new discoveries have made them inadequate. We reject old ways of thinking largely *because* they are old. We keep changing our theories because what we used to accept as knowledge is no longer relevant to our new needs; or because we start asking new questions, which the received theories cannot answer. We become bored and unsatisfied by the familiar assumptions and want different things to think about. We need a change in the familiar picture, a rearrangement of what is there so that we notice it for the first time, and it becomes important and relevant.

This book is an attempt to take a perspective on language that is different from that of much contemporary linguistics. The gradual formulation of linguistics as a discipline in the twentieth century was made with the explicit goal of making it a science, on the pattern of the physical sciences. Theorists were concerned to mark linguistics off from other related disciplines by uniquely defining its object of study. They set about developing a methodology appropriate to the new science, and naturally followed the classical scientific model. Language was to be analysed into the smallest discrete parts, and (more or less) universal laws about their relationships were to be formulated.

This approach has told us a lot about the bits and pieces of language, and has encouraged the systematic study of a wide variety of its manifestations. But the attempt to discover the rules (or grammars), whether of a particular language or of human language in general, has led within theoretical linguistics to increasingly esoteric formulations which are intelligible to fewer and fewer language practitioners. Just as in the works of the earlier traditional grammarians (with whom modern linguists have more in common than they like to admit: see Chapter 5), the picture of language that emerges from much linguistic description is far removed from the language we know and love. It seems to miss the point, much as describing a loved one in terms of his or her chemical and biological make-up misses the point.

In this book, I propose what I believe is an interesting alternative to the approach of traditional scientific linguistics. By applying the principles of ecological thinking to the study of language we are able to set language in its essential human context. From this perspective, language appears both more familiar and more complex than in the traditional view. This approach is in many ways not new, and most of its elements can be found in one or another part of the language sciences. For a couple of decades or more scholars working in fields like sociolinguistics and pragmatics, and more recently in the study of discourse in its many variations, have adopted a stance that could be called ecological in the sense that I outline in this chapter. The idea of an 'ecology of language' was proposed by the Norwegian-American linguist, Einar Haugen, in 1972, and although he did not go very far along the path of exploring its enormous theoretical implications, he indicated some directions that others (including me) have found very revealing. Where the term has continued to be used at all, it has been used mainly in studies of multilingual communities, which is where Haugen seemed to think it belonged.

Nonetheless, there have been very few attempts to date to articulate a fully ecological view of language. Those attempts are discussed briefly in Chapter 7. I draw on them from time to time throughout the book, but they are too limited in their conception. Their authors tended to see ecology as an interesting metaphor that could illuminate a few aspects of the relations between language and culture and society. I am proposing a much more fundamentally ecological

approach, one which has far-reaching implications for our understanding of human sociality, and also of how language works within it. Many of these implications are still only dimly discernible, and at present we can sketch only the bare outlines of a fully ecological linguistics. But I hope to explain enough of the ecological perspective to enable language practitioners, and others, to discover its promise for themselves.

## The ecological crisis and a shift in thinking

There is a gradual but increasingly noticeable shift in the way in which we in modern Western societies are thinking about ourselves and our relationship to the world around us. We have begun to realize the devastating effects of treating our environment as if it were simply there for our exploitation. We have an inkling – still feeble, but unable to be ignored – that if we continue in the way we are for another generation or so, we shall have succeeded in making the world uninhabitable. We have made it so already for those many species which have become extinct owing to human activity. The new and frightening element in today's world is that we can foresee the possibility of soon making it uninhabitable for ourselves, as well:

Humanity is paying a real price at the present time for its inability to see things *in context*. For example, failure to give sufficient consideration to the fact that nature and the natural environment provide the context within which human activity takes place is leading to the destruction of the globe's natural ecosystem [...] failure to give sufficient consideration to the fact that culture provides the context within which economic and technological developments take place is leading to equally disturbing results.<sup>1</sup>

This is not a book about ecology in that sense. I am not qualified to describe the potential (or, some would say, actual) ecological disaster that confronts us, nor can I propose any new and creative ways

1 Schafer 1998 pp.51–2.

of averting it. I am however, very interested in what this threat is doing to our ways of thinking and our assumptions about what constitutes valid knowledge. A century ago, it was unimaginable to all except a few visionaries that humans should not seek to dominate the rest of creation and do what we like with it. There were, it seemed, plenty of species, and if one or two disappeared, that was merely an indication that they were unsuited to survive in the changing world and, after all, one species more or less is a drop in the ocean.

But things have changed. We have realized that the balance of nature cannot be evaluated in quantitative terms. Although there is disagreement about how serious the threat to our survival is, the very fact that it is discussed at all makes the world a very different place from what it was for previous generations.<sup>2</sup> The very possibility that our whole race may soon be facing extinction has wonderfully concentrated our minds. People are, however slowly and grudgingly, admitting that we are not separated from the environment – not over against it or above it – but an integral part of it. We are who we are because we are part of the vast, complex interactive system or network or web that is our environment (no single metaphor can quite do justice to the concept), and it does not simply exist in order to sustain us:

Ecology has supported the fundamental insights that humans are not unique in nature, that all life is interdependent, and that the earth itself forms an interwoven whole. It implies that humans can only change their way of life if they take into account their natural capacities and their complex relationship with their environment.<sup>3</sup>

These insights are gradually leading to new ways of thinking that differ in many fundamental respects from the way our parents and grandparents thought. The origins of the revolution in thinking are in biology and zoology, but they have begun to influence not only how we think about organisms in the natural environment. They have implications for how we think about anything and everything. So-called 'ecological thought' is challenging all of our assumptions, and

2 Seitz 2002 ch.5.

3 Marshall 1992 p.338.

bringing new insights into disciplines as diverse as theology and economics, psychology and chemistry.

In some ways, the term 'thinking' is perhaps not quite apt. In our society, which has for three centuries been increasingly dominated by empiricism, analysis, quantification, and functional outcomes, the word has become strongly associated with a sort of scientific rationalism. Ecology may be better described as a sensibility, which Theodore Roszak characterizes as:

holistic, receptive, trustful, largely non-tampering, deeply grounded in aesthetic intuition [...] a radical deviation from traditional science.<sup>4</sup>

Ecology is, in these terms, more helpfully described as a way of seeing, and this book is about what happens to our theories of language when we try to see in this new way. Nonetheless, since the terms 'ecological thinking' and 'ecological thought' are widely used in the literature, I shall use them interchangeably with 'seeing' and 'looking' throughout the book. As I hope will become clear, whether we refer to it as a way of thinking or a way of seeing, it challenges many of the assumptions of traditional 'scientific' linguistics. And, although we are concerned with language as our object of study, human beings – in particular, the things we do and how and where we do them – become the focal point of an ecological view.

Before we explore this radically different view, however, we should ask what 'ecological' means in this context. In what ways does it represent a paradigm shift from earlier ways of thinking? What are the implications of the new paradigm?

4 Roszak 1980 p.431.

## What is ecology?

In 1866, the biologist Haeckel proposed the new science of ecology, which arose from the burgeoning of the evolutionary theory expounded by Darwin in *The Origin of Species* (which appeared in 1861). The term was derived from the Greek *oikos*, 'a house' (which is also the root of 'economics'), to express the idea that the whole earth is like a vast, interrelated household: what Haeckel called 'the oneness of the cosmos'. He saw the universe as a unified and balanced organism, in which humans and animals had the same natural status.

The central presupposition of this new science was that the natural world forms an interrelated whole, and that the place of organisms within that whole is the key to understanding their forms, their evolution, and their behaviour. A recent textbook describes ecology as 'an enormous jigsaw puzzle', in the sense that:

each organism has requirements for life which interlock with those of the many other individuals in the area [...] So we have a picture of ecology as a subject full of complexity [...] There is an almost infinite amount to be discovered about the ecology of the world.<sup>5</sup>

The biologist Colinvaux concisely describes the role of ecology, not merely in describing, but in explaining, the behaviour of organisms:

An ecologist must often be out in the field studying animals and plants in nature, but many other people do this without being ecologists [...] For centuries there was no attempt to look at the lark's beautiful performance [...] and to ask the question, 'Why does the skylark behave in this fetching but peculiar manner?' When that question is asked, the field of study of the skylark becomes ecology. But reflect on the myriads who have watched skylarks without asking that question: naturalists all, but ecologists none.<sup>6</sup>

5 Chapman and Reiss 1999 pp.2-3.

6 Colinvaux 1973 p.2.

The subsequent development of ecology within the biological sciences is beyond the scope of this chapter,<sup>7</sup> but what is of interest to us is the way in which, throughout the twentieth century, these perspectives increasingly influenced other disciplines. Within sociology, human ecology grew out of a belief that aspects of human society could best be understood by adapting established biological ecological models to human populations. For example, a city in which a certain social group lived could be regarded as a human habitat, just as a forest is the habitat of, say, a certain species of parrot. Humans, like any other organisms, have to adapt to the physical world in which they find themselves, and this explains important aspects of their social behaviour:

It is a fundamental assumption of human ecology [...] that a human ecosystem is a population's response to the necessity of maintaining a workable relation to the environment [...] An ecosystem is an arrangement of mutual dependencies in a population by which the whole operates as a unit and thereby maintains a viable environmental relationship.<sup>8</sup>

Later human ecologists added to this the concept of culture and personal emotions, which act to modify the rather mechanistic picture of human interaction suggested by Hawley. The spaces, buildings, and so on, which make up the urban environment are not merely physical objects, as they are for non-human organisms. They may also have a symbolic value, positive or negative, which can encourage the concentration or dispersal of settlement around them. They may have aesthetic value which can promote certain types of behaviour: a concrete jungle, without trees or large, open spaces, is more conducive to some forms of violent crime, for example. Taken together, environmental factors, both physical and cultural-personal, help to explain the spatial and growth dynamics of urban communities.

This human ecology was still essentially a biological approach, in which there are three elements. Two individual entities – the human organism and environment – are related by a process of interaction. A crucial step, however, had been taken. Human beings were now being

7 A very readable summary is given in Marshall 1992 ch.24.

8 Hawley 1986 p.26.

seen as a part of nature, and subject to the natural processes that affect every organism. If this seems nowadays to be more or less unexceptionable, it is only because (at least partly and in theory) an ecological perspective has become part of our contemporary worldview. The works of ecological theorists have started to make sense to a generation confronted by the dreadful environmental consequences of the received assumption that humans are somehow independent of nature.

It was, in every sense, a natural step to go on to explore the philosophical and ethical implications of reintegrating humanity into the environment:

[Ecological] ideas have some far-reaching implications for thinking about the human relation to the rest of nature. They imply, for instance, that the human mind is not a kind of entity which is radically different from other kinds of natural, or material, phenomena; they also imply that human societies are part of nature too and hence in principle amenable to naturalistic understanding.<sup>9</sup>

So what is ecological thought? Many writers have attempted to define what constitutes an ecological view. Laferrière and Stoett write that 'ecological thought is not a consensual expression', and describe its scope as 'bewildering'.<sup>10</sup> Hayward says that the question of what ecological thought is 'does not admit of a simple direct answer'.<sup>11</sup> There is a wide range of views, often in conflict with one another, that lay claim to being ecological.

In the narrowest sense, ecology is a scientific discipline of interest to a few specialists in the biological sciences. For such scientists, ecology is a more rigorous form of empirical science, a corrective to the blinkered approaches by earlier scientists who overlooked or took for granted far too much. But there is a wider concept of ecology:

The uptake of ecological ideas in social and political thought [...] has led to a much broader understanding whereby ecology is claimed to be an intrinsically critical science with subversive and revolutionary potentialities such as to overturn old worldviews and inspire new values.<sup>12</sup>

9 Hayward 1995 p.30.

10 Laferrière and Stoett 1999 pp.24–5.

11 Hayward 1995 p.8.

12 Ibid.

In other words, the environmental crisis has led many to suspect that the scientific paradigm, which has dominated Western ideas for three centuries, is fundamentally flawed. Roszak aligns ecology with mysticism and the 'rhapsodic intellect':

Ecology does not systematize by mathematical generalization or materialistic reductionism, but by the almost sensuous intuiting of natural harmonies of the largest scale. Its patterns are not those of numbers, but of unity in process; its psychology [...] is an awakening awareness of wholes greater than the sum of their parts.<sup>13</sup>

The 'deep questioning of nature is a central tenet of the deep ecology movement initiated by the philosopher-mountaineer Arne Naess.<sup>14</sup> Rather than seeking to dominate nature from a position of power over it, ecology contemplates nature from within. It is an approach that has a lot in common with the traditional lore and nature religions of pre-industrial societies, and some writers explicitly draw upon these sources of ecological wisdom. Hayward summarizes the three 'general imperatives' of this concept of ecology:

- Live in harmony with nature;
- Overcome anthropocentric prejudice;
- Recognize intrinsic value in beings other than humans.<sup>15</sup>

Naess advocates 'a biospheric egalitarianism', in which the needs and rights of all organisms are recognized.<sup>16</sup> There are obvious political consequences here for the hierarchical, elitist power structures and the exploitative military-industrial complexes to which they have given rise in modern nation-states.<sup>17</sup> Although not everyone who

13 Roszak 1980 p.430.

14 Sessions 1995.

15 Hayward 1995 pp.31-2.

16 Naess 1989.

17 See, for example, Mumford 1970.

obeys these imperatives is a political activist, there are many branches of modern ecology that are first and foremost political.<sup>18</sup>

Where does the study of language come in? We might ask why the term ecology should be applied to the study of language; after all, ecology is primarily concerned with the organic system (or systems) of the natural world, and it is not obvious what they have in common with language. Can there be a truly *ecological* basis to the study of language, or is this just another example of a buzzword applied thoughtlessly?

There are two answers to this question. One is that ecology is neither more nor less than a useful metaphor which gives us some interesting insights into language. The other is that language is, in a fundamental way, a part of the ecology of our world, and can be understood fully only if we think of it as such. The concept of ecology as metaphor is the predominant view.<sup>19</sup> The few linguists who have explicitly written about language from an ecological point of view have applied ecology as a metaphor. This is not surprising, since (as we shall see in Chapter 7) it was the inspiration for Einar Haugen's original proposal.

The second view is only just beginning to be argued explicitly.<sup>20</sup> There are, however, many sociolinguists, pragmaticists, and others within the broad discipline of linguistics whose views are implicitly ecological. To argue, as I attempt to do in this book, for a fully developed theory of language ecology, is not particularly innovative. As I mentioned in the Preface, all of the different parts of the theory discussed in the subsequent chapters have been written about before. There is, nonetheless, great value in bringing them all together under one theoretical rubric, because in that way we can see more clearly than is the case at present the implications of an ecological view for our whole conception of what language is and how it works.

18 Laferrière and Stoett ch.2 give a very useful survey of the political aspects of ecological thought.

19 Fill and Mühlhäusler 2001 Introduction.

20 Fill and Mühlhäusler 2001 is a collection of writings, not all of them recent, as a contribution to this view of the relationship between language and ecology.

Let us examine these two views of what an ecology of language might be.

## Ecology as a metaphor for language

Various metaphors for language have been around for a long time. They have been invaluable in helping linguists to focus attention on certain features of language, but like all well-worn metaphors, they are now so familiar that they are no longer seen as metaphors. They have come to be regarded as simple descriptions.<sup>21</sup> (That is what has occurred, for example, with the metaphors of language as a tool and language as structure.)

Biological metaphors, too, have been common in discussions of language for at least a couple of centuries. The first explicit statement that the relatively new biological concept of ecology could serve as a useful metaphor was made by the Norwegian-American linguist, Einar Haugen:

Today the biological model is not popular among linguists. It was clearly a metaphor only, which brought out certain analogues between languages and biological organisms, but it could not be pushed too far [...] Even if we reject the biological, the instrumental, or the structural metaphors, we recognize the heuristic value of such fictions [...] In this paper I propose to treat the 'life' of language in the spirit which I take to be that of the science of ecology.<sup>22</sup>

I shall examine Haugen's ideas in more detail in Chapter 7. Following Haugen, Mackey explored ecology as a metaphor for language 'shift' (which is itself a metaphor), in other words the process by which one language is replaced by another in communicative behaviour of an individual or a group:

21 A similar forgetfulness has overtaken metaphors for communication. See ch.3.

22 Haugen 1972 p.58.

When one thinks of areas on the face of the globe where languages long dead were once spoken, it is an ecological reasoning that springs to mind. It is as if we were contemplating the fossils of pre-historic creatures rendered extinct through changes in their environment. Languages too must exist in environments and these can be friendly, hostile or indifferent to the life of each of the languages. A language may expand, as more and more people use it, or it may die for lack of speakers. Just as competition for limited bio-resources creates conflict in nature, so also with languages.<sup>23</sup>

In his description of the way in which different languages fare in a multilingual society, Mackey writes about them as if they 'behave' in some sense like living things:

The ecology of language shift is the study of interrelated sequences of causes and effects producing changes in the traditional language behaviour of one group under the influence of another resulting in a switch in the language of one of the groups.<sup>24</sup>

At its most basic, a metaphor works by likening (a) something that we find it hard to describe or conceptualize to (b) something else that we can describe or conceptualize. Often the likeness is easy to grasp, even if the elements in the metaphor are themselves complex: the eye is like a camera; poverty is like a disease in the body of society. The metaphor of language ecology, however, is not so straightforward. It relies on a fairly complex analogy between the two sets of elements. On the one hand, there are, as the (b) element:

- a living organism;
- its natural environment;
- the interactions between the two.

On the other hand, as the (a) element, there are:

- a language;
- the community of people who speak the language;
- the interactions between the two.

23 Mackey 1980 p.67.

24 Ibid., p.68.



If the metaphor is valid in any functional sense, it implies that there is a legitimate parallel between the sets of elements. In other words, the relationship between an organism and its environment is analogous to the relationship between a language and its speech community. In diagrammatic form:

organism ↔ natural environment :: language ↔ speech community

where the double arrow represents the interaction between the two elements, and the sign :: represents the analogy between the two sides. The two sets of elements are not, of course, identical, and the critical question is: to what extent are they alike? In other words, how robust is this analogy?

Depending on what we believe the answer to that question is, we can use the metaphor as a model (or theoretical framework for thinking) in one of two ways. First, we can take the resemblance between the two sets of elements in the metaphor to be very partial: it may be an overall, generalized resemblance which does not carry over into any detail; or there may be a similarity in one specific aspect only.

In that case, we are justified only in using the metaphor as a model in a way that serves as an aid to filling gaps in our scientific vocabulary.<sup>25</sup> Boyd defines this function as providing 'epistemic access to a particular sort of thing or natural phenomenon'.<sup>26</sup> More simply, this is a metaphor functioning as a helpful illustration. For example, learning a foreign language has been likened to the growth of a crystal, which occurs as chemicals from the solution in which the crystal is suspended gradually adhere to its outer faces. In a similar way, linguistic knowledge accretes from the language environment, fastening on, as it were, to what we already know. This illustration is an unusual and surprising way of conceiving of language learning, and it may help to stimulate our thinking about how best to teach languages, but no one would for a moment suggest that there are any

25 Black 1962 pp.33 ff.

26 Boyd 1979 p.483.

specific parallels between crystallization and language learning. Indeed, it is easier to think of ways in which the two processes are unlike than alike. Such a metaphor cannot be expected to serve as more than a helpful way of illustrating a particular point; it cannot explain or predict. In this way, it is similar to the more familiar use of metaphors in literature.

Secondly, we can take the resemblance between the elements of the metaphor to be quite extensive, such that in many or even all significant aspects the two are alike. In this case, we can use it as a heuristic model, which represents 'the perception, shared by those who use the terms, that the [...] description characterizes the world as it really is'.<sup>27</sup> By exploring the characteristics of the better-known element within the metaphor, we can discover hitherto unsuspected things about the less-known element. A heuristic metaphor – also, like ecology, drawn from biology – was at the basis of nineteenth century comparative philology. In an era of intense interest in what we now call genetic relationships – first between the various human races and later between all living species – scholars borrowed the current concerns and applied them metaphorically to language. And when they wondered about the 'family relationships' between the languages of the world, it opened up exciting possibilities and led to new discoveries.

Language scholars began to look for, and soon discovered, 'parent' and 'daughter' languages on the basis of 'genetic' ties. For example, if in a particular region we noticed that a number of people had bright red hair and a hooked nose, we would assume they all descended from one red-headed, hawk-nosed great-great (etc.) grandparent. It had been known for centuries by linguists, travellers, and others that some languages – for example, English, German, and Dutch – are similar in vocabulary and grammar, whereas Chinese and English are not. But not until scholars began to think along the lines of the family metaphor did they begin to wonder if these similarities were systematic and due to a common ancestor. This led them to start trying to reconstruct a picture of what these ancestor languages were like, and a long and exciting period of language research was ushered

27 Pylyshyn 1979 p.434.