

# Part I: Opposition

**Part I, 'Opposition'** gives an epistemological account of our use of oppositional categorisation as a taxonomic strategy employing certain simple epistemic tools. Opposites are maximally saliently different sub-categories of a background epistemic field defined by a salient similarity. Oppositional classification is especially attractive to us because its structure satisfies our obligation (defended by Kant) to reconcile the conflicting maxims of seeking both unity and diversity in our taxonomic activities. Oppositional classification defines and partitions a field of epistemic objects for ease of epistemic manipulation. It is based upon the mutually functional application of two forms of negation which I call 'spotlight' and 'toggle' negations: the former posits a background field of saliently similar objects, and the latter mutually exclusively and exhaustively partitions that field into saliently different subcategories. Variations both in the application of these tools and in the kinds of epistemological objects mapped by the epistemic field account for the different kinds of opposition. One such variation is scalar opposition. The good/bad contrast examined in Part II is an instance of scalar opposition.

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## Chapter 1. An Epistemological Approach to Opposition.

### i) Introduction

Surprisingly little has been written directly on the subject of opposition, although oppositional phenomena can be found playing crucial roles in most if not all important philosophical works. Both deconstructionists like Derrida and contemporary critical epistemologists in the analytic tradition like Genevieve Lloyd and Val Plumwood argue in effect that oppositional construction is a form of comparison and contrast that is ubiquitous in the public epistemological domain (including academic philosophy). This fact, as we will see in Part III of this work, has important implications when we recognise that oppositional constructions of ideas are for various reasons extremely vulnerable to political inflexion.

These two factors, that is, the ubiquity of oppositional constructions, and their apparent ideological significance, by themselves would warrant an explicit examination of opposition; however, there are in addition many compelling philosophical questions which also involve opposition. An example, and one which will figure centrally in this work, is the question of the logical underpinnings of the generic value opposition, the good/bad contrast. Others include related and analagous value oppositions such as permissible/prohibited and true/false.

In this Part, I will be taking an epistemological approach, within a broadly Kantian or constructivist epistemological paradigm, to the subject of opposition. Aristotle says of contraries<sup>1</sup> that they apply to (among other things) 'the most different of the attributes in the same recipient subject, ... to the most different of the things that fall under the same faculty, ... to the things whose difference is greatest either absolutely or in genus or in species' (*Metaphysics*, Bk V, Ch 10, 1018a, 25-35<sup>2</sup>). I will be arguing that the most general common feature of all oppositions is that they

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<sup>1</sup>One kind of opposite, according to Aristotle. Examples include good and bad and black and white. For a relatively compact discussion of different kinds of opposition see his *Categories*, Chapter 10, E.M. Edghill (transl.) in *The Basic Works of Aristotle*, Richard McKeon (ed), N.Y.: Random House, 1941.

<sup>2</sup>*Metaphysics*, transl. W.D. Ross, McKeon, op. cit.

mark maximum salient difference within an epistemic field or construction of some sort, this field or construction itself organising saliently similar objects. Opposition is, then, the relation of maximal salient difference within a salient similarity.

In subsequent Chapters, I will show how opposition functions as a taxonomic strategy designed to structure epistemic fields for ease of manipulation. I will argue that this strategy is motivated by the *a priori* maxim, defended by Kant, that we reconcile conflicting imperatives to maximise both unity and diversity in our taxonomic activities. I will examine the ways in which epistemic fields are structured using different kinds of negation which themselves reflect these conflicting imperatives. I will then review uses of opposition by the Ancient Greeks, regarding them both as a 'case study' in human philosophical use of opposition, and as a major influence upon historical contemporary Western uses of it. I will argue that the epistemological imperatives and strategies that I have described are clearly evident in these early and influential uses of opposition.

Finally, I will explicitly address opposition from a logical point of view. Triangulating from the very different contributions to logic of George Englebretsen (on the Square of Opposition, and on negation) and R. and V. Routley (on the semantics of negation), I will show how the recognition of the function-specificity of different kinds of negation clarifies the nature of problems such as the infinitation of the negative, and more importantly, makes sense of the logic of opposition.

## ii) Some Accounts of Our Use of Opposition

In this section I will selectively review some important kinds of empirical accounts of human interest in and use of opposition, preliminary to defending an epistemological approach to the issue.

### a) The Body

C.K. Ogden, in his book 'Opposition'<sup>3</sup> claims that 'opposition is based on spatial experience' (p 94). Opposition can be articulated by a 'visual schematism' in which the body has a special place. The body is both symmetrical (laterally) and asymmetrical (because it **faces** one way, p 96). Ogden compares our bodies to that of an actinian like a starfish. An intelligent starfish might primarily use radial oppositions, where as for us, according to Ogden, they are secondary. Secondly, although Ogden does not explicitly mention this, an intelligent sphere might have no concept of asymmetrical facing, and hence of asymmetrical directionality between opposite extremes.

According to Ogden, for us, opposites are either the two extremes of a Scale or the two sides of a Cut (through a line, or a field), which marks a neutral point (pp 58-94). He says that what he calls the 'spatial cut' is visually schematised using the vertical axis of the body (p 95). 'Front/behind', the related 'before/after', and 'future/past' also provide spatial and temporal cuts, here based on the asymmetry of our property of 'facing'. Ogden goes on to claim that the extremes of a scale are schematised bodily through the head and feet, which generates the use of 'up/down' to express movement between these extremes.

The significance of the 'right/left' distinction for the Ancient Greeks<sup>5</sup>, including the explicit mention of right and left sides of the body in medical theory, and its mention as an example of the 'method of division' in Plato, would seem to support the view that our embodied experience provides both a stimulus and a metaphorical content for certain conceptualisations of opposition. Ogden's observations certainly contribute to an understanding of why some kinds of opposition are favoured by us over others, and why they are metaphorically expressed in the way they are. But they tell only part of the story. The question remains of just what the relationship is

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<sup>3</sup>C.K. Ogden (1967), Opposition - a Linguistic and Psychological Analysis. Bloomington: Indiana University Press.

<sup>4</sup>I will more closely examine Ogden's account in Chapter 2, Section viii, below.

<sup>5</sup>See Chapter 3, below.

between these characteristic bodily experiences of ours and the highly elaborated epistemological structures that we are investigating.

Mark Johnson, in *'The Body in the Mind'*<sup>6</sup> argues that imagination, an organising capacity, is the bridging activity between perception and abstractive conceptualising. 'Imaginative structuring' emerges from bodily experience. 'Image schemata' are patterns for perceptual and motor organisation. 'Metaphorical projections' are patterns drawn from physical experience and applied in the organisation of abstract conceptualisation.

A core such schema, with a pervasive metaphorical application, is that of **balance**, 'an activity we learn with our bodies' (p 74), and Johnson describes the early balancing struggles of a baby becoming 'a little *homo erectus*'. In addition, bodily equilibrium, systemic balance, is a pervasive feature of bodily experience. 'Things are felt as "out of balance." There is "too much" or "not enough" so that the normal, healthy organization of forces, processes and elements is upset.' (p 75). Johnson elaborates his example by claiming that we respond to felt imbalance and disequilibrium by, for example, adding heat to cold hands, or moisture to a dry mouth. As we will see in Chapter 3, this is also consistent with the Ancient Greeks' development of 'balance' models of human health. The question is, does the experience of relieving cold by the application of heat count as a direct bodily experience of the process of balance, and if so, why? If biological instinct drives us to drink when thirsty, it also has us duck away from falling objects, twitch our ears at strange noises, sleep with our backs protected. Why is the one experienced as a process of balance, while the others are not?

A hallmark of the experience of balancing would be the phenomenon of diminishing returns, in either direction of the application of a cause (e.g., in the application of cold to relieve heat, or heat to relieve cold). Where processes of balance are involved, we reach a point where we have had enough, and having too much becomes problematic. In correcting a loss of balance, we can overbalance in the other direction. But other features of the experience must also be noted if it is to be recognised as one of balancing, and these are more epistemically complex. These

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<sup>6</sup>Op. Cit.

include the recognition of 'heat' and 'cold' as sharing underlying causal unity, even when having quite different effects. This would seem to be a fairly sophisticated epistemological act of 'noticing', were it not for the existence of a prior, available, epistemological framework in which the notion of a balance between extremes, which mark opposite directions of causality, has a ready place. Such a framework would allow us to recognise causal elements in balancing experiences as having an oppositional and mutually causal character and give us grounds for marking balancing experiences off from other kinds of bodily experiences, as experiences of balancing. What we call balancing may be, then, 'an activity which we learn with our bodies', but that we mark off and recognise this kind of activity as unlike other bodily activities and experiences cannot itself be explained by the experience alone. Rather, some more abstract epistemological activity must accompany these bodily experiences in order for them to be experienced as acts of balancing.

Johnson reviews (p76ff) several features of our perception of balance, which can be extremely complex, and which Johnson argues is best described as the perception of a balance of 'psychological forces'. There is no explanation, however, of the psychological salience of balance in perception, nor of our capacity to recognise that all of these various, often almost compulsive psychological phenomena have 'balancing' in common. He says (p 85) 'We are dealing with levels of organization that are on the borderline between bodily processes and conscious or reflective acts that we can focus our attention on, if we choose. We are dealing with preconceptual levels at which structure emerges in our experience ...'. Johnson is rightly concerned to restore the body to centre stage in epistemological theory, a project that has also recently engaged researchers in other contemporary epistemological paradigms like feminist poststructuralism. However, there is no reason to suppose that restoration of the body to centre stage in epistemology requires that its relations with the more abstract elements of knowing is monodirectional. Experiencing the activity of balancing and experiencing it as balancing are two different things. And this experience will not be able to be taken up and used as an image schema or a metaphor for more abstract and diverse occasions of balance until it is recognised and partitioned off from the rest of our experiences as having the unique characteristics that it has.

The kinds of observations that both Ogden and Johnson make, however, would seem to be more usefully viewed as supporting the view that active abstraction and 'wired in' perceptual organisation are points on a spectrum between which the different kinds of structural phenomena shade into one another. Further, it must be recognised that the human brain is highly adaptable and flexible: the influences between these structures can and will be mutual. Abstract epistemological structures will feed into and infuse concrete experiences, which will themselves be taken up and fed back into strategies of abstract organisation. The toddler struggling to her feet is also thinking - in, and through, and about, her bodily experiences. The possibility of the presence of a very basic epistemological propensity for constructing experiences oppositionally, one which is both brought into play and influenced by experiences, including bodily experiences, is surely required to fill out accounts of oppositional concepts like balance that draw upon bodily experience.

#### **b) Environmental Accounts.**

The Ancient Greeks provide a striking example of enthusiastic use of oppositional concepts and frameworks in their theorising. G.E.R. Lloyd<sup>7</sup> examines J. Burnet's<sup>8</sup> environmental account of this phenomenon. Lloyd quotes him as follows<sup>9</sup>:

The cycle of growth and decay...takes...the form of a war of opposites, hot and cold, wet and dry....The opposition of day and night, summer and winter, with their suggestive parallelism in sleep and waking, birth and death, are the outstanding features of the world as they saw it.

The problem with Burnet's account for Lloyd is that other societies with similar climates did not share the Ancient Greeks' frequent choice of hot/cold and dry/wet as opposition basics. Lloyd elsewhere concludes that Ancient Greek use of opposition is 'evidently not the outcome of empirical observation' (p 30, op. cit.), but it remains plausible, perhaps simply obvious, that their use was influenced by salient features of experience that lent themselves to oppositional construction.

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<sup>7</sup>G.E.R. Lloyd (1966), *Polarity and Analogy - Two Types of Argumentation in Early Greek Thought*, Cambridge: Cambridge University Press.

<sup>8</sup>Cited to J. Burnet (1948), *Early Greek Philosophy*, (4th ed.), London.

<sup>9</sup>Lloyd (p 28) cites a larger passage containing this quote to pp 8f., op. cit.



Burnet cites the opposition 'day and night' as one likely environmental stimulus for oppositional thinking. There is another salient feature of our experience, however, which is temporal, and much more personal than the day/night cycle, and that is the experience of the present as different from both the past and the future. Our use of the temporal categories 'the present', 'the past' and 'the future', categories which are formally differentiable from anything that they might happen to contain (or be expected to contain) is a highly salient experiential stimulus for the development of a certain kind of oppositional epistemic strategy. That strategy involves the construction of opposites from ordered series of epistemic objects standing in comparative relations with each other<sup>10</sup> (for example, 'hot/cold', 'black/white', 'loud/soft', 'day/night'). If, with Kant, we recognise time as a form of experience (i.e., as one of the grounds upon which our synthesis of experience into a meaningful, ordered pattern of events is based), opposition may have *a priori* elements.

As to Burnet's mention of a 'war' of opposites, there is a clear social basis for conceiving the oppositional relation as being one of war or conflict. Ferguson<sup>11</sup> says (p 10) '...the habit of antithetical thinking was deeply imbued in the Greek mind, and we may suspect that its prominence was somehow connected with the practice of debate in the assembly and law-courts.' This is a very interesting remark from the point of view of understanding potential political inflexions of oppositional constructions, which I will be examining in Part III of this work. There is no doubt, from the evidence provided by the Pythagorean Table of Opposites alone, that value and status, with recognisably socio-political roots, found its way into Ancient Greek oppositional taxonomies. In Part III, I will argue that a detailed analysis of influential oppositional constructions can be facilitated by the theoretical recognition of the **power** contexts of public epistemic practices, together with an understanding of the special affinity between value and descriptive opposition.

If we combine an understanding of the constructive and publicly-negotiated and shared nature of knowledge with a recognition of the saliences and amenability to

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<sup>10</sup>I explain and discuss this kind of opposition in Chapter 2, Section viii), and Chapter 4, Section iv).

<sup>11</sup>John Ferguson (1969), *The Opposites, Apeiron*, 3 (Jan), pp 1-12.

oppositional construction of various (spatial, temporal, perceptual, and social) features of our experience, which is also shared, we do have a plausible account of the occurrence to the Ancient Greeks of the idea of causal, warring, value-significant oppositions in nature. I will be defending this claim in detail in Chapter 3. If we complete this kind of account with a model of how we construct opposites using basic, simple epistemic strategies we are much closer to a conclusive story about human interest in and use of opposition.

### c) Psychological Accounts

The psychological investigation of our use of opposition, as an area or tradition of study, has been surprisingly neglected, although demonstrated effects of various oppositional or oppositionally-based phenomena crop up, in a number of different guises and under various labels, in research in the fields of, for example, cognition, language, memory and child development. An example of explicit psychological interest in opposition is, however, provided by Richard N. Williams and John Paul Lilly, in a 1985 paper, 'The Effects of Oppositional Meaning in Incidental Learning: An Empirical Demonstration of the Dialectic'<sup>12</sup>. In this paper, Williams and Lilly demonstrate effects on learning and memory of oppositional meanings, as part of the project of defending Rychlak's 'Logical Learning Theory'<sup>13</sup> and, more generally, of advocating the systematic psychological study of oppositional phenomena, 'largely overlooked by cognitive and behavioristic psychologists' (p 420). However, they report that there is nevertheless considerable empirical evidence for the importance of oppositionality in meaning to human cognition. I have argued above against the tendency to overemphasise empirical stimuli for our use of opposition; Williams and Lilly argue that the research shows that these uses 'involve the person ... as meaningfully involved in the world, rather than merely the person as a sort of "feature detector".'

Interestingly, Williams and Lilly found that one of the effects antonymy had on recall errors in their study was that 'subjects seemed ... not to be able to remember which end of the meaning dimension was given'. (p 430). They point out that

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<sup>12</sup>In *The Journal of Mind and Behavior*, Vol. 6, No. 3, pp 419-34.

<sup>13</sup>See J.F. Rychlak (1977), *The Psychology of Rigorous Humanism*, N.Y.: John Wiley & Sons.

previous research has demonstrated that the polarity of meaning dimensions is acquired by children before particular meaning labels, and supports the idea that the antonymy of a pair 'seems to be more salient than the words themselves' (p 430). Oppositionality is itself a relation. Memory research relatively consistently indicates that more general or 'deeper' levels of processing activity have greater longevity and integrity<sup>14</sup>. The apparently superior relative salience of the oppositional relationship (compared to the salience of the particular opposites related), would seem on this view to indicate that opposition is a general organising principle applied to objects in experience, rather than an additional empirically observed fact about the relationship between some objects of experience.

This observation is consistent with the view that oppositionality as such is in some sense prior to or more fundamental than particular experienced examples of oppositional pairs. Later (Chapter 3), I will argue that certain important Ancient Greek views of opposition saw opposition as such, rather than particular opposites, as causal. This observation is also consistent with the view that any given oppositional differentiation conceals an underlying and psychologically or epistemologically salient unity. Again, in Chapter 3, I will argue that oppositional construction was used by the Ancient Greeks to (among other things) define the parameters of ('unify') a field of enquiry.

Rychlak (1977, op. cit.) says: 'Knowledge is earned through actively applying meaningful premises; at this point we can speak of learning taking place.' (p 325). He argues that active strategies are used by us to create meaningful connexions between objects of thought and experience. Logical Learning Theory, a psychological model of learning heavily influenced by Kantian epistemology, emphasises oppositionality as one important organisational 'pattern' or strategy of human learning. Rychlak claims that there are at least four types of connective strategies: those universally affirming, and those universally denying connexions between objects ('Unqualified Affirmations' and 'Negative Affirmations'), those affirming connexions that are not uniform or universal ('Qualified Affirmations'), and one Rychlak calls 'Oppositional Affirmation', which involves connexion via

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<sup>14</sup>See, for example, F.I.M. Craik and R.S. Lockhart, 1972, 'Levels of Processing: A Framework for Memory Research', in *Journal of Verbal Learning and Verbal Behavior*, Vol. 11, 671-684.

'dialectical contradiction' such as 'X is the reverse of Y, X has a meaning diametrically opposed to Y, X contradicts Y'. (pp333-4). Rychlak, concerned to combat the dominance of crude, causal associative concepts in experimental psychology, complains that the 'active intelligence' of learners is usually overlooked in the experimental situation, in part because of an emphasis on 'unqualified affirmation' as the only connective principle. This 'active intelligence' is part of what I seek to highlight and understand in our use of opposition. Unlike Rychlak, however, I do not see oppositional connexions as epistemically primitive organisational strategies, but will argue that they are built up from more basic epistemic tools.

#### **d) An Epistemological Approach**

In that epistemological tradition broadly characterisable as Kantian, knowledge is held to be constructed by us from the raw data of experience, using strategies and principles some elements of which are not themselves acquired or learned from experience. Both shared *a priori* elements of knowledge and shared environments (or data) are held to ground epistemological communication, and for Kant, objective justification, between knowing beings. A now reasonably uncontroversial modification of Kantian epistemology would include shared social, cultural and linguistic environments among the influences upon the degree of communication available to knowing beings. More controversially, we might now also hold that these influences will on occasion, to some degree, legitimately be reflected in criteria for belief between such beings, and thereby in criteria of justification.

The key notion for my purposes from this tradition is the active and creative, albeit rule-governed, nature of knowing. While some elements of knowing, say certain very general rules, principles and strategies for organising experience and constructing communicable knowledge, may be available to us *a priori*, there will be reciprocal influences on our epistemic strategies coming from the contexts of the epistemic practices in which they have a point. Further, there will be much room for creativity and choice in the way we impose organisation on experience. On this view, the *a priori* necessary contents of a body of knowledge and its contextually contingent contents will often be difficult if not impossible to distinguish. The contributions to a body of knowledge from the *a priori* and the empirical will range

on a spectrum from the epistemically necessary to the quite arbitrary, but there will be grey areas in between where universally experienced environmental factors may give a false *a priori* flavour to an epistemically contingent epistemic strategy, or where a common underlying epistemic framework is overshadowed by a rich diversity in the uses of it. Further, the choices made by knowers when engaging in epistemic activities will range from those which are self-consciously independent, reflective and considered, to those which are habitual, to those coerced by features of the context of the choice. We may, as part of a linguistic community, for example, unreflectively conform to a particular classification strategy. Or, we may be driven unwillingly to conform on pain of epistemic or at least linguistic excommunication. We may also be driven to a given classification strategy by various saliences thrown up by anything; from our perceptual apparatuses to the values and practices, the Wittgensteinian 'forms of life', in which our epistemic activities are embedded.

Further, social and cultural factors, as well as the epistemological practices in which systems of knowledge have their point, will strongly influence the degree of creativity permitted in the construction of knowledge - what can be played with and what is inviolable, how far we must select, and how far we are permitted to construct. It should also be remembered that public or shared knowledge is negotiated, disseminated and recorded in various ways; linguistic encoding of public knowledge is only one such way. Because of this, we cannot rely completely on linguistic encoding in our search for potential *a priori* elements of the construction of knowledge, or in the (apparently more popular) search for evidence of radical linguistic relativity of knowledges. Some cultures, for example, (e.g., Western culture) strongly emphasise instruction in their epistemological practices, and so tend to carefully encode spatiotemporal sequencing in their descriptions of events; other cultures may be more inclined to convey the subjective quality of the experience as a whole and so pay less attention to these factors, misleading sociolinguists into linguistic relativity theses about epistemological basics like our experience of time and space<sup>15</sup>.

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<sup>15</sup>I am alluding to the now cliched Hopi Indian and Tobriand Islander research which is usually cited to demonstrate that spatiotemporal experience can radically differ between linguistic groups.

The vexed practice of making a cross-cultural or linguistic empirical search for universals or radical differences, with all its inherent problems of interpretation and translation, is not the way that Kant demonstrated the existence of *a priori* knowledge. Kant's strategy was to distil ordinary shared experience, including capacities that we all obviously have such as the capacity to engage in reasoned action, down to its underlying structural presuppositions. The object of my enquiry, however, has its place in publicly negotiated and disseminated knowledge, and this brings its own features to the investigation, features which do much of the distillation work that is required. One of important such feature is that public handling of knowledge will tend to act upon systems of knowledge, and their elements (concepts, justification practices, etc.), like Darwinian selection - only those structures and elements will tend to survive that accord with and reflect whatever epistemological capacities all participants in the system share.

Requirements of communication between human beings will also do some of this work. The attempt to convey something to another requires some guesswork towards a meeting of minds. For example, when I have to meet someone at Sydney's Central Station it is always agreed that we meet under the clock on the Country platform, and you will usually see a small crowd of people there doing the same thing. When people have to meet, they have to coordinate their world views, and the risks of miscommunication can be overcome by picking a large, easily labelled and easily recognisable landmark. The same goes for the basic epistemological frameworks through which we will attempt to communicate ideas to others in public epistemological contexts. We will use simple, basic, 'landmark' epistemological strategies and tools, and these will succeed only insofar as they have been readily recognised by other knowers - only insofar as they are shared, or the capacity to recognise and use them is shared in spite of widely differing abilities, educations, histories, political positions and so on. Since only successful strategies and tools will survive in the structures of public knowledge systems, these systems can provide clues to the presence of universals of human epistemology. The cross-cultural empirical search for evidence for or against the *a priori* is, then, misguided and unnecessary, since the differences between users of just one system of knowledge, combined with the 'selection' stress on any such system, will provide us with a distillation effect that reveals basics of human epistemology.

I would be very surprised to discover that there was a cultural or linguistic community unacquainted with the concept of opposition. However, the scope of my claims about the account of opposition that I will be defending need not be as ambitious as this. I am not in fact concerned to defend any claims about whether oppositional constructions are *a priori*. Rather, I seek to provide an understanding of opposition which will facilitate an understanding of phenomena connected with it which are sufficiently important to warrant investigation whether or not they are universal features of human experience. It is sufficient for my purposes that opposition is present throughout the Western tradition of publicly regulated epistemological practices, and that it can be analysed into simpler elements, and its function plausibly contextualised in simple, basic epistemological practices, which are recognisable to Western thinkers. Just as the meeting of minds requires mutual recognition of shared epistemological territory in the communication of ideas in general, the eliciting of recognition is the core justification strategy that I will employ in my arguments about the epistemological structure and function of opposition.

Finally it should be kept in mind here and throughout this work that the epistemic practices, strategies and tools which I am arguing contextualise and underpin opposition do not define or exhaust our capacities for structuring or experiencing the world. They are merely simple and well-trodden epistemic paths that we can choose to modify or avoid and from which we frequently wander. This point will be important to a fair reading of Part II, which takes a controversial rationalistic approach to (an important subclass of) evaluation, and will be reiterated there. However, on the other hand, the influence of the availability of these paths, especially in public epistemological contexts in which they provide a tempting shared framework for communication, should equally not be underestimated; the power of this influence is central to the arguments in Part III of this work.

One of the core epistemological activities is that of description, in the sense of taxonomy: classifying and ordering things. Taxonomy is engaged in at varying levels of detail and systematicity, for various reasons and in various contexts; one, for example, would be the context of developing a vocabulary for the purposes of

communication, this communication, as Wittgenstein pointed out itself having a practical context (being contextualised in a 'form of life'<sup>16</sup>). Taxonomic activity at very highly developed levels of detail and systematicity is part of the practice of contemporary science, where curiosity about the world, and the goal of working out a stable explanatory model of the world, motivates the classifying and ordering of objects with which we would not normally, and perhaps could not, directly engage (objects which are not part of the currency of ordinary, everyday activity). But this is probably too highly developed and stylized a model of taxonomic description for our purposes: if we are to understand opposition as a very basic feature of (at least) human epistemic strategies, we must look at less explicitly motivated taxonomic activities, which are more generally exhibited across the spectrum of human activity.

Sorting and ordering, including explanatory sorting and ordering, is a prerequisite for the simplest reasoned action. Reasoned action is action which is done for reasons which will be self-consciously applied again in similar circumstances, and it is the identification of similarities, differences, and the causal order of events in the world around us that enables us to develop and apply such simple principles of action as looking for a certain kind of food where we have found it before.

In public epistemological practices, we are going to try to systematically map and encode the results of our taxonomic activities, for ease of learning and communication, and the strategies that we employ to do so will in turn reciprocally influence the activities themselves. I have kept the model of this activity that underpins my subsequent discussion extremely simple (it could be considerably elaborated): we construct an epistemic 'field' upon which actual and possible objects can be arranged. This field can be as general or specific as we like. Its construction involves selecting out and delimiting a category of significant identified similars in experience. These similars can be anything that can be an epistemic object - objects like pears, properties like colour, forces, directions, relations and so on. We then partition this field, using some simple epistemic tools, in such a way that it can exhibit significant, selected or constructed, relations of difference

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<sup>16</sup>Ludwig Wittgenstein (1958) Philosophical Investigations (2nd ed.), G.E.M. Anscombe (transl.), Oxford: Basil Blackwell. See, for example, Para 23 (p '11e' of Anscombe).



among the objects organised by the field. We are able to map this field and the relations between objects that it exhibits using the subject/predicate form of the proposition. Parts of fields can be employed as independent fields, and whole fields can be incorporated in larger fields. In the next Chapter, I will explain the most basic epistemic tools used to structure these fields.

## Chapter 2. Some Broad-Brush Epistemology

### i) Kant: A Taxonomic Maxim

Antithesis is an element in any classification, and the primary form of antithesis, one may say, is division into *two* groups - so that the *simplest* form of classification, by the same token, is a dualist one<sup>17</sup>.

Kant argues that the organised and systematic search for similarities and differences is prescribed by two '**maxims**' of reason, meant to guide the understanding in its construction of concepts from the raw data of experience. In the 'Critique of Pure Reason' (in the Appendix to the Transcendental Dialectic<sup>18</sup>), he argues that these maxims operate in **two** directions in our categorisation of objects: first, to **maximise unity**, and second, to **maximise diversity**. These two guiding maxims would seem to be at odds with each other, but they are reconciled by the practice of hierarchically ordering differentiated objects under categories of greater and greater generality; or, looked at in another way, by differentiating categories within categories, and so on. (This is, of course, the popular image of taxonomy as practiced, for example, by the biologist.) The search for the most general possible category is the search for 'unity', and the search for the finest discriminations possible is the search for 'diversity'. The most interesting thing about Kant's view here is his characterisation of the **hierarchical arrangement genus/species** as the **reconciliation** (or, you might say, unification) of the conflicting practices of searching for both unity and diversity.

The opposed requirements of seeking unity and diversity are reconcilable because things can be the **same** in some respects and **different** in other respects. But the epistemic practice of holding constant any samenesses and looking for a difference, or of holding constant any differences and looking for a sameness, require a uniting

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<sup>17</sup>G.E.R.Lloyd, op. cit., p 80.

<sup>18</sup>1781(1st ed) and 1787 (2nd ed.) Both editions are combined in Norman Kemp Smith's 1933 translation, 'Immanuel Kant's Critique of Pure Reason', London: Macmillan, (1986).

organisational idea. This idea, according to Kant, is the hierarchically organised genus/species pattern of mapping similarities and differences among objects.

Again, it is important to keep in mind that practices and principles characteristic of the highly developed and stylized practices of scientific enquiry do not necessarily also characterise human epistemic basics. A good proportion of our construction of experience is fluid, intuitive, affective, aesthetic, and inconsistent. However, this is inadequate to the requirements of the kinds of shared knowledge utilised by even very simple forms of human reasoned or reflective action, such as searching for food, finding shelter, avoiding injury and so on. For knowledge meant to guide such action, we need easily replicable and simple epistemic tools, and we use these not only to facilitate communication with other knowers, but because it is a simple and easy way to facilitate replication. These requirements are what underpin the epistemic practice of **consistently applied comparison**.

In what follows, I will describe some of the basic epistemological tools with which we construct and structure epistemic fields for the purposes of mapping the results of consistently applied comparison.

## ii) Spotlight Affirmation and Negation: An 'On/Off' contrast

As John Dewey says<sup>19</sup>:

Should logical theory take its cue for interpretation of affirmative and negative propositions from what happens in the conduct of inquiry, it would be evident that (1) such propositions are *functional* in resolution of a problematic situation, and are (2) conjugate or functionally correspondent in relation to each other.' (p 181).

Dewey argues that one function of the affirmation/negation contrast in logic is to contrast information to be included in a body of knowledge, with material to be eliminated, so increasingly determining an indeterminate situation. 'Selection involves rejection and the latter act is rudimentary negation.' (p 185). This selection process is driven by whether the material **agrees with, or conflicts with**, what

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<sup>19</sup>Logic - The Theory of Inquiry. N.Y.: Henry Holt and Company, 1938.

is already known, and so, while it is also appropriately understood in the context of comparison. (pp 183-4, op. cit.), its focus is centrally upon preservation of **consistency** within the body of knowledge, with inconsistent material being dropped from epistemic attention. These considerations concern the development of a body of knowledge, that is, of true claims, by excluding what is false, and so in fact concern (**one** aspect or dimension of) the semantics of the true/false contrast. But the true/false contrast has close semantic connexions with the affirmation/negation contrast, and I will argue that there is a form of negation that corresponds with this use of the true/false contrast.

The contrast between an object of epistemic attention and what is not now under consideration comprises a form of the affirmation/negation contrast. This form of negation is one in which the affirmation/negation contrast has **asymmetrical** epistemological significance. For this kind of contrast, affirmation posits or highlights an object of epistemic attention<sup>20</sup> off from an epistemically negative and indeterminate background. The negation of such an affirmation **does not posit something else** but **undoes** the original positing. A negation of this sort is **epistemically** 'negative', and its application presupposes the affirmation that it negates. This affirmation is therefore like a spotlight, focussing attention on one area against an epistemically 'darkened' background. I will therefore call it 'spotlight' negation.

R. and V. Routley<sup>21</sup> characterise two different traditional interpretations of the conjunction of  $p$  and  $\sim p$ : the first is that  **$p$  and  $\sim p$  together imply everything** (which I will discuss below in connexion with 'toggle' negation in Section iii), and the second is that  **$p$  and  $\sim p$  together imply nothing**. The latter emphasises the **mutual incompatibility** of  $p$  and  $\sim p$ :  $p$  and  $\sim p$  cancel each other out<sup>22</sup>. On this view, obviously,  $\sim p$  must be treated as epistemically 'negative'; it is not 'there' in any sense, and cannot be represented on a Venn diagram, for example; it works, rather, as the removal or undoing of  $p$ .

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<sup>20</sup>I will be using the term 'object' throughout this work in a very general sense to mean a discrete object of epistemic attention, so that it can include an epistemic field, or a subfield comprising a category or class of things, or it can be an individual or a property

<sup>21</sup>R. Routley (now Sylvan) and V. Routley (now Plumwood) (1985), Negation and Contradiction, *Revista Colombiana de Matematicas*, Vol. XIX, pp 201-231.

<sup>22</sup>The 'cancellation' view. See p 205-6 of R. and V. Routley, 1985.

Where a spotlight affirmation or positing is made, what is affirmed is **exhaustive** of the epistemic field or domain relevant to the epistemological activity in which it has a role. On this view, we can picture  $p$ 's 'border' as one-sided (there is an 'inside' only), and there is no 'other' against which  $p$  is contrasted. While  $p$  stands alone epistemically, there is no epistemic space for  $\sim p$ .

It might be thought that, on such an interpretation of  $\sim p$ , the **ordering** of  $p$  and  $\sim p$  would matter to its implications, so that, for example, if we began with  $\sim p$ , a negation of it would result in  $p$ . But we cannot 'begin' at  $\sim p$ , because the 'off' position of the spotlight destroys **both**  $p$  **and** the  $p/\sim p$  contrast which gives  $\sim p$  sense. This is why I have described a 'spotlight'  $\sim p$  as 'epistemically negative'; it has no meaning without  $p$ . It follows from this that spotlight negation is not recursively involutory<sup>23</sup>.

From the point of view of the propositional mapping of epistemic fields, no spotlight negation can take a predicate (which is one way of expressing the claim that a spotlight negation is epistemically negative). Conversely, we can represent the 'subject' position of a proposition as a spotlighting device, so that it follows from something's being the subject of a proposition that it is a spotlight affirmation, no matter whether it has a negation operator attached or not. This claim will be further explained and defended at the end of the next Section.

The following epistemic tools are properly applied **within** a spotlight affirmation, although, as I will later argue, various interesting epistemic phenomena arise from breaches of this rule.

### iii) Partitioning the Field: Toggle Negation

Dewey points out that in some epistemic contexts, negation is both implicit in affirmation, and must be understood positively - the grounding of an affirmation such as 'This is red' requires that the exhaustive disjunction of alternative possibilities be ruled out (op. cit., p 188-9; this will be discussed further in Ch 4,

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<sup>23</sup>Negation is recursively involutory where  $\sim\sim p$  implies  $p$ ,  $\sim\sim\sim p$  implies  $\sim p$ , and so on.

Part v.). So, for example, 'This is red' implies 'This is not black or yellow or ...etc'. Where this is required in some epistemological practice, a form of negation is being used in which some epistemic field is partitioned into epistemically positive, but **mutually exclusive** categories, and the negation operator moves the focus of epistemic attention between these categories. The affirmation/negation contrast, then, is here a relation between structural partitions of an epistemic field which organise significant differences among potential predicates of objects in that field. The purpose of organising significant differences makes this form of affirmation/negation contrast fundamentally comparative in nature and I have therefore called it **comparative negation**.

This sort of comparison divides an epistemic field (say, a kind of object) into parts, exhibiting salient predicable contrast such as, for food, differences in colour, smell, taste, and after-effects (satisfaction, illness). This presupposes some background similarity, something held in common which provides a basis for the examination of differences. As William James<sup>24</sup> remarks: '*The same things...which arouse the perception of difference usually arouse that of resemblance also. And the analysis of them, so as to define wherein the difference and wherein the resemblance respectively consists, is called comparison.*' (p 345, op. cit.). He explains that we only notice differences between things of the same kind (or, as I have put it, which have something salient in common), and gives the example that it wouldn't occur to him to compare the force of gravity and the colour of the ink that he is using unless he was looking for an example of this kind (p 344). This salient sameness (we can also understand it as expressive of the structural **unity** of an epistemic field or domain) is also evident in the presupposed spotlight affirmation of the background epistemic field, against which internal divisions of that field (salient differences) can be made exhaustive.

A salient sameness, then, provides the basis for comparison which in its simplest form has the following character: two relevantly similar things are examined to see whether they differ over the having or lacking of other salient properties. Coming upon a piece of fruit, I recall that I have eaten something with a similar shape and

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<sup>24</sup>William James, *The Principles of Psychology* (1890), in Great Books of the Western World, Vol 53. Robert.M. Hutchins, (ed.), Chicago: William Benton (1952).

colour, but this piece of fruit lacks the same smell. This kind of comparison, like Kant's genus/species strategy for maximising both unity and diversity, involves partitioning what is shared and paying attention to what is absent. However, the process can be inverted - the lack itself can be treated as a positive property (that piece I recall lacked these marks on the skin), by comparison with a novel presence. These differences are noted to a purpose (in this case, gathering safe and nourishing food<sup>25</sup>), but the basic form that we impose, under the demands of consistent application of the information we are acquiring, in systematically comparing objects, is that of **possession** compared to **lack** of some salient property, an application of comparative negation.

It is easy to see how quite complex functional taxonomies can be built up using this simple sameness/difference strategy of comparison, within a framework of decision about which samenesses and which differences are relevant to the epistemological task at hand. In the case of taxonomising food sources, relevant samenesses and differences involve properties that bear causally on edibility, nourishment and pleasure, this itself constituting a diachronic taxonomic task of identifying recurrent conjunctions between some properties and others, e.g. smell or colour and taste, and/or certain salient effects such as ensuing illness<sup>26</sup>. Some differences will of course not be relevant at all (such as whether the stem of the fruit happens to point this way or that way), and may not even be noticed. They may, however, be the sort of differences a biologist would notice. If not, they may yet be the sort of differences an artist would notice.

Presupposing the capacity to break down objects into parts or salient properties, and presupposing also a posited background field, the having/lacking contrast can nevertheless be thought of as a basic tool of organised comparison, which can accommodate perspective shifts and reversals, something which, as we will later see, can also be accommodated by ordered series. For example, this pear with a clear skin can be the standard for comparison with that pear with a marked skin, so that the latter is conceived as lacking something that the former has (a clear skin), or

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<sup>25</sup>Note the beginnings of an intrusion of value considerations into the taxonomic activity. This and what follows should be reminiscent of Urmson's paper, 'On Grading'. This paper will be discussed in more detail in Part II.

<sup>26</sup>No doubt we are 'wired' to vividly recall colours, smells and tastes that are followed by illness.

the former can be conceived as lacking something that the latter has (a marked skin), or the perspective can be switched to the other pear, which with corresponding appropriate inversions, has equivalent effects.

Comparative negation is a **logical toggle switch**. A toggle switch has two positions, and the effect of switching it depends upon what option is in force at the time of the switching. Switching, no matter what position the switch is in, causes the other option to be chosen, no matter which that is. Comparative negation is like this. If we negate A, we get  $\sim A$ , and if we negate  $\sim A$ , we get A. I have earlier explained that spotlight negation is not also a toggle in this sense (it is not recursively involutory). In proposition-based constructions of knowledge, we draw heavily on a strategy of treating truth/falsity as a toggle. If this is required by some epistemic practice, inappropriate uses of spotlight negations in propositions will cause their truth values to misbehave.

Unlike spotlight negation, toggle or comparative negation is **not** employed in order merely to focus upon or posit some epistemic object. It is employed in order to mark possession **compared to** lack of some salient property, and in an epistemic context in which the having/lacking contrast is itself salient, so that both the having and the lacking have epistemic value, not independently but in relation to each other. This is why I have called it **comparative** negation. Since both sides of a comparative negation are epistemically significant, in contrast with a spotlight negation, the negation side of the contrast must be adequately defined or understood. The 'lacking' side of the contrast also counts as an epistemically positive sub-field of the background epistemic field, and this background field is properly conceived as the **sum** of its sub-fields (for example 'has P' and 'has  $\sim P$ '); 'has P' and 'has  $\sim P$ ' are on this view **complements**. It should therefore be clear that the epistemic field that a comparative negation mutually exclusively and exhaustively divides must be specified or apparent in order for the comparative negation to have its proper meaning and function. That field is itself epistemically salient on any occasion of comparative negation.

Where, in a logical system, emphasis is upon the **complementarity** of p and  $\sim p$ ; this results in the construal of the conjunction of p and  $\sim p$  as 'implying



everything'<sup>27</sup>. One way of interpreting what is meant by this is to hold that the conjunction 'p & ~p' **undoes** the partition between the toggling sub-fields, and therefore is equivalent to the metaepistemic spotlight negation of the comparative negation relation for that epistemic field (or, in other words, to a spotlight negation of the subfields, which leaves us with an undifferentiated background field). On a Venn diagram, the 'complementarity' of p and ~p is expressed through having 'p' and '~p' label complementary spaces; this relies conceptually upon treating ~p as epistemically 'positive'. Further, in a comparative or toggle p/~p contrast, p is epistemically dependent upon its complementary, ~p, as well as upon the background field or domain that p and ~p mutually exclusively and exhaustively divide. The key element which distinguishes **toggle** or **comparative** negation from **spotlight** negation is the presence of a **specified background field or domain that includes ~p** (i.e., it is whether ~p functions as an epistemic positive or as an epistemic negative). This distinction is easily overlooked where spotlight affirmations are confusedly conceptualised as marking something off from 'everything else' or against the background of a vague 'universe'. This confusion is implicated in negation conflation which, I will later argue (Chapter 4, Part ii), result in the flawed semantics of classical negation. A spotlight affirmation is its own background epistemic field, and is 'everything' for the purposes of the epistemic task at hand.

Each of the forms of negation that I have described **emphasise and reflect the two imperatives to maximise both unity and diversity in our taxonomic activities**; these can be thought of as structural dimensions of the resulting epistemic constructions. Spotlight affirmation/negation emphasises unity, sameness, exhaustiveness and completeness, backgrounding while presupposing the fundamental salient epistemological difference between the epistemically positive and the epistemically negative. Toggle negation emphasises diversity, difference, mutual exclusivity and consistency, backgrounding while presupposing the fundamental salient epistemological unity of the background field of objects through which it switches epistemic attention. These two forms of negation work together hierarchically in propositional maps of epistemic fields, alternating between

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<sup>27</sup> The 'explosion' view (see R. and V. Routley, op. cit.). This is also briefly discussed on p 57 of Val Plumwood's Feminism and the Mastery of Nature (1993), London: Routledge.

some posited spotlight field in the subject position of a proposition, and toggling predication possibilities for objects in that field (the predication relation has/lacks should also be a toggle; this will be explained further in Section iv). One toggle option can be spotlighted, however, to take a subject position for further predicated discriminations.

One way of articulating the distinction between spotlight and toggle negation is through the exhaustiveness of the fields over which they operate. Negated spotlight affirmations leave us nowhere else to go, but toggle negations, operating over subfields of positive larger fields, leave a positive remainder. But the recursivity of this function remains to be explained. How does it, in negating one subfield, 'pull' the complementary epistemic field back into epistemic focus (imply its affirmation)? In order to understand this, we must recognise that subject-predicate relations are hierarchical in structure, as are the epistemic fields they map for us. The spotlight affirmation is the most general field, which can be conceptualised as always switched 'on' in any proposition. We can picture a dichotomous division of a field as a semicircular shield held over the spotlight, which toggle negation can flip back and forth. This expresses the recursive involutariness of toggle negation, the most peculiar feature of which is that its application to one side of the dichotomy affirms the other side and vice versa. This is analogous to the darkening of one part of the spotlight forcing the light to shine through on the other side and vice versa. It is because the spotlight is always on that a toggle works in the way it does, and this is why, first, spotlight and toggle negations must work together hierarchically, and second, why the subject position of a proposition must always be spotlighted (in fact, we can take the subject position of the proposition itself to be the spotlighting device). The use of toggle negation for the predicate level will be discussed in Section iv), below.

Where these levels or orders of analysis are collapsed, again, spotlight negation can become conflated with toggle negation. Possible political causes and consequences of negation confluations will be discussed in Part III of this work.

#### iv) Dichotomy and Trichotomy

Lloyd<sup>28</sup> remarks that the two assumptions of exhaustiveness and mutual exclusivity tend to follow upon any classification of phenomena 'as a whole' into two groups (p 94). John Ferguson<sup>29</sup> says (p11) 'Dichotomy is ... natural, because it is the simplest method of reaching plurality out of unity, and it is characteristic of science to seek the simplest adequate explanation.' If we take a field of phenomena upon which we seek to impose order, the first and simplest step is to divide it into epistemically (possibly because evaluatively) significant parts. **But why two mutually exclusive and exhaustive parts?**

This epistemological propensity arises out of the two possible positions of the mutually exclusive and exhaustive affirmation/negation toggle switch. We must divide a field into parts using some criterion, which will be some property/ies able to be selected out and formed into mutually exclusive and exhaustive predicates (e.g., 'is animate/'is not animate') If not, then some objects will remain unclassified (the object, state of affairs or 'world' will be incomplete, something the context of our classification may require that we avoid), or some objects will belong in two sub-fields, compromising the structural partition that we are trying to create (and something to be avoided if the epistemological context requires avoidance of contradiction). The more important **meeting** the selected criterion is to some epistemic practice, the more important **failing to meet it** will be, so both the 'meeting' and the 'failing to meet' conditions are as epistemically significant as each other, in terms of the epistemological practices in which the classification is embedded (e.g., 'edible/inedible' in knowledge meant to guide food gathering).

We can use toggling predicates, then, relying on the contrast (perhaps a constructed contrast) between having and lacking some salient property, if each and every object in the field either has or lacks the property, to construct a mutually exclusive and exhaustive division in the epistemic field. The structure of such a global, 'macro' dichotomy, then, reflects and amplifies the micro toggle negation over

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<sup>28</sup>Op. Cit.

<sup>29</sup>Op. Cit.

predicates for each subject underpinning it. The logical structures at the two levels of analysis are self-similar; like 'scaling' fractals, these structures are 'invariant under change(s) of scale'<sup>30</sup>.

A dichotomous division is the simplest possible taxonomic move, but it is also the most epistemically attractive. This is because we can explain the 'tendency' to which Lloyd refers, if we take seriously Kant's claim that we are endowed with a maxim of reason to pursue the maximisation of both unity and diversity. The division of a field into two parts, using a salient **mutually exclusive and exhaustive criterion** of division so that what is predicated of part of the field is denied of the other part, and vice versa, amounts in principle to a strategy for achieving the highest attainable balance between unity and diversity. This is because, within the constraints imposed by obedience to both of the opposite maxims, **exhaustiveness ('everything is either P or ~P') maximises unity, and exclusiveness ('nothing is both P and ~P') reciprocally maximises diversity**. The conjunction 'Things which are P' and 'Things which are ~P' define and comprise the whole. The relation between them, 'having P' compared to 'lacking P', is the same relation read from different perspectives, just as the relation *bigger than* and *smaller than* are the same relation read from different perspectives<sup>31</sup>. Where everything is either P or ~P, then **everything shares this relation with some other thing**. Yet the difference or epistemic distance between the perspectives 'having' and 'lacking' is maximised by the constraint that nothing accommodates both, and that no further movement is available to the toggle switch that does not return the object to sameness. Objects which have P are as saliently epistemically different as they can be, relative to this particular taxonomic arrangement, from objects which lack P<sup>32</sup>. So **everything stands in a relation**

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<sup>30</sup>Benoit B. Mandelbrot (1977), *The Fractal Geometry of Nature*, N.Y.: W.H. Freeman and Co., p 18. The notion of 'fractals' in general concerns 'irregular fragments' (see p 4), which is precisely what an epistemic field and its structural divisions are not. However, 'fractals' are widely (mis)understood to mean 'scaling' fractals, that is, fractals which exhibit that form of order in which their characteristics are invariant by scale (their structural characteristics are reiterated at finer or grosser scales of analysis). It is this form of order, not 'fractals' in general, that I am using as an analogy for the reiterative structures of epistemic fields. A brief account of scaling fractals (a subclass of fractals) is given on p 18 of Mandelbrot, and for more detailed discussion, see Chapter IV of his book.

<sup>31</sup>This issue will be discussed in more detail in Chapter 3, Part iii.

<sup>32</sup>This is the simplest, and usually, initial form of global contrast within an epistemic field, and so this 'maximal difference' expresses the prior selection of the criterial toggle as marking an important

**with some other thing which is such that it is as different as it can be from that other thing.** The whole now comprises two classes of thing which are united by standing in the one relation (the having/lacking P relation) to each other, but are divided by being as different from each other as that relation permits. Further, the unity has to be defined in terms of what divides, and the diversity must be defined in terms of what unites. **This amounts to the reciprocal, and reconciled, maximisation of unity and diversity.**

The construction of a global dichotomous division of a field requires that certain modal and quantificational requirements be met by the field. Every possible object on the field, for example, must have either P or  $\sim$ P. Second, it has to be impossible for anything to have both P and  $\sim$ P<sup>33</sup>. This may require some creative tinkering with 'reality'; this tinkering, however, will generally be constrained in the direction of empirical conservatism by the requirement, in public-epistemological contexts, that the taxonomic strategy be able to be readily taken up by a number of users<sup>34</sup>.

In any case, once the dichotomous division has been constructed, it has various implications. If a thing has P, then it does not (according to the field) have  $\sim$ P and vice versa, and any object in the field has either P or  $\sim$ P. In addition, quantificationally, all objects must have either P or  $\sim$ P, all objects with P must lack  $\sim$ P, all objects with  $\sim$ P must lack P, and so on. One of the things a dichotomy is able to do for us, then, is summarise information about the field. If we have a symmetrical object, we need only see half of it in order to know what the other half looks like, once we understand what it is to invert. Half of the object tells us all we need to know about the rest of it. Toggle negation is in part a device used to decode summarised information about symmetrical fields, or about objects in symmetrical fields. Since dichotomy can be reiterated over and over (within sub-fields, and within their sub-fields), it provides us with a powerful epistemic compacting device, which can be unpacked by the toggle negation switch. It is this feature of

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extremity of difference. Variation in other properties is held constant for the purposes of constructing these initial contrasts, but can subsequently be represented in structural elaborations of the field.

<sup>33</sup>These requirements guarantee completeness and consistency in epistemic fields, something that may in fact not be necessary or appropriate in the epistemological practice in which the field has its point. This will be discussed further in Section iv.

<sup>34</sup>This is the problem with 'grue' and 'bleen', isn't it? 'Grue/bleen' users would, apart from anything else, have the tedious task of constantly having to explain themselves.

epistemic fields structured by toggle negation that underpins the 'symmetricality' connotation of opposition.

We have formally developed a propositional structure with hierarchically arranged toggles to record and communicate the epistemological arrangements that we have constructed. We can picture an epistemic field as a circle, with the centre (which stands for the entire field) representing the subject position of a proposition, and its radii representing predicative relations to points on its circumference representing predicates (in this way we can represent a three-dimensional hierarchical structure two-dimensionally). These radii by themselves reflect and encode structural information about the whole circle. For example, these radii, in dichotomised fields, can be pictured as 'expanded' (around the circumference) into semicircles representing two mutually exclusive and exhaustive predicative possibilities for the subject. Using a toggle negation, we can summarise the field using only one semicircle. These semicircles can then themselves be divided hierarchically again and again, into segments containing segments, which each contain the structural information encoded in the larger segment containing it, compacted information which can be unfolded or unpacked using the affirmation/negation toggle. This recursivity is analagous to a fractal 'cascade' (where a reiterated function generates structures that are self-similar through different scales of description<sup>35</sup>); the resulting within-field structures are 'scaling fractals' to the global structure of the field. Further, any point on the circumference can itself be focussed upon as a spotlight subject, and itself become the centre of a radiating field of predicates. Preliminary to my later arguments concerning opposition, we can picture the oppositional relation in general to be represented by the circle's diameter.

The modal and quantificational implications of dichotomous division become especially significant when we look at divisions within ordered series such as *better than*, and will be discussed again in Part II. Explicit recognition of them is also useful to an explanation of some of the ideological phenomena associated with 'binarisms' or 'dualisms', and they will therefore be relevant again to discussion in Part III.

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<sup>35</sup>Mandelbrot, op. cit., see especially p 34.

Predicates and predicate terms should cooperate together as toggles if we wish the propositions containing them to have contradictory negations, and therefore have truth values which function as toggles (this can be pictured as a metaepistemic field dichotomised by 'true/false' and organising our propositions). This may not be required or useful in some epistemological practice, but even where we permit or require incompleteness or contradiction in our propositional truth-fields, there will be a meta-metafield underpinning our epistemological framework which is mutually exclusively and exhaustively divided into, say, 'true', 'both true and false', 'neither true nor false', and 'false', and which can be dichotomised (or trichotomised, see below) to represent saliently different categories of truth relations between propositions. We might, for example, seek to represent the supposition (one that might be required by, or arise from, the epistemic practice in which the field has a point) that a proposition which is true and not false is significantly different from all other kinds, and so create a dichotomy on the field between these truth-value relations and the rest. Or we could create a trichotomous construction exhibiting an extremity of difference (oppositional) relation between true and false as extremes, with the other variations in between. It should be clear, then, that the 'requirement' that predicates toggle is not some kind of unbreakable rule, but rather a recognition of the epistemic structural phenomenon that our epistemic arrangements, wherever distinctions are made, will ultimately always reflect some form of dichotomous division.

Now in most taxonomic practices, the properties arranged into toggling predicates are in fact going to be complex. They will be compound and disjunctive properties, or 'family resemblance' constructions in which socio-epistemological factors influence where lines are drawn. Where complexes of properties which are themselves separately epistemically salient are used, the 'has/lacks' contrast may be expanded to include a middle 'neither' area which is nevertheless epistemically positive (belongs in the field) and so counts as a position on the toggle. We might, for example, use the compound property  $(A \& B)$ , and instead of contrasting this with its contradictory negation,  $\sim(A \text{ and } B)$ , select out  $[(A \text{ and } \sim B) \vee (\sim A \text{ and } B)]$  as one structural division of the field, with  $(\sim A \text{ and } \sim B)$  as another. We will usually do this when A and B are separately epistemically salient (e.g. where they do not blend or create a gestalt property). Where this form of division is used, our negation toggle has **three** positions (the actual epistemological switching is done

using conjunction), and there are three partitioned areas of our epistemic field. This is a **trichotomy**. Propositions encoding these divisions (predicating one or the other of these property complexes to an object) are mutually exclusive and exhaustive **contraries**, with respect to the background field that they divide, just as black/grey/white are mutually exclusive and exhaustive 'contraries'<sup>36</sup> with respect to the field of monochromatic colour.

Note that one of the negations of (A & B) above is more different from it than the other (an object lacking both A and B is, all else equal, more different from an object having both A and B than one which has either A or B). This is because the toggle negation contrasting A and  $\sim A$ , for example, marks these two properties as maximally different from each other, all else equal. In principle, at least, if we choose or construct our properties carefully, for any conjunction of properties, we can obtain a maximally different variation of these properties just by switching the negation toggle for every property. For every conjunctive property defining a partition of an epistemic field, then, there is a 'contrary' conjunctive property that is more different from it than any other such 'contrary' conjunctive property. The use of **any** number of such 'contraries' to define epistemic sub-fields can therefore always fall naturally into **three** partitioned areas - the two extremes, and the disjunction of those in between. This will turn out to be significant to our understanding of polar opposition, and of opposition between extreme contraries such as 'black/white' and 'hot/cold', and will be discussed in Chapter 4, Section iv, as 'semantic opposition'.

Note, however, that every trichotomy also contains a dichotomy of the form  $A/\sim A$ , to which it can be reduced by picking out one partitioned area and contrasting it with the rest of the background field. This is connected with my remark earlier that for trichotomy, the epistemological switching is done using conjunction. The presence of a dichotomy in every trichotomy (and in every exclusively and exhaustively partitioned field no matter how many segments there are), is a precondition of constructing toggling predicates, but also turns out to be significant when the selection of an area to take the affirmation position of the toggle is

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<sup>36</sup>Inverted commas will mark ungrammatical uses of the term 'contraries' where my meaning is evident and correct usage would require clumsy qualifications.



politically inflected, (an example might be the male/female/neither trichotomy, which, under political influences, has evolved to become collapsed into male/not-male or male/other) and will be discussed in Part III.

The properties arranged into toggling predicates for the purposes of constructing di- and trichotomies, then, will rarely be simple properties, but will be complexes discovered, constructed or crudely projected onto the objects to be organised. The having/lacking contrast will normally become epistemically significant because of saliences thrown up by the context of the classification. This may well be a value- or power-based salience. A vivid example is the male/female distinction ('having maleness/lacking maleness') which so preoccupied the Ancient Greeks and which continues to obsess today. I have argued that the relation of comparative negation is invertible in the sense that affirmation and negation are mutually significant, and of equal epistemic weight as perspectives for reading the contrast. Value and power influences on the choice of criterion, however, will tend to result in significant value asymmetries in contrasts between the objects which 'have' and the objects which 'lack'. And it will not always be the objects which 'have' which are considered better than the objects which 'lack'<sup>37</sup>. These asymmetries and other phenomena should not, however, be confused with the relative epistemic significances or weights of the two positions of a toggling negation. They are both epistemologically 'positive'.

In this section I have argued that taxonomies are built up using comparative negation, an epistemic 'toggle' in which affirmation and negation both equally imply presence in a field of enquiry, have equal epistemic weight, and have the significance that they have in relation to each other.

I have also argued that a special form of this strategy, dichotomous division, involves the use of some criterion as a global toggle, so that a field of enquiry is partitioned into two mutually exclusive and exhaustive parts. I have argued that this strategy is simple in structure (because it reflects the structure of the toggle used to construct it), and that in addition it is epistemologically compelling because it provides the simplest solution to the problem of meeting the conflicting

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<sup>37</sup>This will be examined in detail in Part III., 'Binarisms'.

requirements to seek both unity and diversity in our taxonomic activities. Although they might seem epistemically 'primitive', childish, or crude when applied to objects in the world, the significance of global dichotomies becomes apparent when we recognise their insistent presence in our conceptualisations of the truth/falsity relations between propositions. The notion of a proposition having a contradictory relies upon the possibility of 'true' and 'false' operating as a toggle. Our capacity to construct a negation for a proposition relies on the availability of at least mutually exclusive relations between truth and falsity, contrariness. These and other dichotomous and oppositional phenomena involving propositions will be explored in more detail in Chapter 4.

If, as I will later argue, opposition can be generally defined as extremity of salient difference within a salient similarity or sameness, then it would follow from the view that dichotomy provides the simplest strategy for the reconciliation of unity and diversity, reciprocally maximising sameness and difference, that dichotomy is the simplest form of opposition (which I will call '**dichotomous**' opposition). Examples of dichotomous opposition are propositional contradictories, hemispheres, enantiomorphs (mirror images), the present/absent contrast, conventional uses of true/false, and the logical negation toggle. **Trichotomous polar opposition** is the next simplest form, consisting in an arrangement of three partitioned areas in which those which are maximally different constitute polar opposites. Examples of trichotomous polar opposites include extreme contraries like black/white, the opposite sides of a street, river or frame, left/right, and any taxonomic partitioning in which two extreme categories are separated by middle, neutral, 'neither' area.

#### v) Ordered Series and Relations

More is required for our simplest taxonomic activities than comparative and spotlight negation. A further requirement is the capacity for placing objects in an ordered series<sup>38</sup>. Kant (op. cit., p 544) explains that the continuity between the branches of the taxonomic hierarchy is what grounds the potential exhaustiveness

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<sup>38</sup>In line with the overall aims of this work, I will be confining my discussion of ordered series to the simplest sorts of ordering arrangements (finite, partially or totally ordered, transitive, etc.)

of the whole arrangement, a requirement of the maxim to seek unity. Further, as Kant points out, there are no limits in principle to the degree of diversity demanded by the maxim to search for differences, and the degree of horizontal and vertical differentiation in the hierarchical taxonomy is potentially infinite. He says, again in the Appendix to the *Transcendental Dialectic*:

...all differences of species border upon one another, admitting of no transition from one to another *per saltum*, but only through all the smaller degrees of difference that mediate between them. In short, there are no species or subspecies which (in the view of reason) are the nearest possible to each other; still other intermediate species are always possible, the difference of which from each of the former is always smaller than the difference between these. (op. cit., p 543).

He claims that the species are in nature discrete, otherwise we would be faced with an impossible infinity of differences. But the law or maxim to seek diversity does not itself give us a criterion for deciding what degree of difference or similarity is sufficient (presumably this is dictated by the surrounding practices of the epistemic activity). We can go a long way with Kant here without agreeing with him that the 'species' are always in nature usefully discrete. It is true that many salient properties are vividly perceptually discrete, such as (Aristotle's) whether an animal has eyes or not, and perceptual limitations and 'wired-in' perceptual processes (such as those for perceiving vocalisations) partition degrees of difference for us for a lot of properties. But the need, for the purposes of planning reasoned action, to recognise, categorise and utilise cause-effect relationships, by itself demonstrates the need for a capacity to recognise and categorise ordered sequences, in this case of events in space and time. In addition, many of the properties we must use to distinguish objects and events are not by nature discrete. Colour, size, loudness, taste, and so on are fundamentally significant discriminatory properties. Taxonomic decisions must be made if divisions are to be imposed even in simple manifestations. When they are presented in complex arrangements, as for example taste, colour and size usually are, decisions about where to draw the line for the purposes of sorting similarity and difference, and in addition for creating an ordered sequence as a framework for organising relevant dimensional similarities and differences, will require some agreed-upon criterion.

We will also need to find a way to **preserve ordering relations** when we create **subcategories** within ordered series.

A hierarchical ordering arrangement is a very interesting thing. Moving up the hierarchy, each category nests, with others at the same level, inside a category above it. This is one way of understanding and differentiating direction (i.e., as cumulative containment) which is an important feature of many oppositions, and which is implicated conceptually in both toggle and spotlight negations. However, for present purposes it is important only to note that a hierarchical arrangement is an ordered series (with 'diversity' naming one pole and 'unity' naming the other). If we use a spatial metaphor for an ordered series, we will tend to conceptualise it as a line marked by (usually evenly spaced) points, which represents the ordering relation between those points. There are two ways of reading the line, corresponding with the line's two directions, and with the two points connected by the line, viewed as **perspectives**. These opposite directions of progression amount to different available strategies for reading or describing the relative locations of objects in the series (eg, larger and smaller, warmer and colder). An ordered series therefore contains opposition within itself. For unity and diversity, the two directions manifest in the different options for reading the series serve to articulate the opposite requirements of Kant's maxims, and to provide a framework for their reconciliation. They are commensurate readings of the series because they are inversions of each other.

If Kant is correct (and our actual taxonomic practices would seem to indicate that he is), sorting and ordering, using the epistemic categories of **sameness** and **difference** on one hand, and of asymmetrical (ordering) relations on the other hand, would seem to be among the most fundamental of our epistemic activities. Later I will argue that these two epistemological tools are different aspects of the same tool, since comparative negation, the basic comparing and contrasting tool, is itself an ordered series with two ranks.

We must choose between the directional options for reading an ordered series if, given a position at any point on the line, we must answer the question 'What (should/will) come next?' This question is one that arises in any epistemic context where the order of a comparative relation is significant; most vividly in predictive

contexts usually associated with reasoned action, but also in purely taxonomic contexts. We can graphically represent the two directions available for reading an ordered series by imagining the line as having two sides which can be parted and 'blown out' to form a circle. We can then represent ourselves, when we reach the limit of the series, as continuing past the limit to proceed around in the direction of the opposite limit, without retracing our steps. We might seek to do this when attempting to conceptualise changes of direction in an identical comparative relationship (e.g., from *hotter than* to *colder than*) which nevertheless proceed in a consistent temporal direction, as do temperature changes through the seasons. We might wish to do this in order to mark the fact that we are not retracing our **temporal** steps. The circle is one way to represent events that are perceived by us to proceed by degrees from one extreme to another and then back again, and this is probably why such sequences often are understood and described as cyclical.

Recall that I earlier argued that comparative or toggle negation is employed in order to mark possession **compared to** lack of some salient property, and in an epistemological context in which the having/lacking contrast is itself salient, so that both the having and the lacking have epistemic value, not independently but in relation to each other. Because of this, **comparative negations are themselves best viewed as ordered series of ranks** comprising two ranks (P and  $\sim$ P) which is able to be read from either perspective, or in either direction. If this is true, we can use the concept of comparative or toggle negation to articulate ordered series, and vice versa - the two epistemic tools reflect each other. Further, the representation of ordered series graphically as circles might be the way to represent recursive involution, which characterises toggle negation, as a continuous and closed logical 'movement' permitting no escape from the epistemic field comprising P and  $\sim$ P.

Finally, I have suggested that comparative negations, which involve a perspectively invertible relation (between ranks), can be viewed as an instance of an ordered series, at least of those which are ordered by transitive, asymmetrical relations like *larger than*, *later than*, *colder than* and *better than*. But if this is so, there must be something that corresponds to transitivity in a series with only two members, and I suggest that **recursive involution** is this corresponding characteristic, that is, that  $\sim\sim$ P implies P, that  $\sim\sim\sim$ P implies  $\sim$ P, and so on. The fact

that if  $\sim P$  is ' $\sim$ ' with respect to  $P$ , then  $\sim\sim P$  is also ' $\sim$ ' with respect to  $\sim P$ , ( $\sim P$  stands to  $P$  as  $\sim\sim P$  stands to  $\sim P$ ) is what grounds the recursive involutory nature of comparative negation, and this seems to me to be a form of transitivity.

Aristotle's 'correlative' opposites<sup>39</sup>, 'fall under the category of relation' (*Categories*, Ch 10, 11b, 20-25), and 'all relatives have correlatives' (Ch 7, 6b, 25-30). They must be 'explained' by reference to each other. Examples include 'double' and 'half', 'the greater' and 'the less', 'knowledge' and 'the knowable' and 'master and slave'. I have claimed that opposition, itself a relation, is the relation of extremity of salient difference within a salient similarity. A 'salient similarity' in this definition also expresses the notion of an epistemic field or domain definable by some unifying element. Relations can also provide this unifying element, and so structure epistemic fields. In fact, if the view of comparative negation as involving an ordered series of two ranks is correct, relations structure all partitioned epistemic fields.

It is possible to confuse the structural definition of an epistemic field with its membership. Such a confusion might account for Aristotle's peculiar belief that 'knowledge' is the correlative opposite of 'the knowable' (Ch 7, 6b, 30-35) as well as of the thing known, and that the knowable, or the thing known is 'known by' knowledge (see also Ch 10, 11b, 25-35).

Where Aristotle talks of 'the knowable' as the correlative opposite of knowledge, he treats knowledge analogously with perception:

So it is with every other relative term; but the case we use to express the correlation differs in some instances. Thus, by knowledge we mean knowledge *of* the knowable; by the knowable, that which is to be apprehended *by* knowledge; by perception, perception *of* the perceptible; by the perceptible, that which is apprehended *by* perception. (Ch 7, 6b, approx. 30-36)

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<sup>39</sup>See, e.g., *Categories*, Ch 10 on correlatives, and Ch 7 on relations.

The first thing that Aristotle may be doing here is construing knowledge analogously with his construal of perception, that is, through the potential relation 'knows' (analogous with 'perceives') between a possible knowing apparatus, which he terms 'knowledge' (analogous to a possible perceiving apparatus, 'perception'), and a limited field of possible objects, 'the knowable' (analogous to the limited field of possible objects, 'the perceptible', Ch 7, 6b, 35). If so, 'knowledge' is for Aristotle closer to what we would contemporarily construe as 'the knower' than what we would construe as 'knowledge', and what we would construe as 'knowledge' Aristotle construes as the relation 'knows', 'is known by' (Ch 10, 11b, 25-35), or 'is to be apprehended by' (Ch 7, 6b, 30-35) the latter apparently an attempt to match the modality of 'the knowable'.

Let's proceed as if this interpretation is correct. Aristotle's 'knowledge' and 'the knowable' are not *relata* as we would construe them, but rather **positions** in an epistemic field constructed to accommodate any cases of **knowing** - (knowledge apparatuses-knowing-known) that come along. This accounts for the modality he ascribes to them. The relation 'knows' is being construed by him as a **genus** from which can be derived the **necessary conditions** for membership of that genus, that the object be either a knowing apparatus, or be knowable (be a possible object of knowledge). A sufficient condition for membership would be that the object actually knows, or is known (stands in the required relation to a corresponding *relatum*). Necessary conditions for membership can be used to define, by indicating the conceptual parameters of, the epistemic field structured by the spotlight genus. A confusion of this with actual occupants of the field would account for Aristotle's otherwise puzzling modal construal of them as 'knowledge' and 'the knowable'.

In any case, we can think of some relation  $Rxy$  as structuring an epistemic field, where  $R$  represents the relation and  $x$  and  $y$  are the *relata* positions, all objects in that field having in common that they stand in the relation  $R$ , but, for asymmetrical relations, dichotomously divided by belonging to one or the other of these *relata* positions.

Correlatives predicated of objects both predicate the existence of some relation and specify which of the positions the object occupies. **Location at one of these positions precludes location at the other**, so a relation of comparative

negation also obtains between  $x$  and  $y$  within the field structured by  $R$ , and relative to that field, the relata are 'contradictories'. This field marks or highlights salient similarities and differences among the objects which have position on it (salient, that is, according to the epistemological practices in which the field has a point). Since the relata positions are mutually exclusive and exhaustive of that field, they represent maximum salient differences between the objects in that field, that is, between objects which are relevantly similar in belonging to the field. Asymmetrical dyadic relations, then, accommodate dichotomous opposition, which characterises the relation between their relata, and this is why correlatives are opposites.

Let's recall the visual metaphor of epistemic fields as circular. For a field  $R$  defined by a relation  $R$ , the field can be pictured as bisected into two semicircles standing for the relata positions  $x$  and  $y$ . When these are constructed into predicates, e.g., 'is a master'/'is a slave', the toggle negation of one switches epistemic perspective to the other, and vice versa. But these are not the only important structural elements of the field. We can also spotlight-negate the relation  $R$  (e.g., 'does not stand in a master-slave relation', or 'is neither a master nor a slave'). This switches off the field, leaving us with an epistemic negative of which nothing can be predicated. But let's picture the field as a disc like a coin, which can be flipped<sup>40</sup>. Here we have two fields back to back which are analogous to the two semicircles of a two-dimensional circular representation, and which can stand in a toggling relation to each other. The 'other side' of the field  $R$  is  $\sim R$ , the toggle negation of  $R$ .  $R$  and  $\sim R$  are complements to the field represented by the disc, and accommodate the organisation of relations which are inversions of each other, in the sense that one undoes or neutralises the other, and the undoing of one pulls the other into being (or, more accurately, into epistemic focus). An example of such a pair is 'knowledge/ignorance', but these include all directional opposites, as well as the inverse readings of ordered series (e.g., 'better than/worse than'). This latter is a clue that  $R$  and  $\sim R$  are not two relations but one, read from different perspectives, even though often this relation does not have a name of its own, or is named by the name of both directions (e.g., 'up and down'), or expressed in terms of degrees or overt relational terms (as in 'degree of knowledge' for 'knowledge/ignorance', or

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<sup>40</sup>This metaphor is inspired by the 'record cabinet' example in R. and V. Routley, op. cit., which will also figure centrally in discussion in Chapter 4, Part iv.



'comparative value' for 'better/worse'). But some examples include 'the vertical' for 'up/down', and 'speed' for fast/slow.

We can think of such relations as themselves metaepistemic fields dichotomously divided by **directions** as mutually exclusive and exhaustive predicable **epistemic** properties of these relations. In such cases, we have a dichotomous relational opposition. If it is possible to epistemically 'stop' on a relational epistemic field and move in neither direction (or, in other words, if we can represent the relations between objects without progressing in either direction of the relation), we have a trichotomous division of the relation (as is the case with better/equal/worse). In such a case, the relational opposites are maximally different by direction (opposite directions are maximally different from each other), and can be conceived of either as trichotomous polar opposites, or as extreme polar scalar opposites (opposites which are limits or poles of scales, which will be explained further below in Section vi).

In oppositions deriving from relations, then, it is important to distinguish the comparative negation of one or the other of the relata from the negation of the relation itself. If it is the relation that is the object of enquiry, then its negation will be either spotlight or comparative, depending upon whether it is an epistemic object as a subject or as a predicate, respectively. A comparative negation of a relation will move epistemic attention to (affirm) what Aristotle calls the (relation's) **contrary**<sup>41</sup> (e.g., 'ignorance' as the contrary of 'knowledge'). This explains the following remarks at Ch 7, 6b, 15-20:

It is possible for relatives to have contraries. Thus virtue has a contrary, vice, these both being relatives; knowledge, too, has a contrary, ignorance. But this is not the mark of all relatives; 'double' and 'triple' have no contrary, nor indeed has any such term.

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<sup>41</sup>Aristotle's 'contraries', where there is no intermediate term, are actually contradictories within the epistemic field they structure. There is some confusion about contraries in Aristotle, as well as in classical propositional logic, connected to the phenomenon of the 'infinite of the negative'. This has of course generated further confusion about the nature of opposition. I hope to clarify these issues in Chapter 4.

'Ignorance' stands to knowledge as the comparative negation of the **relation** of knowledge, and metaepistemically is a directional opposite of the knowledge relation in the sense that knowledge and ignorance relations undo each other. 'Double' and 'half' are, I would argue, similarly, at a metaepistemic level of analysis, directional opposites of the relation between doubles and halves. The confusion here arises from treating 'double' and 'half' as naming the relata of this relation, and therefore as correlates. (E.g., 'Thus, double is a relative term, for that which is double is explained as the double of *something*.'<sup>42</sup>). Halves and doubles are correlates, but 'double' and 'half' are like 'up and down' in being contraries in Aristotle's sense.

It is worth noting that Aristotle mentions comparatives like 'equal/unequal', 'like/unlike' as being a species of relatives that admit of degrees, different from those like 'double' and 'triple' which do not (*Categories*, Ch 7, 6b, 25-30). I think that this distinction gives rise to or reflects a confusion about the ontological status of degrees. Degrees are positions on scales and constitute the smallest epistemic unit of information (or the smallest sub-field) available for the scale in its particular epistemic context. They have nothing necessarily to do with quantities or amounts, although the ordering arrangement between them on a scale is readily mapped onto a numerical scale for ease of communication. The construction of the micro epistemic fields that we call 'degrees' is highly flexible, and its 'size' can be varied in different epistemic contexts. We may decide that some property should not be constructed to admit of degrees in one context, because finer discriminations are not necessary, but treat it as admitting of degrees in another. For example, in some contexts 'knowledge/ignorance' may be viewed as an all-or-nothing decision, but in others as a matter of degree. In many cases, complex arrangements of criteria and 'family resemblance' strategies of classification will make the decision whether something is to be classified one way or the other more like a decision about where to draw the line through some range of degrees of belonging than like a decision between contradictory possibilities. In epistemic contexts where a decision nevertheless will have to be made, and in public epistemic contexts where the highest possible agreement on presuppositions is desirable, we will tend to explicitly construct and advocate or adopt the use of a criterion that works as a

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<sup>42</sup>*Categories*, op. cit., Ch 10, 11b, 25-30.

conventional toggle. Many things, therefore, that we would not ordinarily think of as being 'a matter of degree' will on closer examination be seen to admit of degree. As to 'doubles' and 'halves' they are simply indivisible micro fields on a two-place scale, but we can imagine a scale of progressive doubling where this doubling does, after all, admit of degree.

Finally, the 'master/slave' opposition is an especially interesting one because it can be read as being a pair of relation (not perspective or relatum) contraries in certain ideological contexts, that is, it can be supposed that (in some general sense) if you are not a 'master', then you must be a 'slave', or the less you are a 'master', the more you are a 'slave'. Because of the powerful negative value loading of 'slave', this nasty taxonomic error may be used to legitimate dominating behaviour at the level of individuals or of larger groups such as gender or race groups, or states; this kind of political inflexion of epistemological frameworks will be examined in detail in Part III.

This is not at all intended to be a complete account of the use of ordered series and relations as epistemic fields, or of the kinds of relations that can be constructed using negation within these fields. There is a great deal more that can be said on these complex issues, but for simplicity's sake, I will not pursue them here. My purpose is only to demonstrate that there are relevant similarities between apparently different kinds of opposition by revealing the epistemological structures underpinning them.

#### vi) Some Combinations

Scales are a kind of epistemic field. A degree on a scale is the smallest constructed partitioning of this field, and these can vary in grain according to the demands of the epistemological practices in which they play a part. Just as dichotomous division can be recursively employed to create multiple, hierarchically organised divisions in a field, so can dichotomous (and trichotomous) division be employed recursively on scales. The complex epistemic unit comprising an ordering relation joining two adjacent positions on a scale is, again, like a scaling fractal to the relation between the extreme points on the scale, or between the areas of the scale exhaustively divided into two.

It is no doubt because of the logical affinity between comparative negation, ordered series and relations that we are able to employ comparative negation to construct **subcategories** on scales that **preserve** between them the **ordering relation** defining the ordered series. This is because we can use toggle negation over some criterion to partition the scale, as long as the criterion is such that the having/lacking contrast that constitutes the criterion consistently preserves the ordering relation. Logically this amounts to the alignment of the having/lacking contrast with the toggle negation of the relation. For example, we can combine the toggling criterion 'burns my skin'/'does not burn my skin' to preserve relative temperature (all else held constant) using the toggle negation of relative temperature 'hotter than'/'not hotter than'. We can do this because anything which burns my skin is hotter than something which does not (within sensible temperature limits). This will create a pair of categories on my temperature scale (hot/not hot) that preserves the relative temperature relations between objects falling into each category (all objects falling into 'hot' will be *hotter than* all of those which fall into 'not hot'). In fact, we will more often reciprocally determine categories analagous to a 'hot/neither/cold' contrast by combining toggling criteria for, e.g., 'hotter than'/'not hotter than' with toggling criteria for the **inverse** of hotter than: 'colder than'/'not colder than' (by combining the latter with, e.g., 'chills my skin'/'does not chill my skin'). This kind of categorisation upon scales turns out to be central to understanding the good/bad contrast, and will be discussed again in Chapter 4, Section iv, and examined in detail in Part II with respect to the comparative evaluative relation *better than*.

Partitioned epistemic fields are all characterised by relational structures if it is correct to construe comparative negation in this way. This structural similarity underpins the semantic similarity of all of the otherwise apparently different kinds of opposition. These different kinds merely emphasise or highlight different structural elements of epistemic fields, or reflect different degrees of partitioning of epistemic fields. On the 'circle' metaphor for these fields, the relation of opposition is always representable as a diameter joining points on the circumference, and opposite categories on a field always at least include the points joined by the diameter.

Dichotomous partitions of scales generate what I will call **dichotomous scalar opposites**. Their subcategories are each other's 'contradictories' with respect to the scale (that is, excluding anything off the scale). Examples of these include pass/fail, permissible/impermissible, some interpretations of true/false, morning and afternoon, and so on.

Trichotomous partitions of scales have of course three subcategories, which are each other's 'contraries' with respect to the scale; those categories which include the two limits of the scale are normally opposites (those kinds of opposites usually known as 'contraries', under Aristotle's influence<sup>43</sup>). Examples of these include 'black/white', 'hot/cold', 'up/down', and, importantly, 'good/bad' (in the generic use of 'good/bad' as denoting a positive/negative value contrast). Because they include the poles of the scale, I will call such opposites **polar scalar opposites**.

In the *Categories*, Chapter 10, Aristotle says that there are four senses in which things are said to be opposed: as correlatives (e.g., double/half), as contraries (e.g., bad/good), as privative to positive (e.g., blindness/sight), and as affirmative to negative (e.g., 'he sits'/'he does not sit') (11b, 15-25). I have discussed correlatives in the previous section, and will discuss contraries, privatives and affirmatives and negatives in Chapter 4 in connexion with the Square of Opposition. It should already be apparent, however, that I view contraries (with a middle, neutral category) as polar opposites (either straightforwardly on trichotomous fields, or in combinations of trichotomous division with scalar or relational fields). 'Affirmative and negative' I view as metaepistemic contradictories, which count as a straightforward dichotomous opposition.

In what follows, I will review the attempted categorisation of various kinds of opposites by C.K. Ogden, whose book 'Opposition'<sup>44</sup> constitutes a fairly thorough attempt at taxonomising oppositions from a linguistic perspective<sup>45</sup>.

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<sup>43</sup>This is misleading because, e.g., 'blue/white' are 'contraries' in the sense that they both cannot be truly predicated of the same object (at the same time, in the same respect, etc), but can be both falsely predicated of an object. The differences between these and extreme or 'polar' contraries, and between these and 'logical' contraries (those arising from negation infinitations) will be examined in Chapter 4.

<sup>44</sup>*Opposition*. Bloomington: Indiana University Press, 1967.

<sup>45</sup>His approach also happens to be quite similar in style to an 'ordinary language' species of linguistic analysis. Ogden appears to have utilised the entries under 'Opposite' in the Oxford English Dictionary,

Ogden says (p 41<sup>46</sup>):

Opposition is not to be defined as the maximum degree of difference, but as a very special kind of repetition, namely of two similar things that are mutually destructive in virtue of their very similarity.

Ogden has here noted a central element of Aristotle's definition of opposition that is often ignored, namely that similarity or sameness, in some important respect, is an important element of opposition. It is true that the antagonistic relation between opposites is connected to their similarity as well as to their differences, since it is underpinned by mutual exclusivity with respect to the background field which expresses their unity.

Ogden lists the following opposites (p53):

- |                            |                              |
|----------------------------|------------------------------|
| 1. Black and White.        | 14. Possible and Impossible. |
| 2. Hot and Cold.           | 15. Kind and Unkind.         |
| 3. Open and Shut.          | 16. Good and Bad.            |
| 4. Ruler and Ruled         | 17. Work and Play.           |
| 5. Hard and Soft.          | 18. Ill and Well.            |
| 6. Right and Left.         | 19. Easy and Difficult.      |
| 7. Man and Brute.          | 20. Before and After.        |
| 8. Up and Down.            | 21. Male and Female.         |
| 9. Acid and Alkali         | 22. Love and Hate.           |
| 10. Pleasure and Pain      | 23. British and Alien.       |
| 11. Visible and Invisible. | 24. Red and Green.           |
| 12. Town and Country.      | 25. Normal and Abnormal.     |
| 13. Learned and Ignorant.  |                              |

'The writings of logicians', he says 'are intriguing rather than helpful.' (p 54). But by examining large numbers of oppositional linguistic formations such as those above, we can make a 'preliminary hypothesis' that there is a fundamental distinction in opposition: that between the Scale and the Cut (p58). Opposites on a scale are its two extremes; examples include top/bottom, black/white, and hard/soft. For opposition by Cut, the cut, which can vary in breadth, is a neutral point, and it

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a fact which probably supports the usage legitimacy and degree of comprehensiveness of his account. An understanding of what follows will be aided by referring to the 'Projectional Diagram of Opposition' which I have reprinted from p16 of Ogden as Appendix 1. of this work.

<sup>46</sup>Op. cit.

marks the 'absence' of the two opposites which fall on either side of it. Examples of opposition by Cut include enantiomorphs (mirror images), left and right, opposite sides of a street or river, opposite sides of a rectangle, red/green, up/down, kind/unkind, the A/Not-A contrast, inside/outside, north/south hemisphere, present/absent and visible/invisible (see Appendix A). These two forms can structure oppositions of properties, spatial relations, directions, and definitions.

I think that Ogden's use here of the notion of the Scale and the Cut needs some reorganisation; however (as can be seen from the Projectional Diagram in Appendix A), Ogden recognises that Scales and Cuts can be combined in various ways.

Ogden's analyses of the above list of linguistic oppositional construction<sup>47</sup> includes the following: 'Man and brute', according to Ogden involves 'Man' as an 'extreme' on a scale extending in to a cut, with the cut here marking the point of negation by definition (with 'brute' amounting to not-Man and hence off the scale). In seeing 'Man' as scalar, Ogden here may be seeking to articulate the value content of 'Man', which permits greater and lesser 'Manhood'. But this and other, similar examples seem to me to reflect inappropriate uses of negation, in particular that form of toggle/spotlight negation conflation recognisable in the semantics of classical negation: the negations involved in their oppositionality 'infinite' beyond the epistemic field, for example the scale or the definition. This phenomenon will be discussed in more detail in Chapter 4. For my present purposes, it is worth noting that this kind of error seems to be attracted to contrasts which are value-laden or politically significant, something that is relevant to the arguments in Part III of this work. In fact, value-laden and politically significant oppositional contrasts abound in Ogden's list.

In general, Ogden's distinction between Scale and Cut seems quite arbitrary when we see that some of his 'Cut' examples utilise scales as epistemic fields (e.g., left/right). This problem is connected to his restriction of the notion of Scalar opposites to those oppositional relations where the poles constitute the opposites (like top/bottom, best/worst). But even here, since the Cut can vary in width, we

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<sup>47</sup>Op. cit., pp 99-102.

can view this kind of opposition (opposites which name poles) as opposition by a very wide Cut. It can be viewed as simply a limiting case of (as 'extreme') polar scalar opposition.

I have argued that all partitioned epistemic fields are relational in virtue of the toggle negation relation that is used to partition them. Returning to our metaphor of epistemic fields as circles, in the simplest form of dichotomy the diameter at right angles to the vertical partition can also represent a scale with two positions (each extending from the centre to the circumference). The same can be said of fields which structure relations of any kind. For epistemic fields that organise ordered series of objects in comparative relations, however, this scale simply has many more scalar positions. We can view these scalar positions as microfields within the larger epistemic field that the scale comprises. We can picture this two-dimensionally as concentric circles around the centre of the field, which can represent distinctions as fine-grained as we please. These concentric circles have the advantage of expressing the cumulative 'containment' that is a feature of ordered series, and which underpins both directionality and transitivity. The cumulative containment in opposite directions from the centre can represent the two directions for reading the scale implicit in any asymmetrical ordering relation (however, these structures can be represented in many different ways). My main point, however, is that ultimately there is no substantive difference between Scales and Cuts - the differences are differences of structural emphasis only. If this is so, it is not surprising that, as Ogden himself notes, the sides of a Cut and the ends of a Scale have been 'universally included under one term before any conscious attempt at systematization arose' (p 96).

Ogden's analysis of each of these different examples of opposition varies in what is organised by the various structural elements (i.e., whether it is a definition that is negated, or whether it is some property, or whether some direction is reversed, or whatever), as well as in the structural features that are emphasised by the particular opposition. With the (I have argued, compromised) exceptions described above, however, in each of these different examples of opposition we can discern the features that, I have argued, define opposition and express its function: epistemic fields or domains (temperature, colour direction, definition), in which **extremes** generated by **negation contrasts** provide **coordinates** for the placement of



objects that differ saliently with respect to each other. The exception is the case of kind/unkind which Ogden analyses as symmetrical (but not extreme) areas on a scale extending in to a cut marking 'indifference'. Ogden thinks, then, that there can be more extreme areas on the kindness scale than kind/unkind, which are also opposites. I would argue that in such cases (other examples include warm/cool, some usages of good/bad, adequate/inadequate and so on) we are dealing with a microfield of a scale, something that is contextually implied by use of one or the other of the terms as opposites. This microfield, then, is limited by these categories as extremes; there are no further extremes relevant to this epistemic context since they are, in this context, off the scale.

If I am correct, the common denominator of all kinds of opposition remains extremity of salient difference, encoded in structural partitions of an epistemic field, within the salient similarity expressed by that field as a whole.