

THE UNIVERSITY OF TASMANIA
CENTRE FOR EDUCATION

RESISTANCE AND ENGAGEMENT:
A DEFENCE OF SCIENCE FICTION
FOR THE ADOLESCENT STUDENT

A dissertation submitted to the
Centre for Education being part
requirement for the Degree of
Master of Education.

ALISON SOLODUCH

November 1986

TABLE OF CONTENTS

	Page
ABSTRACT	i
ACKNOWLEDGEMENTS	vi
INTRODUCTION	1
<u>PART 1 - THE LITERATURE</u>	
CHAPTER 1 - SCIENCE FICTION AND SCIENCE FICTION FOR ADOLESCENTS: AN EXPLORATION OF THE GENRES	
1.1 Definition and Description	13
1.2 Characterization and the Concept of 'World'	20
1.3 Generic History and Classification	25
1.4 Reading Science Fiction: Some Initial Reflections	32
1.5 Science Fiction: Children's Literature?	38
1.6 Criteria for Evaluation	45
<u>PART 2 - THE TERMS OF A DEFENCE</u>	
CHAPTER 2 - OPPORTUNITIES FOR ENGAGING IN MORAL AND PHILOSOPHICAL SPECULATION AND DEBATE	
2.1 A Question of Ethics	53
2.1.1 The moral value of story	53
2.1.2 Optimism and pessimism	61
2.2 Engaging in Philosophical Speculation and Debate	68
2.2.1 The opportunities offered	69
2.2.2 Science fiction: a provocation and a game	78
CHAPTER 3 - THE PSYCHOLOGICAL POTENCY OF SCIENCE FICTION	
3.1 Modern Anxiety, the Scientific World View, the Search Beyond the Known	86
3.2 Curiosity and Tolerance	95
3.3 Adolescence: A Theme and a Metaphor	97
3.4 The Sublimative Functions of Science Fiction	101
3.5 The Science Fiction Community	112

	Page
CHAPTER 4 - SCIENCE FICTION AND EDUCATIONAL DEVELOPMENT	
4.1 Science Fiction and General Educational Development	118
4.1.1 An exploration of Kieran Egan's theory of educational development	119
4.1.2 The importance of narrative and some particular claims for science fiction	126
4.2 An Argument for the Study of a Genre	131
4.3 Science Fiction and the Development of Specific Learning Capabilities	139
4.3.1 Conceptual change, the growth of knowledge, the personal dimension	140
4.3.2 The use of the imagination	144
4.3.3 Learning analytical inference	145
4.3.4 Developing and practising an ironic view	149
4.3.5 Developing the capability of aesthetic reading	152
CHAPTER 5 - AN EVALUATION	
5.1 The Literature	160
5.1.1 The development of criteria for evaluating science fiction	161
5.1.2 Good texts: Good reading	165
5.1.3 Reading science fiction for adolescents	171
5.2 Some Questions of Ideology	177
5.2.1 Some general comments	177
5.2.2 Science fiction and gender issues	181
<u>PART 3 - SCIENCE FICTION IN THE SECONDARY SCHOOL</u>	
CHAPTER 6 - RESISTANCE OR ENGAGEMENT? A GLIMPSE AT AN ALTERNATIVE FUTURE FOR SECONDARY SCHOOLS	
6.1 Education as Process	195
6.1.1 Literature and learning	200
6.1.2 Science fiction and school	202

	Page
CHAPTER 6 (continued)	
6.2 Damaging Dichotomies and a View of an Alternative	206
6.2.1 The reader and the text	207
6.2.2 The learner and her knowledge	209
6.2.3 The student and the teacher	211
6.3 Some Operating Principles for a Science Fiction Program in a Secondary School	213
6.3.1 A closer look at possible roles for teachers	213
6.3.2 Reading and writing science fiction: some possibilities	215
6.3.3 An appropriate assessment profile	224
6.3.4 Production, publication and celebration.	225
IN CONCLUSION	233
BIBLIOGRAPHY	241

ABSTRACT

The object of this dissertation is to argue the value of the literary genre, science fiction, in the education of adolescents. Through the notions of resistance and engagement, science fiction is used to focus a critique of traditional secondary school curricula which, it is argued, no longer effectively transmit useful or desirable features of our culture.

Science fiction narratives are relatively simple on a literary level and contain satisfying plots. Those identified in this dissertation as 'didactive', however, also entertain serious and provocative theoretical considerations. By taking sensitive elements from the 'thickness' of daily life, and distancing them in fictional form through the techniques of 'estrangement', these stories can stimulate readers to sustained reflection on the meaning and purpose of life and to the construction of possible futures for themselves and the society they live in. Science fiction's particular use of 'cognitive estrangement' can operate to initiate speculation and debate in many disciplines, giving rise to forms of language in response which belong in the domains of politics and social organization. The study of this 'literature of ideas' can serve to heighten individual students' awareness of the powers of persuasive argument.

The dissertation is in three parts: Part 1 explores science fiction with a view to identifying the principal opportunities offered and the demands made on adolescent readers. Through closer textual analysis, Part 2 defends certain science fiction texts on moral, intellectual, emotional and general developmental grounds. Criteria are offered for the evaluation of works within the genre in terms of their contribution to the development of valued educational capabilities. The study of science fiction is placed in the context of adolescents' wider personal and cultural definitions and experiences.

Part 3 outlines some operating principles for a program of science fiction in the secondary school in the light of the considerations discussed above. The invitations to speculation in seriously extrapolative and propositional science fiction narratives are shown to promote an openness and reflexivity in teaching approaches and a wide range of possible student responses, with important implications for general educational theory and practice.

ACKNOWLEDGEMENTS

I wish to thank the people who have helped me in the writing of this dissertation. To Hugo McCann, my Supervisor, I owe my special thanks. His willing undertaking of the difficult task of corresponding by letter between Tasmania and Perth, the dedication with which he carried out this task and the stimulus of his comments are characteristic of all my dealings with him throughout my years of study.

I extend my gratitude to Bill Green at Murdoch University for the time he took to guide me in my work and for some helpful and stimulating discussions. I should also like to thank Grant Stone in Murdoch University Library for his willingness to share his seemingly inexhaustible fund of knowledge of science fiction, and for his steady supply of books. I am grateful to the staff of Murdoch University Library. Their unfailing courtesy and helpfulness have assisted me greatly.

Maxine Walker has my thanks for supplying some very timely inspiration.

INTRODUCTION

Two questions might properly spring to a reader's mind on first noting the title of this dissertation. The first is, to *whom* is the defence to be directed? The second must be, against *what* will science fiction, in fact, be defended here? To answer both questions it will be helpful to take a second look at the title.

Sharing the headlines with the literature itself is the adolescent student. Adolescents, of course, are people, and it is worth pointing out here that as objects of study, they will exhibit characteristics and behaviours as varied as those of the adults they will become. While it is fruitful to focus on the stages they pass through in their development, this must always be seen in the light of the people they already are. Nowhere is this individual difference more pronounced than in reading. A large number of adolescents are keen and independent readers; many are voracious in their appetite for the printed word. Some are omnivorous in their tastes, while others are highly specialized and selective, devoted to particular fields such as science fiction and fantasy. Other individuals, on the other hand, however competent, are only occasional readers or do not read at all, preferring other media or other activities. Some adolescents experience difficulties in finding books to suit their needs and interests, even if they were keen readers as children, while an unfortunate number, for various reasons, are unable even to acquire basic, functional reading capabilities. In secondary schools, teachers of literature have the task of providing appropriate and valuable reading and learning experiences for all these young people; of mediating, in other words, between the text and the student.

This may take the form of specialized assistance where difficulties are experienced or of referral to a specialist teacher;

it may be to produce a book - any book - for the easily discouraged person with little reading experience. The teacher's role is sometimes to match a student's reading interests with a book providing a lateral reading experience, to consolidate on progress made, or it might be to point another student to the next step in complexity, truthfulness or provocation, to transcend rather than merely satisfy the student's perceived present needs. Whether she is working in an English classroom, a library or elsewhere, the teacher of literature takes as axiomatic the position that reading is a vital path to a fuller and richer experience of life, and she has developed criteria for evaluating the literature read by young people in terms both of its literary quality and its appropriateness to the particular young readers in her care. She will share with thoughtful teachers from other disciplines in secondary schools a concern that students enjoy what they do, and find it purposeful and intelligible. She will, no doubt, believe that significant learning cannot take place unless the students are personally involved in, or willingly and actively engaged with what they are doing, and she will worry constantly about the growing signs of disaffection and alienation in students in school, as they grow older. Whether this is expressed by resistance or open rejection of the educational institution or its curriculum, or as is more frequently the case, in apathy and passive endurance, this aspect of secondary schooling will be as worrying to the literature teacher as to any other concerned with the purposes and practices of education.

To return for a moment to the title, it is probable that the opposing words 'resistance' and 'engagement' will spring into prominence. It will be argued in this dissertation that the 'popular' literary genre, science fiction, might play an important, indeed a unique, role in engaging many adolescents in a vital debate about

the world, its possible futures and their place in it.¹ Put simply, it will be argued that science fiction might play a unique role in their *education*, since what better purpose could education have? Through an analysis of what characterizes this literature and what it can offer a developing mind, this paper will attempt to stimulate teachers to explore the field more widely and deeply. Many students already gain a great deal from science fiction, independently of and perhaps in spite of school, and they read and frequently discuss it with energy and enthusiasm. The first step, therefore, in considering how a teacher might capitalize on this, must be to explore the nature of just what it is that young readers might be gaining from science fiction, and what opportunities exist within the genre for meaningful engagement. This must be an exploration, in other words, of its powers *and* pleasures.

It may, even in this brief Introduction, be becoming clear that English teachers are not the only teachers who stand to gain inspiration from a study of the claims science fiction might make on their field. No popular literature resists being compartmentalized or reduced to the business of a single subject area quite as strenuously as science fiction, and no literature has ever dwelt as precariously on the bridges and intellectual frameworks spanning the disciplines. Far from being exclusively the domain of the English teacher, science fiction, through its subject matter and the methodology of its creation, bursts the walls of the cellular classroom. To discuss what it is about necessitates entry into some of the most vital (and potentially, at least, both senses of the word 'vital' might be realized if this happens) - areas of the secondary school curriculum, from the physical sciences to history or computer studies. Issues central to the position and the future of these fields of knowledge in the real world are

raised, often effectively and always provocatively, in science fiction texts. This dissertation will address itself to the question of the validity and efficacy of using science fiction narratives for many different purposes and in many different areas of the secondary school curriculum.

Against what, then, does science fiction need defending? It needs to be borne in mind that these next chapters will essay a defence of science fiction addressed to teachers *for* adolescents *in* schools. The approach is not that of a literary critic, but of a pedagogue, with all the disciplinary interaction that that term, at least in part, implies. A defence of science fiction for adolescent students must take into account the genre's effectiveness, its usefulness and its power to educate as well as its literary quality. It will be argued that while these criteria overlap, they are not necessarily congruent.

The front line of a two-line defence strategy must first be prepared against the image which science fiction continues to have in some circles as a literature of inferior quality. It must be stated briefly here, and explored further in Chapter 1, that the term 'popular literature', while frequently applied to the whole of science fiction as a body of books, is not very accurate. A glance into some of Stanislaw Lem's or Philip K. Dick's more esoteric works will reveal why. However, science fiction continues to be regarded (by libraries, for example) and marketed as a single genre.

'Popular', of course, too, has particularly for those committed to maintaining a mainstream notion of cultural heritage in secondary school curricula, a pejorative ring. As a form of popular literature then, science fiction is often luridly illustrated and packaged and crassly marketed and displayed, with publishers exploiting the ghetto image science fiction developed earlier this century. As

well as this, many adults who are not well acquainted with science fiction through reading books are familiar with its cousins in other media, remaining, perhaps, unaware that there are parsecs separating the movie *Flash Gordon* from Theodore Sturgeon's novel *More than Human*, for example, or even the movie of *Dune* from Frank Herbert's original book of the same name.

It is certainly not the purpose of this paper to debate the importance of helping young people understand and share in their cultural past, but rather to suggest that coming to terms with their present and their future is a vital and pressing concern to them and to their educators. It will be shown that among the vast number of works gathered under the modern umbrella of 'science fiction' are writers and texts which can satisfy very stringent criteria of evaluation and which offer a stimulating glimpse into some very fruitful educational alternatives. It will, indeed, be shown in the genre exploration in Chapter 1 that there is no such single artefact as 'science fiction'; the range of subject matter, narrative techniques and sub-genres is perhaps as wide as in modern mainstream writing with a similarly vast range in literary quality. Masterworks such as Zamyatin's *We* or, more recently, Lem's *Solaris* or Philip Dick's *The Man in the High Castle* share the generic umbrella with mundane, derivative or even to modern liberal consciences, offensive pieces, guilty of any charges of triviality, perniciousness or scientific or literary incompetence that might be levelled against them. And also, most significantly for our present purposes, there are lurking under that canopy, countless provocative, speculative, witty, original, frighteningly plausible or simply enjoyable works of fiction. It is thus essential that teachers not take a term such as 'science fiction' unquestioningly or pre-judge individual texts on the basis of their belonging or not belonging to a perhaps despised genre,

but rather that they develop critical faculties of discrimination and evaluation based on as wide an acquaintance with individual texts as possible. To defend science fiction from misleading condemnation and blithe misconception is to endeavour to showcase the richness, variety and challenge within the literature which is available and waiting to be discovered, its particular appropriateness for adolescents, and indeed for our time.

The second line of defence must take into account the particular vulnerability of science fiction if introduced carelessly to educational institutions, which must be for this literature, alien territory. Created in part within a literary ghetto, science fiction's position outside the mainstream has afforded it a spontaneity and a directness of contact between writers and readers which is an essential part of its vitality and power. A fact that cannot be denied, on the other hand, is that many adolescents do not enjoy such a productive relationship with their schools. The prolonged exposure of the one to the other often results in a mutual immunity against significant contact, or a numbness or passive and often uncomprehending endurance on the part of the student. To introduce a healthy, exciting and eminently accessible cultural form into such territory presents a serious challenge to teachers to prevent its reduction to the level of the mainstream - that curriculum material of the 'inside', of which teachers and schools, but not the students, are the possessors. It is clear that the school, not the literature, must change.

Literature, however, has always had a rich heuristic potential. A literary work, a unique event born of the transaction between a reader and a text², has always offered the chance for a fruitful channel of communication to be opened up between student-readers and teacher in terms meaningful to them as individuals, and for

students to be engaged personally in directing their learning processes. Science fiction is regarded as an expression of popular culture with which even non-reading students are familiar to an extent through television, film and other media, and it currently enjoys a growing popularity among the young. In this way the rejection of science fiction as 'serious' literature by purveyors of mainstream cultural forms has its potentially positive side through its enthusiastic acceptance, in turn, by many adolescents who resist and reject these mainstream forms. An encounter with a science fiction text might offer one of the few remaining chances of fanning, feeding or even, in some cases, re-igniting the vital spark of curiosity about the world and their place in it, which is so much a part of the developing adolescent personality and yet which traditional school curricula and structures often seem to serve only to dampen or even completely extinguish.

To bring science fiction to school might, at best, result in its marriage with some of the best purposes of education, if its peculiar and ambivalent position as popular literature is carefully exploited. The final chapter of this dissertation will point to ways of tapping the energies generated when science fiction text meets adolescent reader. It seems clear that at least some of the difficulties experienced in a traditionally closed, one-way system of teaching may be overcome. It will be shown how science fiction permits, indeed encourages, more open and innovative teaching styles, and a complexity and depth of student-initiated discourse difficult to ignore. The possibilities range from involved and informed debate on matters of crucial current importance, to feasible models of aesthetic involvement in authorship, with its rich possibilities for the study of literature.

It may serve as a timely warning, however, right here in the Introduction, to recall that those adults who have developed that intense and passionate enthusiasm and devotion to science fiction that characterize the 'fan', have done so through a voyage of personal discovery, an adventure, perhaps one of the most exciting of their lives. If it were not possible for some of this pleasure to be experienced in institutions of learning, for the fun of science fiction to be preserved, this dissertation would not have been written and its author would certainly not be a teacher.

NOTES TO INTRODUCTION

1. The term 'popular genre' needs a brief explanation here, though a detailed discussion of its implications is outside the pedagogical focus of this dissertation. The term may be seen to apply to science fiction historically in both a quantitative and qualitative sense. First, the wide circulation and large sales of science fiction since the nineteen-thirties qualify the literature to be designated as 'popular'. Frederik Pohl's account of science fiction publishing history is a useful reference (in 'The Publishing of Science Fiction', *Science Fiction Today and Tomorrow*, ed. Reginald Bretnor (New York: Harper and Row, 1974), pp.17-44).

The qualitative implications of the term 'popular' fiction are rather more problematic. The stylized and modalized *form* of many science fiction narratives, from the earliest days on, indicates the genre's links with narrative forms of folk or 'popular' culture. This has been well documented by Northrop Frye in *The Secular Scripture: A Study of the Structure of Romance* (Cambridge, Mass.: Harvard University Press, 1976).

Chapter 1 of this dissertation addresses itself briefly to this. As well as this, the increasingly 'centralized' position of literary tradition of science fiction and other 'popular' forms this century, has been explained by Frye as a response to the exhaustion of the mainstream literary forms, principally the realistic novel. German scholarship of the sixties and seventies has developed the terms 'Trivialliteratur', 'Massenliteratur' and 'Unterhaltungsliteratur' (entertainment literature) to examine the place of science fiction and other popular forms in literary tradition. See, for example, Manfred Nagl, *Science Fiction: Ein Segment Populärer Kultur in Medien- und Produktverband*

- (Tübingen: Gunter Narr Verlag, 1981), pp.13-15.
2. Louise Rosenblatt, *The Reader, the Text, the Poem: the Transactional Theory of the Literary Work* (Illinois: Southern Illinois University Press, 1978), esp. pp.11-21.

PART 1 - THE LITERATURE

CHAPTER 1: SCIENCE FICTION AND SCIENCE FICTION FOR
ADOLESCENTS: AN EXPLORATION OF THE GENRES

It will probably be clear from the Introduction to this dissertation that the term 'science fiction' includes a much broader range of individual texts than will be either intelligible or useful in general to adolescents. While brief mention must, of course, be made to some seminal works of great complexity and literary strength, examples in the body of the dissertation have been chosen specifically with a view to their accessibility and appropriateness to young readers, while criteria for evaluating texts will be outlined at the end of this chapter. No individual works will be examined in detail in this chapter, but titles mentioned may serve to stimulate teachers to discover these texts for themselves. Justice has not, of course, been done to the now large body of scholarship and criticism of science fiction, but again, examples have been taken with the aim of showcasing the potential of this literature to educate as well as entertain, matters which will be taken up in subsequent chapters.

1.1 DEFINITION AND DESCRIPTION

There are as many definitions of science fiction as there are writers, critics and readers of it, yet it has remained ultimately indefinable as an entity for three main reasons. The first is its mixed and colourful generic ancestry, which makes the task of characterizing it as a literary genre a most complex and difficult one. The second reason involves the vast range of works currently gathered under the term. Such are the differences in scope, theme, style and literary quality displayed by individual writers both before and since Hugo Gernsback coined the term 'science fiction' in 1929, that it is often difficult to see what any two randomly chosen texts could possibly be said to have in common. The third difficulty in defining this literature in such a way as to contain

its many disparate elements is bound up in its very *raison d'être*. It will be seen through a closer exploration in this chapter that science fiction takes as its subject matter what might be recognized as the very essence of the times we live in: the essence of rapid change and the explosion of human knowledge. It is therefore only to be expected that since its true beginnings as a popular genre in the American magazines of the nineteen-twenties and thirties, the literature itself has mutated as rapidly as one of its own fictitious micro-organisms. On a temporal scale then, science fiction has evolved, moving from simple forms to more complex, just as in a metaphorically spatial sense it has shifted ground and expanded, colonizing other domains of literature and learning, and claiming them for its own.

Eric S. Rabkin (1976) has written that 'a work belongs in the genre of science fiction if its narrative world is at least somewhat different from our own, and if that difference is apparent against the background of an organised body of knowledge'.¹ The two main points in this description distinguish science fiction first from 'naturalistic' fiction and second, from other forms of 'non-naturalistic' fiction, such as myth, folk and fairy tale and fantasy. (The term 'naturalistic' is used here as Darko Suvin (1972) intended. His work will be explored more fully shortly.)

In naturalistic fiction the world of the narrative bears a straightforward and recognizable relationship to the real world as perceived and shared by author and reader. This world commonly bears the now famous name coined first by Stanislaw Lem, the 'zero world' of empirically verifiable properties.² It is against this shared basis of familiarity that the naturalistic fiction is played out. Works of non-naturalistic fiction, including science fiction, belong somewhere on a continuum of 'the fantastic'. On the other

hand, since this term is used so frequently by modern critics with varying nuances of meaning, it may be useful to switch to another of Suvin's terms. Suvin (1972) identifies 'estranged' fiction as occupying the contrary position to the empirically verifiable naturalistic fiction. Estranged fiction creates a 'different formal framework ... a different space/time location or central figures for the fable, unverifiable by common sense'.³ Estranged fiction then, contains elements of 'the fantastic' or 'the marvellous', entities, objects and events outside a writer's and reader's shared empirical reality.

Much work has been done to distinguish science fiction from other estranged fiction, although this task, too, is fraught with difficulty, due to the lack of homogeneity in the genre. Important reference works such as Peter Nicholls's *The Encyclopedia of Science Fiction* (1979), include many references to fantasy and fantastic fiction because, as Nicholls acknowledges in his Introduction, the readership of fantasy overlaps substantially with that of science fiction. The work, however, does not attempt to establish clearly on what grounds individual works are 'arguably sf'.⁴ It is well beyond the scope of this dissertation to enter the troubled debate about what, definitively, are the hallmarks of either genre, nor to wrangle about individual authors or books which appear in the shaded area which undoubtedly exists between the two. However, it is important at this point to distinguish as clearly as possible some of the essential characteristics of the theoretical genre, 'science fiction', from others, chiefly modern fantasy, with which science fiction is often confused.

Rabkin stresses in the above definition that the difference in the narrative world of a science fiction work should be apparent 'against the background of an organised body of knowledge'. This

has traditionally meant scientific knowledge or, more precisely, the physical and biological sciences. In other words, the difference between the real world and the created science fictional world is intelligible through reference to currently known science or technology. This may take the form of extrapolation from what is known, or of the creation of an analogous and fictitious body of pseudo-scientific knowledge using known methods and logical, rational deduction. To accept a science fiction world as plausible is to accept that this world should always be intelligible and comprehensible given correct and sufficient information. Indeed, American science fiction in particular traditionally embodied a positivist ideology, expressing a strong scientifico-technological bias, which has come to be known as 'hard' science fiction. Since the nineteen-sixties, however, the infiltration of the 'soft' sciences, psychology, sociology, anthropology, into the world of science fiction has both widened the basis on which the genre functions and thrown forever into ambiguity and uncertainty the positivistic confidence identifying the earlier generations of writers and their stories. Suvin (1973) has stressed that a science fiction world can be understood, that it is subject to a cognitive approach, being unique and changeable. He has, therefore, termed science fiction the literature of 'cognitive estrangement', going on to describe it neatly as:

... a literary genre whose necessary and sufficient conditions are the presence and interaction of estrangement and cognition, and whose main formal device is an imaginative framework alternative to the author's empirical environment.

Suvin's use of the word 'estrangement' immediately introduces notions of separation, distance, otherness, perhaps of dislocation and disjunction, which are central to an understanding of this literature. The meaning which a reader makes from an estranged text must be

a function of a removal from empirical reality, followed by a return to confront that reality. Whether the text be a myth, a fantasy or a science fiction story, it gains its significance through being measured against the real, physical world. The essential difference among these genres lies in their particular relationship to the real world. While the term *cognitive estrangement* identifies the particular conscious and critical relationship held by science fiction to the real world, this may become clearer if a comparison is made with other estranged genres, those which Suvin identifies as 'metaphysical' or 'supernatural'.⁶

Myth is opposed to a cognitive approach, according to Suvin, since it attempts to explain constant and universal truths. That is, its narrative elements are not subject to cognitive scrutiny on a literal level. It is ritualistic, religious and supernaturally determined, essentially static in its nature. Unlike science fiction, it is not concerned with fluctuation and change. Fairy tales, too, escape from the constraints of the known world, remaining indifferent to empirical laws. Because its audience accepts that the fairytale world itself is impossible, within it anything is possible since no attempt is made to subject its elements to a cognitive approach. Fantasy, likewise, posits a manifestly impossible world. W.R. Irwin's definition of fantasy in his influential study (1978), begins with an initial identification of this genre as 'a story based on and controlled by an overt violation of what is generally accepted as possibility; it is the narrative result of transforming the condition contrary to fact into "fact" itself'.⁷ Rather than being invited to share in a speculative examination of a possible (usually future) world, the reader of fantasy is, through the author's rhetoric, persuaded to accept for the duration of the narrative, what she *knows* to be impossible, at least on the literal level. No argument

or attempt is made to influence a reader's normal belief about reality. Science fiction stories deal, on the contrary, with the manifestly possible, whether this merely involves adherence to known natural, physical laws; whether it applies to the state of current astronomical knowledge, to take an example from the sciences, or whether its governing reference point is to sociology or anthropological theory.

A final look at the essential difference between science fiction and the other estranged genres now will serve to place it more securely where it belongs, as a closer relative of naturalistic fiction than its metaphysical cousins. Suvin (1973) is again enlightening on this point when he uses the basic parameter of *time* to test his taxonomy of estranged genres. Science fiction shares with naturalistic fiction its 'omnitemporal horizons'. Both, in other words, range through all empirical times although, of course, with different emphases. Naturalistic fiction concentrates on the present, though historical genres have become significant and it can even, to a small extent, anticipate the future, mainly through the minds of its characters. While science fiction concentrates mainly on 'cognitively plausible futures and their spatial equivalents', it has, of course, often been set in the present and the past. In contrast, the 'metaphysical' genres do not exist in historical time. Traditional myth is above and beyond time; fairy tales happen in a conventional non-historical past and fantasy is set in extra-historical time, though Ann Swinfen (1982) has pointed out that fantasy time is frequently identifiable with significant elements of Western civilization between the Bronze and Middle Ages.⁸

Science fiction characteristically uses what is called a realistic narrative strategy, presenting fiction as if it were empirical fact, but with a perspective implying a different set of norms. The important and highly influential writer, Robert Heinlein,

just to use one example, created large numbers of works using this strategy, setting a stage for many others to follow. Perhaps *The Puppet Masters* (1940) is the best example, because of its early date, to illustrate this point. A schematic narrative outline, however, will serve better to focus attention on the strategy behind the writing. A story might be set, for example, in a period two hundred years from now, with a narrator who is a character living at that time, rather than in the author's and reader's present. The resulting estrangement will arise as the narrator reports pseudo-mimetically on events occurring in a world operating under different norms from the reader's, yet *implying* that the reader shares the narrator's world. This is a simple schema, and there are certainly many more complicated relationships with the real world at work in this literature.

Science fiction, it will be seen then, may in some sense be described as historical. In Marxist critical terms, it must share this designation with naturalistic fiction, but unlike naturalistic or mimetic narratives, science fiction as an estranged genre is not confined to representing what is; rather, its special power is to offer the possibility of 'sensing other historical rhythms', to use the words of the Marxist critic, Fredric Jameson (1981).⁹ Without needing to outline Marxist theory in detail here, it is helpful to consider this notion of history in relation to science fiction. The historian, Robert H. Canary (1974), offers a discussion of science fiction as what he terms 'fictive history'. While many science fiction stories consciously speculate on the meaning of history and on historical processes (Wells's *The Time Machine*, Clarke's *Childhood's End* and *2001: A Space Odyssey*, or Asimov's *Pebble in the Sky* or *Foundation* saga, are only the most obvious and most famous examples), it could be said of the genre as a whole, according to Canary, that it implicitly claims to operate by the

same rules as historical reality. History itself, as Harry Harrison illustrates (1976), is concerned with the greatest of all science fiction themes, evolution and change.¹⁰ Canary compares modern historians' fascination with the uniqueness and otherness of the past with depictions which stress, directly or through indirect or ironic narrative strategies, the otherness of the future.¹¹ Particular instances of this phenomenon are so widespread as to make the choice of examples a difficult task. They range from narrowly extrapolated predictions of the near future, such as Pohl and Kornbluth's *The Space Merchants* (1953), to the creation of wholly-invented analogous worlds, exploring endless variations in human behaviour and change, such as Ursula Le Guin's 'Hainish' series. It will become clear, too, through later discussion, that a literature which can engage a young reader in reflecting on the historical contingency of the present and the alternatives open in possible human futures, is an intellectually challenging literature indeed. Reading certain science fiction texts may enable adolescents to develop critical capabilities unparalleled in other cultural forms available to them.

1.2 CHARACTERIZATION AND THE CONCEPT OF 'WORLD'

One of the criticisms frequently levelled at science fiction is the traditional paucity of characterization. Rather than attempt to answer this criticism at this point, it will be useful to examine the question of characterization as part of what constitutes the very identity of the genre. While Ursula Le Guin (1976) is correct when she points out that there are few rounded, memorable characters in science fiction, she may be misguided in her wish that there were more.¹² It is perhaps advisable to mention at this point, though, that there are increasing numbers of modern writers whose characters are very fully developed indeed, among them Le Guin herself. An author need not, after all, be determined by the genre she has

selected for her writing. She may be using that choice to 'say' something about the genre itself. Authors may, as Heather Dubrow (1982) points out, use a reader's expectations of a genre in order to overturn them, to subvert the genre, or to question some of the underlying attitudes that shape that literary form.¹³ As the sense of identity of science fiction as a literature has consolidated among the communities of authors, publishers and readers through the course of this century, so has the number of authors increased who have used the conventions of the genre as their starting point, in order to overturn them. As Dubrow points out, an author is only able to subvert or invert what already exists, and individual works may often be seen best in terms of a deviation from an identifiable generic norm.¹⁴ There is no pre-determined reason, then, why full, rounded characters cannot occur in a science fiction narrative, as the study of the very successful works of Ursula Le Guin, Alfred Bester, Philip K. Dick, Joan D. Vinge or Jan Mark will show.

There are, however, some good reasons why characters in science fiction stories are more often flat, sketchy, and as individuals, unmemorable. The psychologist, Robert Plank (1980), has identified that while 'mainstream' literature concerns itself typically with what human beings shall become individually, science fiction, through its 'mental experiments', explores the question of what shall become of humanity collectively.¹⁵ While this, too, is a generalization unsupportable through reference to every single work within the genre, it may be fair to say that as a preoccupation of a significant number of writers this observation is true. And if it is true, then regardless of the uniqueness in time and space of the events in which a character participates, that character will take on, in part, a representative function. Jameson (1981) writes of the vital significance of the concept of 'worldness' in romance genres,

including some science fiction, pointing out that the created world absorbs many act-and event-producing functions normally reserved for the characters in naturalistic narratives.¹⁶ The world itself becomes the protagonist of many science fiction stories. The ocean in Stanislaw Lem's *Solaris* (1961), of course, provides science fiction criticism with its most striking example of this, though this work is perhaps of a complexity that places it beyond the reach of most young readers. The human or humanoid characters which populate so many science fiction worlds often function principally to register states of being different from those familiar to the reader. Characters, according to Jameson, are unities, narrative functions, with their actant roles becoming subordinate to their functions in the narrative.¹⁷ These functions can often be identified as hero, 'donor' or villain in simpler stories clearly possessing roots closest to traditional romances, but can also be seen in terms of their specific conventionalized functions within the particular science fiction tradition. Ursula Le Guin's enlightening address on this subject does not contain a complete list of these functions, though it will serve well here to illustrate the point:

... on none of the space ships, on none of the planets, in none of the delightful, frightening, imaginative, crazy, clever stories are there any people. There is Humanity and After, as in Stapledon. There is Inhumanity and After, as in Orwell and Huxley. There are captains and troopers, and aliens and maidens and scientists, and emperors and robots and monsters - all signs, all symbols, statements, effigies, allegories, everything between the Stereotype and the Archetype.¹⁸

Le Guin goes on to point out that the humanity of many characters is indeed irrelevant to their function. They are not beings but acts; it is the act that matters. While her assertion that this behaviourism is inherent in the positivistic ideology of an age of

science and technology - is true as far as most American science fiction historically speaking, is concerned, it falls rather short of the mark of describing an enduring feature in much other science fiction, especially non-genre science fiction. Many works which satisfy the principal defining criteria, yet which were written outside the largely American cultural and commercial parameters which created the science fiction literary phenomenon this century, share strong features, including complex characterization, linking them more closely with mainstream literary forms. Angus Wilson's *The Old Men at the Zoo* (1961) might serve as an example here.¹⁹

The de-anthropomorphizing of narrative identified by Jameson can certainly be seen partly as a narrative result of a loss of humanistic goals in a society dominated by technology, but also as a result of a generally accepted scientific or technical *way of thinking* in popular Western culture. While modern physicists would no longer claim that the pursuit of their science will lead to absolute truth, this uncertainty is a long time in catching up with popular culture. Robert J. Barthell (1972) points out that the fascination of the technical mind with the interplay of rationalistic concepts is a chief factor in the subordination of the human protagonist to the fictional environment. 'Science fiction', writes Barthell, 'examines an individual's environment, our environment, with an inventiveness of, imagination usually reserved for his personal relationships'.²⁰ Barthell's term for science fiction, a 'literature of ideas', can be seen to be appropriate to a large number of texts, from the early 'hard' science fiction of Asimov, Heinlein and Clarke to the influential, prize-winning works of the present day - of David Brin, Gregory Benford or C.J. Cherryh. It can, though, significantly also be seen as a general trend away from the rather naive, folkloric heroism which had flourished in the early days of pulp magazines.

Edgar Rice Burrough's 'John Carter of Mars' tales, for example, could never be seriously written today.

The pervasiveness of change, which has increasingly pre-occupied writers turning to science fiction in modern times, means that narratives tend to stress the subjective nature of all patterns of depicted reality. The evocation of the world, the society, the universe it exists in, must also be complete in order to be coherent, no matter what narrative frame is used to achieve this and, as a consequence, the importance of any single character in modern science fiction is often further reduced than ever before. This is clearly to be seen in the works of John Brunner, Robert Silverberg and C.J. Cherryh, where the number of characters is large, with narrative point of view frequently shifting among the characters. Accompanying this is a trend towards de-anthropomorphizing of the characters themselves. A sense of narrative wholeness has even been successfully sustained in a recent work by David Brin, through the eyes of genetically 'uplifted' dolphins (in *Startide Rising*, 1980, Nebula winner). In summary, then, the frequent purpose of a science fiction story is not to explore the consciousness of an individual but to examine an idea which may span the vast possibilities of the universe.

Of course, the above comments by no means constitute a thorough examination of what clearly has become a complex and varied literary phenomenon. They should, nevertheless, serve to convince those not already familiar with it that science fiction deserves a closer look. Before moving on to consider something of what is involved in being a reader of science fiction it may be helpful to endeavour to place it, as briefly as possible, in the context of its literary heritage. While this is a fascinating study in itself, it is of particular relevance here since it will develop the argument that science fiction is of two basic types and it will be seen in later

chapters that these offer different opportunities to young readers at quite different stages of their development.

1.3 GENERIC HISTORY AND CLASSIFICATION

Placing science fiction in an historical perspective, the authors of *Intersections* (1978) describe it simply as 'a literary response to the rise of modern science'.²¹ This is, of course, neither a precise nor a sufficiently complete description to stand alone, but it opens the possibility of looking at science fiction historically, since it is a peculiarly modern genre. Debate has continued to rage over the years over whether some of the historical antecedents of science fiction are actually science fiction themselves, in particular the Menippean satires of Lucian of Samosata written in Rome in the first century, or the romances of Cyrano de Bergerac, or even Swift's *Gulliver's Travels*. On the other hand, there is little argument that Mary Wollstonecraft's *Frankenstein*, written in 1816, is a true (and perhaps the first) science fiction story showcasing the ideological ambivalence felt at the time at the emergence of science as a significant social phenomenon. The monster is a creature owing his particular characteristics to gothic horror literature, and yet he owes, paradoxically, his very existence to scientific method and some then current scientific theories. The marvellous aspects of the narrative are thus significantly underpinned by an appeal to possibility. Mary Wollstonecraft's concern with ethical questions, too, places her firmly in the science fiction square, a matter that will be looked at more closely in Chapter 2. In this extremely significant work, it can thus already be seen that science fiction may be the illegitimate child of a union between two unlikely parents, with the possibility of all the vigour of a hybrid.

The evolution of Western literature, according to literary theorists, Scholes and Kellogg (1966), divides prose narrative into

7
AC

two streams: 'allegiance to reality' or empirical narrative, and 'allegiance to the ideal' or fictional narrative. Fictional narrative is further divided into romantic and didactic components.²² Maureen B. Smith (1978) has explored the significance of these divisions in relation to science fiction in an attempt to establish that science fiction itself consists of two quite different types of narrative. The importance of this for educational purposes will become clear in Chapter 4 of this dissertation, but direct mention will be made of Smith's work here, to outline the reasons for the divergence.

Within the area of the romantic narrative, Smith sees three principal phenomena contributing to the development of science fiction. They are, chronologically, the gothic novel, the romantic revival in England at the end of the nineteenth century, with such writers as Kipling and H. Rider Haggard, and the emergence of what she terms 'the positivistic romance', and particularly of the works of the influential Jules Verne.

The early days of twentieth-century science fiction owed much to the revival of the gothic novel in the eighteenth century, and its influence is still considerable, making its presence felt principally through the evocation of monstrous and hostile alien beings. Walpole's and, more particularly, Ann Radcliffe's attempts to assign natural causes to marvellous and seemingly supernatural events also provided a logical framework on which science fiction could grow. In Radcliffe's *The Mysteries of Udolpho* (1772), for example, the terror engendered in Emily by a fearful object hidden behind a curtain turns out to be caused by a wax figure, a case of mistaken identity. In this way, Radcliffe developed her concern for human psychological states, the emotional response to external phenomena, and the possibility of rational, natural explanations.

The general revival of the romance came in nostalgic response to the growing alienation felt by many writers and their reading public from their physical and social environment, and out of a reaction to the increasingly technologized life in the cities, once the spread of industrial capitalism had largely completed its upheaval of social organization by the end of the nineteenth century. Perhaps paradoxically though, together with nostalgic and heroic fantasies, there emerged writers such as Kipling and Verne who took the newly popularized romance form and used it to affirm and reify the positivistic ideology that accompanied the ubiquitous technology. The machine and its creator now became the new subjects and heroes of a new world view. Verne's stories eulogize human powers of invention and discovery, and imply that control over the universe and the possession of absolute knowledge are possible. The simple, heroic, chaste though brutal moral code of the characters in these stories links them with the epic tale and with the romance form. This has had enormous influence on writing far into the twentieth century, causing a certain stream of science fiction from the pulp stories, through Heinlein and beyond, to be accused with some justification of operating in a state of arrested moral and emotional development which accompanies a simple affirmation of scientific ideology. The pervasiveness in Verne's works of the quest and the fantastic voyage as story elements, taken from the ancient heroic epic, is one of the common generic ancestors of all modern estranged genres, since it lends itself rather to the presentation of ideas than to the development of individual characters.

The second of the two fictional narrative components explored by Maureen Smith is the didactic narrative, which uses fiction as a vehicle for conveying the truth or, at least, philosophical speculations appropriate to the real world. A common

ancestor of science fiction and modern satirical genres is the Menippean satire, best represented by the satirical pieces of the abovementioned Lucian of Samosata. Lucian created mock journeys, transporting his characters into an unfamiliar environment from which to view the peculiarities of contemporary society. This technique allows an author maximum freedom of observation and facilitates the use of extrapolative methods so favoured by many science fiction writers in the twentieth century. Swift's *Gulliver's Travels* and Voltaire's *Candide* were inspired by this form, before H.G. Wells took it up in his scientific romances at the end of the last century, in particular, *The Time Machine* (1895) and *The Island of Doctor Moreau* (1896). These works share with Lucian and with related modern science fiction a preoccupation with progress and social change. This form of literature is, as Smith has quoted from the work of Mikhail Bakhtin, about 'ultimate questions', and through the work of Wells and the more serious later science fiction writers, has provided a fictional framework which successfully contains the didactic intention of the narrative, and offers an extremely effective way of translating social issues into fictional form. The utopian and dystopian elements common in modern works of didactic science fiction, from Zamyatin's *We* (1920), through Huxley, Orwell, Thomas Disch, Kurt Vonnegut, Pohl and Kornbluth and many others - owe their origins in significant part to the Menippean tradition.²³ It is most interesting to note the strong allegiance owed this ancient genre by many of the most radical and subversive writers of science fiction in recent years, for example, the feminist authors James Tiptree Jr and Joanna Russ. Tiptree's 'Houston, Houston, Do You Read?' (1976), for example, is a story set in a large space ship to which three men, lost in space and time, are rescued. A future Earth society turns out to consist only of women, a fact the men fail utterly to come to terms with. Characteristic

of this story is a blend of humour, parody and a sense of the absurd with the underlying seriousness of the didactic intention. It is a point of serious speculation how young readers might respond to such contentious questions raised in fictions.

Clearly, science fiction stories which highlight social issues will exhibit differences from those which reify a naive heroism and a positivistic ideology, identified earlier as belonging in the romance narrative category. Didactive works are often, indeed, anti-romances. Parrinder (1980) has called these works 'fables' and points out that the alternative worlds of these stories are always, to a degree, positively or negatively valued in relation to our own, thereby stressing the strongly reflexive quality of stories of these kinds, and implying certain demands on a reader.²⁴

The childlike, often primitive nature of much of the writing of the early part of this century can be best understood by taking a glimpse at some of the generic forms that proliferated simultaneously at that time. Adding to the acknowledged influence of the gothic novel, the romantic revival and the positivistic romance already outlined above, Darko Suvin (1973) populates the 'genological jungle' further with the juvenile adventure story, the stories of 'subliterary conflict and sentiment' (which, of course, continue to flourish today), and what he terms the 'pseudomyth', the crude transplanting of a metaphysical approach to mythology and religion into science fiction.²⁵ This last element, including such works as the twenty volumes of John Norman's 'Gor' series, involves a fascinating area of study in itself, but unfortunately beyond our concerns here.

The heterogeneity of science fiction means that it frequently plays 'host' to other literary and 'paraliterary' genres and subgenres. It has thus always been possible to write a science fiction love story, science fiction spy thrillers or science fiction detective stories

or war sagas, and their 'paraliterary' derivatives in formula-fiction or comic book form, and also to use and convert them to the ends of the science fiction genre itself. Alfred Bester's masterwork, *The Demolished Man* (1953), takes the detective story formula and deepens its significance by subverting one of its chief elements, the secret of the murderer's identity. Both the reader and the detective know who the murderer is from the beginning, and Bester's inspired study of law in a telepathic society takes this as its starting point, in order to showcase the particular concepts of proof in operation. Isaac Asimov, too, apart from frequently using the detective formula, has developed a related formula particularly suited to stories of scientific and technological exploration. An intellectual puzzle is presented and the reader is challenged to find the answer before the narrative reveals it. Asimov's 'Robot' series (around 1940), extremely influential to subsequent generations of writers, provides excellent examples of this formula.

From these varied but simple beginnings science fiction has evolved at an extraordinary pace. Perhaps just a glimpse at Suvin's exploration of the more 'cultivated territory' of our more enlightened times might serve as a reminder of the vast range of works to be encountered. Suvin (1973) describes modern serious, or genuinely speculative (didactic) science fiction as falling into two main categories which he calls the 'extrapolative model' and the 'analogical model'. The first is anthropocentric and future-oriented, confining itself to direct forecasts of futures, and showcasing the hopes and anxieties of humanity of the present. Typical subjects for such works are global catastrophes, political dictatorships, the nuclear holocaust, and they thus function frequently as warnings to modern readers. Pohl and Kornbluth's *The Space Merchants* must remain one of the most striking and educationally useful examples of this

model. The analogical model is necessarily neither anthropocentric nor geocentric and, at its best, concerns itself with philosophic and ethical propositions in parabolic form.²⁶ Examples of works of this kind will be discussed further in Chapter 2.

As a response to the rise of modern science, science fiction's rapid development is both intelligible and almost inevitable. After the onset of the Industrial Revolution, the idea of 'the future' became something which was likely to be noticeably different from the present. The velocity of change has continued to increase to the present day and the divergence between present and future became the subject matter of much of this literature. To learn of the way the future was envisaged just a generation ago gives a most illuminating perspective on this (see Frederik Pohl's recent autobiography, *The Way the Future Was* (1978)). Modern science fiction is at present also responding to what is being termed the post-industrial era. The society created by the Industrial Revolution is facing great change. Humanity's capacity to exterminate itself has forced people to question the assumption that technological advance is necessarily morally good. Science fiction's ambiguous place in modern literature, its modern introspective, self-conscious quality and the uncertainty of its relationship to other genres could be seen as a direct expression of the undermining of the ideology which inspired its beginnings. Post nineteen-sixties science fiction can be seen to be implicitly or explicitly reevaluating or revising the conventions of the 'parent' genres, to take another term from Dubrow (1982). Indeed, the notion of parenthood may be helpful to use when reflecting on the relationship of modern science fiction to its older forms. Dubrow writes of genres rebelling against their literary parents, while maintaining a 'tense and ambivalent relationship' with them, even after the parent genre has faded.²⁷ It would be impossible to pinpoint with accuracy, of

course, where parent and child separate into two entities and, to that extent, the metaphor is of limited accuracy. Nevertheless, it is perhaps true to say that serious modern science fiction suffers from a too-easy identification in the minds of the public of the rapidly developing offspring with its often infantile parent.

1.4 READING SCIENCE FICTION: SOME INITIAL REFLECTIONS

The next chapters of this dissertation will examine in some detail the ways in which a young reader might engage with science fiction texts, and some of the opportunities offered by the literature to develop sophisticated literary capabilities, as well as to encounter significant intellectual, moral and emotional challenges. Here, however, it is necessary to conclude this initial consideration of science fiction as a genre, by examining the idea that the stance of a reader when reading science fiction, might in some way be seen as an identifying hallmark of the genre itself, distinguishing it from other literature. To begin with, though, it must be said that the tasks facing a reader of science fiction, in order to make meaning from the text, parallel to some extent those facing a reader of any prose fiction. The distinction is one of degree, not kind. This idea can perhaps be best approached through a re-examination of the concepts of the 'empirical' and 'fictional' narrative elements identified by Scholes and Kellogg (1966). Dubrow (1982) reports the way in which the novel, a relatively modern literary development in the history of Western literature, has re-united the empirical and fictional elements in a narrative, which operates characteristically as a synthesis between the sense of reality perceived and shared by author and reader, and the aesthetic or intellectual or moral impulses shaping the fictional narrative played out on this real world.²⁸

A reader of this type of prose fiction must be able to hold in her mind a clear sense of both empirical and fictional elements in the

narrative, while still responding to the fiction *as though* it were empirical reality.

The difference between naturalistic fiction and estranged 7 fiction, in general, can usefully be described in terms of what a reader has to do. Estranged fiction operates as a *displacement* or *disjunction* of the known through the imagination, on the level of everyday reality. Reality may be *redefined* in terms of present-day ideals, fears or preoccupations. Modern fantasy, as has been shown, need on a literal level make no rational explanation of the marvellous elements within the narrative. Richard Adams's rabbits can talk in *Watership Down*; through the rhetoric of the narrative, the reader accepts this and is not required to understand how this phenomenon has come about. An essential feature of science fiction, on the other hand, is that the seemingly marvellous elements are subject to cognitive scrutiny and rational explanation on a literal level. Cause and effect operate as a reader expects them to, or if they do not, then it is this phenomenon in turn which is scrutinized, as in, for example, the many speculative time-travel stories. Empirical explanation and exposition are often foregrounded as essential elements of the narrative, engaging a reader's *focal* attention and frequently offering significant aesthetic pleasure. Science fiction's traditional involvement with the ideology and methodology of the sciences and of technology has meant that empirical and fictional narrative elements are dialectically juxtaposed, requiring a special kind of synthesis on the part of the reader.

Science fiction, whether of the extrapolative, future-oriented kind, or of the analogical kind, operates even at its simplest through a reader synthesizing just this implied juxtaposition of the narrative world against her understanding of the real world. Indeed, as will be seen later, much science fiction could be said to be *about* the real

world of the present, brought into focus through the strange new lens of the imagined world. In simple tales, where complex inferential analysis is not required, this takes the form of the reader reflecting on whether some part of the narrative is plausible on a literal level, according to what she knows of the real world, or what information has been given in the story. On a more subtle level, a reader may be asked to infer from metaphorical, ironic, symbolic or allegorical narrative features, ideas reflecting contemporary human concerns. Problems may arise for a reader when the rhetoric of the realistic narrative strategy persuades a reader to accept as 'true' on the empirical level what is fictitious, whether this be an extrapolation from the known or a freer flight of fancy. The more naive a reader, or the less information about the world and formal bodies of knowledge she possesses, the more this is likely to happen. An example will serve to clarify this important point.

The Andromeda Strain by Michael Crichton (1969) has been a constant best seller since its publication and frequently seen in the possession of adolescent readers. It is a telling example of the dilemmas which might understandably face a reader, and of the frequently ambiguous union of fictional and empirical elements. Crichton, a doctor and researcher, writes from a basis of detailed knowledge of microbiology and of the politics of science. While there may be no doubt in most readers' minds that his meticulous explanations of viral mutations are based on empirical fact, there is a large shadowy area in the narrative where these data are phased into the fictional story of a viral attack from outer space. Questions such as how much of this story is based on fact, in the sense of 'this is the way things are', or 'this is the way things would be *if* ...', frequently arise in a reading of a science fiction narrative. Questions of the plausibility of explanations occur together with problems of separating

fact from fiction, and fiction paralleling fact from pure invention. Just how probable is it that the United States Government has a top-secret underground epidemiological laboratory with access to nuclear weapons? Or something like it?

Science fiction, then, requires of a reader the awareness, to use Rosenblatt's term, of a 'double set of organising principles'²⁹, and the ability to hold two worlds in view at the same time. As has been mentioned above, the fictional world in science fiction is frequently subjected to empirical scrutiny or scientific explanation, so that there is an overlap, but the deliberate attempt at dislocation in the fictional world means that it can be held or measured against the real world. The reader is asked on the one hand to respond as *if* the fiction were true, yet on the other hand she must be quite clear about the points where the narrative differs from the real world. The primary significance of the notion of 'worldness' in science fiction texts foregrounds the need for this special capability. This will be illustrated in the next two chapters.

The meaning of the work, then, must be constructed by the reader in a special way out of this juxtaposition. Estrangement is a fundamental first principle, out of which meaning is made. Nowhere is this more apparent than in the story of the parallel or alternative present. Though the principle is more clearly at work here, it serves to highlight the requirements for the reading of all science fiction. Harry Harrison (1976) speaks here about the creation of his book, *A Transatlantic Tunnel, Hurrah!* (1976):

Around this idea other ideas grow.
This parallel world, today would
be very much like a Victorian society
with certain material changes. This
would have to be, in some ways, a
Victorian novel. But I could not write
one of these straight so it would
have to be a parody or at least a

humorous novel. But would it be funny in the parallel world? No! It would have to be a book written in *that* world for readers in that world. They would take it straight but readers in our world would be able to laugh at the differences. Big jokes and small became possible; the little humble Washington house beside the burned remains of Mount Vernon, the secondary characters like the detectives, Richard Tracy and, a³⁰ minor RBI executive, J.E. Hoover.

Science fiction frequently operates on the level of de-familiarizing of the familiar. Writers with didactic intentions will want to jolt a reader out of a complacently unresponsive or conditioned attitude to events and situations in the present, and to explore imaginative and extrapolated outcomes to these situations. A feature of estrangement linked historically with the didactic epic dramas of Bertolt Brecht is that the obvious, the taken-for-granted, becomes the subject of a reader's 'focal awareness' (Polanyi, 1967). Thus, common metaphors, clichés and over-used abstractions are often revivified in science fiction through a process of literalization. There are thus alien worlds where human interlopers feel the very trees and plants are watching and listening. They will, predictably, find that this is literally so. In Kurt Vonnegut's 'Harrison Bergeron' (1961), a society is depicted in which the concept of equality has been taken to a literal extreme, and transposed into the administration of physical handicaps for those above the mediocre. Thus the intelligent must submit to periodic noises in their ears and the beautiful must wear masks. The usefulness of techniques such as these for satirical purposes is almost endless. Scientific words and concepts, too, are often lifted out of their rigorous framework, and placed in the medium of the poetic language of the narrative. Examples of this are 'electric', 'heat

death' or 'clone'. Functional language may itself, therefore, be raised to the level of the poetic, adding to its allusive and connotative potential. A reader gains aesthetic enjoyment from words whose normal uses are merely functional. This is signalled in the text, and requires a change in the *stance* of the reader from what Rosenblatt terms 'efferent' to aesthetic. This extremely important point will be discussed in detail in Chapter 4, for it has considerable significance for educating young readers. It is, though much beyond the scope of this paper, also fascinating to contemplate to what extent the reverse has taken place, that science fictional language has been conveyed back into mainline science. Certainly, in the field most traditionally shared by science fiction, astronomy, the connotative potential of new terminology is very powerful. One need only think of dwarves, giants and black holes!

The writer's art of 'poiesis', the making of the reality of the story, is foregrounded in this literature. To read it requires a concomitant 'making' on the part of the reader, though again this differs from reading naturalistic fiction in degree and emphasis rather than kind. Through reading science fiction, the acts of writing and reading may themselves become focussed and subject to scrutiny. The potent awareness, and sense of shock experienced in childhood at encountering something for the first time, may be re-experienced in an estranged text with something of the power of poetry. The discussion of Margaret Meek's paper (1985) in Chapter 4 of this dissertation throws further light on this crucial point from the point of view of its importance for the reader.

Writing on the reading of fantasy, Ann Swinfen (1981) refers to this projected effect on the reader of estranged fiction as 'experience liberated', the introduction of a *sense* of the marvellous into the real world, or the viewing of the familiar with new eyes.³¹

This is an important concept for science fiction, too, particularly as it is used by writers for the purposes of a critique on societies or ideas. H.G. Wells's *The Island of Doctor Moreau* (1896) provides an example of how this has worked which has, no doubt, had its resonance through the decades of this century. Estrangement acts here to liberate Prendick's vision. He returns to London after his ordeal on the island and sees in those around him elements of the Beast Monsters he has left behind. The example is telling enough to be quoted here:

Then I look about me at my fellow-men.
And I go in fear. I see faces keen and
bright, others dull or dangerous, others
unsteady, insincere; none that have the
calm authority of a reasonable soul. I feel
as though the animal was surging up through
them; that presently the degradation of the
Islanders will be played over again on a
larger scale. I know this is an illusion, that
these seeming men and women about me are
indeed men and women, men and women for ever,
perfectly reasonable creatures, full of human
desires and tender solicitude, emancipated from
instinct, and the slaves of no fantastic Law -
being altogether different from the Beast Folk.
Yet I shrink from them, from their curious glances,
their inquiries and assistance, and long to be
away from them and alone

(p.140).

1.5 SCIENCE FICTION: CHILDREN'S LITERATURE?

Science fiction is not officially a branch of children's literature. Indeed, among its readership are large numbers of adults, traditionally male. Many, it seems, according to the polls taken periodically by *Analog* and *Locus* magazines, are scientists and technically oriented professionals, people who become 'fans' during adolescence and retain their affection and enthusiasm for the genre. Increasingly, women are reading science fiction, linked to the fact that women are writing it, and appearing in science fiction texts after an absence of almost half a century. Science fiction, however, speaks most powerfully to the adolescent, the student, emerging from the intellectual acceptance of childhood into an age of questioning and reflecting,

testing and relating, and attempting to understand the place of the individual in a changing world. In its themes and its preoccupations, science fiction addresses this need; indeed it could even be said that as a literature it expresses the *experience* of this need. Dubrow's description of the parent-child relationship within the generic family of science-fiction texts, mentioned above, encourages reflection in terms of a further personification. It may be appropriate to pursue the notion of science fiction itself as an *adolescent* literature.

Thomas Disch (1976) claims that science fiction can be described as a branch of children's literature for three reasons. The first is that, in general, a taste is acquired for it in the early teen years. Second, many of the classic stories are either written about children of wisdom and power, or have adolescent protagonists. The third reason is that science fiction itself is intellectually, emotionally and morally limited.³² Here, before further discussion takes place, it is important to stress that such a generalization cannot be equally true of both the most and the least sophisticated science fiction texts. However, it could be said without fear of contradiction, that works of the literary maturity of Dick's *The Man in the High Castle* (1962), Delany's *The Einstein Intersection* (1957) or Lem's *Solaris* are rare. How accurate, then, is Disch's assertion about science fiction's limitations? The only possible answer must be a form of counter-assertion, or at the very least, an instigation to those wishing to evaluate the literature, to read widely and form their own judgments. Certainly it is true to say that there is a large body of chiefly American genre science fiction, past and present, which is limited in its intellectual scope, emotionally impoverished and morally naive. So, of course, are many adult human beings, including undoubtedly, many readers of science fiction, but it would be unfortunate if such limitations were considered criteria for suitability of a literature for children.

Perhaps a more respectful analysis is required. Disch's use of the word 'children' implies adolescents rather than younger children. Literature written specifically *for* adolescents could be described as evoking an implied reader who is adolescent, with a wider world view than a child, yet lacking a fully mature experience or appreciation of life's complexities. Such a literature is thus characteristically simpler than mainstream adult literature. A concern for the reader's moral growth will frequently be an identifying feature of quality adolescent literature, so that while moral dilemmas and ambiguities will be in evidence, there will be in most cases a sense, if not that ultimate good will befall the characters, then at least that the world and its governing principles might become intelligible, given the necessary and sufficient conditions. With very few exceptions, too, there is an overriding optimism about the world and the role the protagonist has to play in it. The author, then, may take on the moral role of convincing the reader that endeavour is worthwhile. A strong story element still plays an important role. A universal theme linking works of literature written for adolescents is that of development, usually presented through the experiences of the protagonist. For the adolescent reader, such works offer opportunities for empathic involvement in this theme, and for reflection on a number of levels. According to useful work done by Audrey Grant (1984), young readers can be seen to pursue specific identity themes within the context of their reading. They can be seen to explore, within the fictions they read, notions of who they are, who they are becoming, the possibilities open to them of the person they might become.³³ The developmental themes of most adolescent literature may play an important role in this process. Perhaps the truest way of differentiating adolescents' and children's literature from serious adult literature is not to say that it is limited, but

that it is *self-limiting*, often pared down to essentials. An author does not need to distort or falsify her world view, but she works to match those elements compatible with the intellectual, emotional and moral needs and the capabilities and preoccupations of her readers.

Science fiction is a literature which, at its simplest level, has been governed largely by the demands of its relatively unsophisticated reading public. More complex and mature science fiction, while enjoying popularity, could also be described as being shaped by the requirements of its subject matter, its scope and the world view of its author. The constraints often placed upon characterization by this 'literature of ideas' indicate that emotional empathy for individuals will be subordinated in a reader to a fascination with the created world or the idea being tested. Science fiction might thus often be justifiably described as being limited in emotional power, but it cannot be *accused* of not involving a reader in empathic identification with a character if it does not set out to do so! It must be made clear, too, that there is a galaxy of difference between describing a literary work as being limited in emotional content, and describing the emotion engendered as itself limited or limiting. Adolescents, of course, are capable of great depths of emotional response. Crude stories, portraying (just to generalize on a group of works within the genre) white, North American male, mindlessly patriotic heroes, thoughtlessly and bravely rescuing brainless, terrified (beautiful) daughters of stereotypically mad scientists from (unjustifiably) monstrously portrayed aliens - are common enough to require careful examination, not only on literary, but on moral and pedagogical grounds.

The possible close match of the developing adolescent to the science fiction genre is, at *its best*, not so much a function of an author consciously creating a literature appropriate to the needs of this particular group of readers, as of an author, in a more

fundamental sense, choosing the best form of discourse for the ideas being examined. This in itself differentiates serious science fiction proper from literature created specifically for adolescents (and, of course, from the large amount of popular science fiction created for and devoured regularly and then forgotten by an insatiable reading public. But that is a subject for Chapter 3). Science fiction is about change, the effects on society of change, the frontiers of knowledge, rites of passage in an unknown world, the relationship of human life to the cosmos. This is what rightly preoccupies many adolescents, concerned with the adults they will be in the future, and this is why the interests of both literature and adolescent reader have coincided so strongly. That science fiction *itself* is concerned with questioning and testing of limits, means that *it* is, as much as it can be said to exist as an entity, an 'adolescent' literature.

A final appraisal of this metaphor reveals that as a popular, peculiarly modern literature, science fiction speaks to an *adolescent* civilization. In a recent public forum, author David Brin expanded on his theory that humanity's adolescence began with the realization that the species could exterminate itself, thus creating, for the first time, a sense of responsibility for the universal and irreversible consequences of individual acts. He pointed out that replacing the popular worship of the warrior, characterizing a frightened, childlike culture before the end of World War Two, is the current worship of the entertainer, an adolescent, anti-authoritarian phenomenon. Adolescents themselves are the creators of the cult-figures of modern times, and this phenomenon appears to have, in contrast to a generation ago, the assent of Western society as a whole. There is a sense that popular culture *is* adolescent. On another level, humanity's increasing need for openness to change, and its embryonic humane sense of

responsibility for other cultures and for the physical environment reflect the growing social and moral awareness of an adolescent.³⁴

Brin's vision, typical of so many science fiction writers, is optimistic, meliorist, even utopian. He looks forward to the adulthood of the developing species, though it is to be hoped that this notion is not as hegemonic as it sounds. He is right, if in nothing else, at least in pointing to science fiction as the true literature of the inheritors of earth's future.

A group of authors, principally in the last decade, realizing no doubt, the powerful potential of science fiction to engage adolescent readers, has created a specific science fiction literature for adolescents. External features distinguishing these books from mainline science fiction, are the length of the narrative, the mainly adolescent protagonists, the conscious effort on the author's part to gear the scientific or technical content of the story to the level of experience, knowledge and understanding about the world that could reasonably be expected of an adolescent. Internally, however, the thematic underpinnings of the stories follow those of modern 'soft science' or 'social' science fiction models (Asimov, 1982), as they do not principally concern technological puzzle-solving, for what Barthell called 'rather carelessly examined ends'.³⁵ This latter literary form, far from being ideologically neutral, reifies the positivistic belief that rational, logical methods of problem-solving are the only correct and sufficient way of making sense of the cosmos in modern times. (Asimov himself has articulated this belief very clearly (1982).) As a literary corpus, 'quality' adolescent science fiction, small though its numbers still are, can generally be seen to express more humanistic impulses. Like their 'adult' counterparts mentioned above, these stories function within a framework of sociological, psychological, anthropological, metaphysical, ethical and political speculation.

Unlike much adult science fiction, however, the affective level of much of this literature plays a vital role, as a concern for the development of the adolescent protagonist vies for the reader's attention with the claims of the narrative science fictional world. They may be seen, in general, to use alternative universes to focus on human development and the process of maturation, much as Ursula Le Guin has done in her fantasy world of Earthsea (collected 1977). Indeed, on the whole, these works can be seen to share essential features linking them to adolescent fiction in general, while at the same time fulfilling the criteria for science fiction outlined in Rabkin in the definition with which this study began. In reality, of course, specific works are rarely so easy to categorize, and a significant number of these are problematic when it comes to classification, as they mix science fictional elements with elements of fantasy belonging distinctly in the British children's fantasy tradition. Chief among these is Peter Dickenson's *Changes* trilogy (1968-1971) and Rosemary Harris's two volumes on a post nuclear world, *Quest for Orion* and *Tower of the Stars* (1980), as well as, more recently, the fascinating *The Homeward Bounders* (1981) by Diana Wynne-Jones. In addition to this, the works of writers such as Joan D Vinge, Ann McCaffrey, H.M. Hoover, Jan Mark, Robert O'Brien, Monica Hughes and Sylvia Engdahl, to name just a few of the significant authors writing science fiction for adolescents, appear often on the general science fiction shelves of bookshops and libraries, as well as in collections of children's and adolescents' literature. It is as much the decisions of publishers, distributors, booksellers and librarians as any features intrinsic to the works themselves, that create what is frequently an artificial distinction. What is certain, is that no matter what real distinctions can be identified in general between the two bodies of literature, young readers step over them as

frequently and easily as if they were not there. It is partly for this reason that works will be taken for closer study in the next chapters from *both* categories with much the same freedom as the adolescent reader appears to enjoy.

1.6 CRITERIA FOR EVALUATION

So far in this dissertation, implicitly or explicitly value-laden terms have been used, such as 'serious', 'popular' and 'quality', to describe bodies of works, particular authors or literary movements, without sufficient definition or justification. Now is the point where the question of the evaluation of science fiction for adolescent students must be confronted, with a view to outlining the criteria by which individual texts will be judged in later chapters.

First, and perhaps most significantly, it must be clear that this evaluation will not be made in purely literary terms, because in an educational context, any evaluative criteria will depend on the specific use a particular text will be put to within the school program, or the role that text will play in the experience of the particular reader. Thus, some works will be defended on the grounds of the intrinsic interest or appropriateness of the ideas they treat; others will be defended because of the particular needs they fulfil in their readers. Still others will receive approbation because of the opportunities they offer for developing certain capabilities of reading or thought. Some, within the context of the English classroom, will merit particular attention with a view to foregrounding literary quality or opportunities for aesthetic pleasure. Others, finally, will be rejected on those same grounds, or on the grounds that they offend the particular social ethos publically or implicitly expressed by the educational institution, or that they do not fulfil certain minimum cognitive requirements. Some works will be enthusiastically recommended, others tolerated.

It may be useful to begin a consideration of evaluative criteria by taking Whitehead's polarization of children's reading into two narrative categories, 'quality' and 'non-quality' (Whitehead, 1977). The first occurs where an author's personal involvement with her subject matter and audience are such as to 'generate a texture of imaginative experience which rises above the merely routine and derivative'. The second contains works 'whose production has been essentially a commercial operation'.³⁶ Another term in frequent use for the latter category is 'industrial' fiction. While this discrimination is a useful beginning, it runs immediately into problems when used as an evaluative mechanism for individual texts, not to mention whole genres! The fact that a work of science fiction has been created to earn its author a living and to satisfy the demands of a particular market in no way precludes its author or its audience from being involved in precisely that imaginative experience which creates 'quality' literature. Science fiction, in particular, defies easy categorization since it refuses the common dichotomy between high and low culture. Indeed, it straddles more than one philosophical hotbed, such as the 'two cultures' debate, and it contains within its defining boundaries ample opportunity for self-transcendence.

Another problem with evaluating a work of literature purely on the grounds of its intrinsic qualities is that this does not take into account its usefulness in meeting educational needs. This paper argues for the use of science fiction in a school reading program as a *tool*, whether it be used to introduce a reluctant reader to the pleasures of literature or a naive reader to more sophisticated and rewarding texts and readings available to her; whether to direct a science-based student to develop speculative capabilities through fictions; whether to engage readers in argument and debate pertinent to the real world. The number of uses and possible modes of student response abounds, as will be seen in subsequent chapters.

A vital requirement that the literature must fulfil, then, is that it be an *enabling medium*, whatever that might signify in particular contexts. A judgment of the qualities of the literature must function alongside a teacher's appreciation of a particular student's present literary capabilities, her needs and purposes in reading and learning, and the body of that student's present knowledge. Only through familiarity with the diversity and richness of what science fiction texts can offer can any teacher achieve this goal.

The next five chapters will examine the opportunities for overcoming resistance and fostering engagement in adolescent students offered by science fiction. A defence will be mounted on moral, philosophical, educational and finally on literary and aesthetic grounds.

NOTES TO CHAPTER 1

1. Eric S. Rabkin, 'Genre Criticism: Science Fiction and the Fantastic', in *Science Fiction: A Collection of Critical Essays*, ed. Mark Rose (New Jersey: Prentice-Hall, 1976), p.91.
2. Quoted by Darko Suvin in 'Science Fiction and the Genological Jungle', *Genre*, 6 (Autumn 1973), 253.
3. *Ibid.*
4. Peter Nicholls, ed., *The Encyclopedia of Science Fiction* (London: Granada, 1979), p.211.
5. Darko Suvin, 'On the Poetics of the Science Fiction Genre', in Rose, ed., *Science Fiction*, p.62.
6. *Ibid.*, p.64.
7. W.R. Irwin, *The Game of the Impossible: A Rhetoric of Fantasy* (Urbana: University of Illinois Press, 1976), p.4.
8. The argument in this paragraph is substantially taken from Suvin, 'The Genological Jungle', pp.256-257. For the last point see Ann Swinfen, *In Defence of Fantasy: Study of the Genre in English and American Literature since 1945* (London: Routledge and Kegan Paul, 1981), p.75.
9. Fredric Jameson, *The Political Unconscious: Narrative as a Socially Symbolic Act* (London: Methuen, 1981), p.104.
10. Harry Harrison, 'Science Fiction and Change', in *Science Fiction at Large*, ed. Peter Nicholls (London: Gollancz, 1976), pp.107-114.
11. Robert H. Canary, 'Science Fiction as Fictive History', in *Extrapolation*, 16 (Spring, 1974), 81.
12. Ursula K. Le Guin, 'Science Fiction and Mrs Brown', in Nicholls, ed., *Science Fiction at Large*, pp.15-33.
13. Heather Dubrow, *Genre* (London: Methuen, The Critical Idiom, 1982), p.37 and p.23.
14. *Ibid.*, p.95.

15. Robert Plank, 'Science Fiction and Psychology', in *Teaching Science Fiction: Education for Tomorrow*, ed. Jack Williamson (Philadelphia: Owlswick Press, 1980), p.166.
16. Jameson, *The Political Unconscious*, p.112.
17. *Ibid.*, p.123. Jameson's use of the term 'donor' in the following sentence means one who assists or enables the hero to achieve his quest.
18. Le Guin, 'Science Fiction and Mrs Brown', p.20.
19. Le Guin has not defined her use of the term 'ideology' in her argument mentioned at the beginning of this paragraph. However, because it appears to permit a reading consistent with the meaning I have intended elsewhere in this dissertation, it seems fitting to outline a definition at this point. At the end of a useful article surveying the epistemological, sociological, psychological and psychocultural approaches to the concept of ideology, the following synthetic and, I believe, heuristically useful conception has been extrapolated:

Ideology is an emotion-laden, myth-saturated, action-related system of beliefs and values about man and society, legitimacy and authority, acquired as a matter of routine and habitual reinforcement. The myths and values of ideology are communicated through symbols in simplified, economical and efficient manner. Ideological beliefs are more or less coherent, more or less articulate, more or less open to new evidence and information. Ideologies have a high potential for mass mobilization, manipulation and control; in that sense, they are mobilized belief systems.

(Philip P. Wiener, ed. in Chief, *Dictionary of the History of Ideas: Studies of Selected Pivotal Ideas*, Vol.II (New York: Charles Scribner's Sons, 1973) pp.552-563.) See also the discussion of the use of the term 'myth' on pp.91-92 in Chapter 3 below, and the discussion on the 'ironic' stage of educational development on p.127 and pp.151-154 in Chapter 4 below.

20. Robert L. Barthell, 'Science Fiction: A Literature of Ideas',
in *Extrapolation*, 13 (Spring 1972), 60..
21. Thomas L. Wymer et al, *Intersections: The Elements of Fiction
in Science Fiction* (Ohio: Popular Press, 1978), p.28.
22. Robert Scholes and Robert Kellogg, *The Nature of Narrative*
(New York: Oxford University Press, 1966), pp.13-15.
23. Maureen B. Smith, 'Science Fiction: Literature of the Socio-
Scientific Age' (Ph.D. thesis, Murdoch University, 1978),
especially pp.36-138. Smith's work has formed the basis of much
of the discussion on pp.26-28 of this dissertation.
24. Patrick Parrinder, *Science Fiction: Its Criticism and Teaching*
(London: Methuen, 1980), p.77.
25. Suvin, 'the Genological Jungle', pp.257-262.
26. *Ibid.*, pp.262-265.
27. Dubrow, *Genre*, p.117.
28. *Ibid.*, pp.102-103.
29. Rosenblatt, *The Reader, the Text, the Poem*, p.61.
30. Harrison, 'Science Fiction and Change', p.113.
31. Swinfen, *In Defence of Fantasy*, p.122.
32. Thomas M. Disch, 'The Embarrassments of Science Fiction', in
Nicholls, ed., *Science Fiction at Large*, p.142.
33. For an outline of Audrey Grant's work on identity theme in
reading, see her 'Literary Response as Story: Understanding
Response in the Context of Identity', in *English in Australia*,
68 (June, 1984), 3-13.
34. David Brin, at an informal discussion, University of Western
Australia, August, 1985.
35. Barthell, 'A Literature of Ideas', p.61.

36. Frank Whitehead *et al.*, *Children and Their Books* (London: Schools Council Research Studies, Macmillan, 1977), reproduced in part in Rhonda Bunbury *et al.*, *Children's Literature: the Power of Story* (Geelong: Deakin University School of Education, 1980), p.111.

PART 2 - THE TERMS OF A DEFENCE

CHAPTER 2: OPPORTUNITIES FOR ENGAGING IN MORAL
AND PHILOSOPHICAL SPECULATION AND DEBATE

2.1 A QUESTION OF ETHICS

Ethics, or moral philosophy is concerned with value as it relates to the 'moral' behaviour of persons in society. This includes ... the basis of ethical judgments that things are good/bad, right/wrong, moral-immoral-amoral; and the place of duty, obligation, consequences, freedom and responsibility in moral behaviour.¹

This chapter about moral and philosophical issues will explore the opportunities that reading these stories might offer to a developing mind. Not until Chapter 4 will these matters be brought together into a consideration of some of the specific capabilities that this literature might require of or engender in a reader. Examples have been taken from important science fiction books written for adolescents, as well as well-known texts from the general body of the science fiction genre, which could be considered generally accessible to young readers.

2.1.1 The Moral Value of Story

Ring-Rise, Ring Set (1981) by Monica Hughes, is a novel for adolescents. Set in the near future at the onset of a new ice age, it begins with a sixteen-year-old girl's efforts to escape the frustrating course of her life in a scientific research community living under a dome on the ice. Her escape from what is, to her, an unbearably sterile and depersonalized existence, leads her to near death in the frozen Arctic wastes and rescue and adoption by a nomadic 'Eko' community who mistakenly believe she is the reincarnation of a dead daughter. Liza finds, in the warmth and shared living of these 'People', an answer to her unfulfilled longings back in the dome, and she learns about love, inter-dependence and responsibility. The People appear doomed to starve, however, as a result of the scientists' chemical tampering with their environment in their attempts to avert

the ice, and Liza is faced with much more to worry about than her personal happiness and the growing up that was so urgent at the beginning of the story. The dilemma facing her, and on which she must act, forces her to place the survival of the People and their culture against the threat of death for the uncounted and unknown millions of the rest of the world's population. At least, that is the way the situation is presented to her, and it is very difficult to argue with the seemingly irrefutable claims of established science. Only by spraying the poisonous black mould on the snow, the Techs argue, can its progress be halted long enough to enable a way to be found for the deadly ring of particles to be destroyed. Liza's understanding of the People's need for the quality of the life they had always lived (Namoonie, her lover, is utterly reduced by his brief period of captivity in the dome) - forces her to reject the Techs' claims to the right to destroy their habitat for any reason whatever, and she declares at the end that the Techs have simply not taken the People's plight seriously enough in their balancing up of profits and losses. She places herself as a voluntary hostage back in the frozen waste with the People, to help persuade the scientists to, as she puts it, 'Look a little harder for an answer' (p.121). The fact, too, that she commits herself totally to the People by agreeing to marry Namoonie, underlines the searching questions about the quality of life with which this book occupies itself.

The moral questions raised here are numerous and profound yet the narrative is fast-paced and extremely readable. The story belongs to the extrapolative model described in Chapter 1. Its setting in the near future means that the civilizations in the background, dependent on the outcome of the drama being played on the snow, are recognizably similar to our own. Issues raised in the story all require thought in the real world of the present: the rights of the

technologically powerful to affect and irreversibly alter the lives of less 'advanced' communities; to impose dominant cultural structures and beliefs; to tamper grossly with ecological balances, or to regard the extinction of plant or animal species as being justifiable because necessary to their own survival. Stories concerning issues such as these are being played out in the present time in the modern, electronically enlarged world society that adolescents struggle to make sense of. A story extrapolated from the present contains the real possibility of speculation about immediate concerns of the human condition.

It would take a valiant and perhaps foolish individual to assert at this point that the relationship between literature and life is clear and indisputable; that question will doubtless occupy philosophers for a long time to come. It is, however, necessary to take a stand, to suggest that literature, as part of humanity's story-making predisposition, can serve the function of broadening the context of a reader's life, enriching the psyche and providing ways of making sense of society. Story often works as a model of a value system, from which the reader is distanced, as never in life, able to see the system and the issues raised as coherent wholes. Abstractions and generalizations are fleshed out and played out in intelligible ways; causes can be seen to have their effects. A reader has a direct but risk-free insight into issues which bear a greater or smaller relationship with what is perhaps best referred to as the *Zeitgeist*.

Though there may be no way of proving how knowledge of stories affects a person's judgments about life's real issues, it will be claimed briefly here, and taken up at a later stage, that stories at least supply ways of thinking about issues and can assist the development of coherent views, can engender the awareness that the world is shaped historically. In the past, storytelling was the

key way humans were trained in the virtues of their society. As societies were relatively stable, so a stable stock of stories and myths prevailed, and virtues remained constant. Our modern societies, with their rapid change, progress and fragmentation, have also provided an explosion of stories, and the oral tale and particularly the book have lost their monopoly as message and value-bearers. If stories are indeed the major way of understanding any society, including our own, then it is possible to make a strong claim for stories to be written and told, read and heard, highlighting the present and future concerns of our society, as part of the education of the young.

Moral philosopher, Alasdair MacIntyre (1981) argues powerfully that education into the appropriate virtues of our society rests in the stories we tell. His work lends itself to a defence of such books as *Ring-Rise, Ring-Set*, which will bear scrutiny as an example of a morally educative story. Science fiction is, if nothing else, a stock of stories highlighting the present and future concerns of our culture. To MacIntyre, the identity of the individual, to be intelligible, rests in the communication of histories. The 'self' is a narrative quest for the good in life as living traditions identify it. An individual's life is embedded in the larger histories of a society's traditions, and it is important to have an adequate sense of the traditions one belongs to, and which confront one. This is a virtue, according to MacIntyre, which 'manifests itself in a grasp of those future possibilities which the past has made available to the present'.² Science fiction stories are in important ways often about the present shared by author and reader, and the values being examined bear a direct relationship with present concerns. At their best, they could be described as forming part of the living tradition which MacIntyre describes as 'not-yet-completed narrative'.³ Adolescents are concerned with learning the larger histories of the

traditions they live in, and with the search to make sense of the world around them, not just the space they physically inhabit, but that wider world made constantly present to them through the electronic media. Adolescents must work out who and what they are, formulate their life plans according to an evolving narrative of their own identity in a changing world, work out what choices face them. Education may best be seen as helping the young to participate most fully and adequately in the world they inhabit and the moral issues confronting it. Adolescents' resistance to their school experiences may thus be seen as response to their perception that traditional curricula are *not* meeting this need in the present world.

Stories such as the best science fiction stories do not necessarily provide solutions to the problems of the present or future but they provide clear-sighted and provoking alternative ways of seeing familiar things. They can liberate readers from the contemplation of conditioned alternatives. A closer look at *Ring-Rise*, *Ring-Set* may cast light on how this works.

Liza is not a faultless heroine in the story. Indeed, the behaviour she exhibits at the beginning shows immaturity and a thoughtless disregard for others and for the consequences of her actions. She places the whole scientific expedition in jeopardy by stowing away, consuming precious rations and causing a great waste of time and energy in the search that must be mounted for her. She is, also, both less and more than a simple mouthpiece for the author's viewpoint about the issues raised. She is less, first, because of the ambiguous relationship she shares with the narrator and because of all the things she must learn; second, because she realizes that her concerns are so much less important than those of the People, whom she sees in danger. What starts as the story of Liza becomes the story of the People, the Techs and the problems facing the possible destruction

of the whole world's population. In that sense, Liza subordinates herself to her sense of the world she inhabits. She is more than a mouthpiece, on the other hand, because of the independence she appears to be given. In the midst of the great dilemma, Liza is not necessarily given the role of having the answer. The problem is simply too big and its implications too wide. She does, however, take an opportunity to act and be responsible for her actions, to take a stand against what she sees as a too-easy assumption of inevitability in the scientists' solutions. Whether she is correct or not, neither she nor the reader is privileged to find out within the bounds of the story, though her concern and her assumption of responsibility are clearly applauded. The issues are not finished with, in an easy salve to a reader's anxiety, as indeed, of course, these same issues continue unsolved in the real world. They are a part of a modern 'not-yet-completed narrative' of critical importance. What would make a work such as *Ring-Rise*, *Ring-Set* defensible in moral terms according to McIntyre or Fred Inglis (1981), whose work is also of importance here, is the optimism of the story, the sense that the life of Liza, the protagonist, and the lives of all the People are worth living, that her efforts to make sense, first out of her own life, then out of the problem facing her, are worthwhile. Liza's life story is a quest for the good in life for herself, for humanity; a sense that she be accountable for what she does, and a strong demand that others, particularly the scientific community, be accountable also, instead of declaring reduced responsibility for their actions, sheltering behind a dominant attitude of scientific determinism. Liza is successful in stinging the Tech chief, Master Bix, into a rueful admission of his awareness of this accountability, which weighs heavily upon him, in contrast to the simpler, more arrogant stance of his subordinates, and it is this striking moment which provides the book with much of its ultimate

optimism. This book allows the reader to believe that the human species *might* rise to the challenge of coping with its environment, both in using its technology to avert disasters, and in preserving and managing in a sympathetic and morally responsible way, the lives of the people, animals and plants existing symbiotically upon the Earth's surface.

Ring-Rise, Ring-Set belongs to an enormous body of science fiction literature dealing with the possible end of the world. The fact that there has been so much of this literature written in recent years surely indicates a psychological trend reflected and expressed by author and reader in their demand for and supply of such stories. They face together the reality of the peril of the destruction of the world. That anxiety, however, forms the subject of a separate section (see Chapter 3). Here, it is important to link global catastrophe stories and ways urgently sought and found to deal with disaster and destruction, once again with McIntyre's notion that societies' morals are told in stories or episodes. Many science fiction stories are modern moralities, presenting tests of human values in changed circumstances which, nevertheless, often reflect modern concerns. Science fiction stories typically give voice to hope, fulfilling thereby an important and popular role with the reading public. Humanity *may* be able to 'look a little harder for an answer' in *Ring-Rise, Ring-Set* and elsewhere, and this book affirms with the best science fiction for adolescents, the taking of risks as being necessary to life. The constant threat of destruction hangs over the characters in the story, and death is a reality faced more squarely as each winter passes, by Liza and her People. There is a strong risk of failure at the end, and there is certainly no infantile assurance that the problems will be easily solved. Liza is not an extraordinarily endowed super-heroine, assured of success. The scientific community is not simple-mindedly condemned, despite severe criticism of its world view.

Nor are the People presented as noble savages with answers to life's mysteries lost by 'civilized' humans. The People and their way of life are in need of protection, not emulation; their vulnerability is clear and moving; it is also clear that the world should not, indeed could not, solve its problems by becoming like the People. So what is worthwhile? The taking of risks to find proper solutions is worthwhile. Life itself is affirmed *through* fear of destruction and death. An important motif in such stories is the chance given an individual to do something of worth to overcome the blanketing determinism of the bureaucratic world view. This chance is frequently, as here, afforded ordinary people, with the author acting as a representative of the general populace. The opportunity for characters and also readers to see and act on the consequences of technological development and to understand the inevitable interconnectedness of science and society, and the chance to confront the miserable certainties of change as a challenge - are matters to be defended vigorously in books written for and read by adolescents.

Science fiction literature in general can be described as registering the ideologies of our time. Together with the beginning and end of the world are ideologies of machines, of aliens, of social and gender relations, of immortality and of nuclear destruction. These form more than mere plot formulae; they recur thematically in story after story, and, taken as a body, can be read as an ideological history of the twentieth century, chiefly, of course, a white Western ideology. Books written for adolescents, too, often express the ideological concerns of the community the author feels she represents. Before leaving this brief discussion of the defensibility of science fiction on moral grounds, it is necessary at least to mention that ideological assumptions are always implicit in literature and criticism, when moral judgments are being made. In the above discussion of *Ring-Rise*,

Ring-Set, for example, there is tacit but clear approval given to Hughes's implied judgment that technology alone does not provide the answer to all life's questions. It is impossible to avoid, and better to face, particularly in an educational context, the fact that these value assumptions are present. Too often, educational material is falsely assumed to be value-free, when in fact many factors influence its discussion, selection and presentation. In Chapter 5, criteria for the rejection of certain works of science fiction, or at least for strong reservations regarding their approved use in schools, will be outlined. The value position implicit in the forming of these criteria will necessarily be a widely acceptable form of liberal humanitarianism, so that books projecting militarism, blatant racism or sexism as well as nihilistic or overly cynical world views will be, most likely, rejected. (This value position has been adopted here for the purpose of presenting the arguments coherently; that is, it has been adopted for its appropriateness rather than its adequacy, which is not subject to question here.)

2.1.2 Optimism and Pessimism

The possible moral value of science fiction for adolescents, however, lies not so much with what a particular work is *about*, but in what it *is*, or what it enables a reader to create out of it. That this is inextricably linked with aesthetic enjoyment is undeniable, so that this concept bears a relationship to C.S. Lewis's notions of 'Logos' and 'Poiema'.

The notion of Poiema (something *made*) implies the construction of the form or shape of the work. It requires a reader to experience the pleasure of what might be called the 'fittingness' of the Poiema, in the act of *making* it. The Logos (what is *said*) requires the Poiema for the text to be a literary work at all.

Lewis's ideas may allow an insight into the reasons for the 'fittingness' of certain science fiction texts for adolescent

readers. It is possible to argue that texts and adolescent readers share ways of constructing views of the world, in an important sense. Adrift from childhood's acceptance of the world-as-it-is, adolescents must construct views which are adequate for their sense of their emerging identity. The preoccupation with 'worldness' in science fiction examined in Chapter 1 means that a reader is engaged in an act of 'world-making' which must be coherent and at least internally consistent. The obvious and very important point to consider here is the future orientation of much science fiction and the optimism of its visions.⁵

Leaving aside those works to be criticized or rejected later on ideological grounds, it seems clear that writers of science fiction can usefully be described as having a more or less optimistic view of the future, and that this might have significant moral and educational implications, as well as a strong influence on a reader's aesthetic pleasure, as she constructs the Poiesis of the work.

In a recent article, Joseph O. Milner (1985) has identified a strong dichotomy between what he calls the 'meliorist' and the 'reactive' world views expressed by science fiction writers. He defines the first as 'celebrat[ing] the progress of man and the hope that civilization is in some broad fashion moving towards an almost Edenic state', while the second is 'a more sceptical view of man's pilgrimage. It sees mankind as basically flawed, unable to progress and forever caught in the tension between its angelic and bestial nature'.⁶ These two views could be summed up, too, as on the one hand hope for, and on the other, fear of the future. They are manifested significantly in the two types of modern science fiction narratives identified respectively by Suvin as analogical and extrapolative (see p. 30 above). The correlation between the terms is a significant, if not a necessary one, with some interesting cultural implications.

American writer, Sylvia Engdahl, whom Milner describes as belonging squarely in the meliorist camp, writes of far-distant futures, where humanoid civilizations have achieved higher levels of intellectual and moral understanding. In *Enchantress From the Stars* (1970) and its sequel, *The Far Side of Evil* (1971), Engdahl expresses what Milner has identified as a 'developmental' view of civilization's moral growth. The technically and morally advanced society, to which the female protagonist belongs, and for whom she works on 'youngling' worlds, is presented as truly good, and also something to which humans are capable of aspiring. The world of the first novel; Andrecia, bears strong resemblances to Earth's medieval past, while its invaders, as well as the inhabitants of Toris, the world on which the sequel is set, are obvious parallels to the humans of modern Earth. Individuals in all youngling cultures are shown to be capable of transcending the limitations imposed on them by the stage of development of the majority of the people on their own worlds, for example, Jarel in *Enchantress* and Kari in *The Far Side of Evil*. The implications are clearly that, by analogy, our modern society is in an adolescent phase of moral development, and we are given the possibility of hope that human beings can ascend the hierarchy to the fully adult 'post-conventional' stage. (Kohlberg's stages of moral development are usefully compared by Milner to the three stages enacted by Engdahl's three worlds.) Elana's people are altruistic, and willing to sacrifice themselves for a perceived higher good. If humanity survives the critical transition period from a lower stage to the higher, there is a future for them, too. In *Heritage of the Star* (1973), the Scholars are prepared to devote their lives, completely against their personal inclinations, to maintaining a rigidly hierarchical social structure, and to propounding a false religion in order to give their people their only hope of survival. They

maintain and preserve, by religious mystification and cant, the life-giving technology on the hostile world on which they are refugees, while they devote themselves to solving their urgent technological problems. The moral questions concerning this vision of society are given a more complex and certainly more problematic treatment here than in the earlier series. Indeed, in the sequel, *Beyond the Tomorrow Mountains* (1973), the protagonist is sympathetically shown undergoing all the mental torture of a full-fledged existential crisis, as he questions whether in fact there is any hope for the future, and therefore any point in maintenance of the social structure and, indeed, in continuing existence. Significantly, it is the moral uncertainty and ambiguity of this second volume, as much as the increased complexity of the narrative, that places it frequently in adult rather than adolescent shelves in libraries and bookshops.

Milner points out the dichotomy between meliorist and reactive writing. He contrasts the salvational works of Engdahl to the darker visions of the world of John Christopher's 'Tripod' trilogy. While he claims that most science fiction is to some degree reactive, it might be just as accurate to suggest here, that most, too, are to a significant degree meliorist. Hope, in other words, can blend with fear in the evocation of most worlds. This difference in emphasis can lead to a perhaps more open-minded analysis of works which do not pulse with quite such utopian fervour as Engdahl's. It is useful to turn briefly again to *Ring-Rise, Ring-Set* to begin to answer the concern expressed by Milner about any works foregrounding the darker possibilities lurking in the human future. This book appears to fulfil the four categories of the reactive novel identified by Milner, at least on a surface analysis. First, the natural disaster threatening the world is accompanied by a depiction of a depersonalized society, prepared to override the People's rights in order to solve

the problems facing it. Mainline culture is opposed by an outsider, an adolescent girl who does not fit in, and who must ally herself to the more primitive community to find acceptable values for living. She is the sceptic, the questioner, yet ultimately the guardian of important moral values. Second, the view of history appears to be anything but developmental, with death of the human race or guilty survival (depending on the destruction of cultures and habitats) seeming to be the only two real alternatives posited. Third, technology appears to be an evil, or at least a dangerous and improperly controlled tool, blinding people's eyes to questions of great moral importance. Finally, the formal storytelling elements correspond to the reactive pattern with a simple, single-layered narrative approach. The story is told from Liza's viewpoint alone and no other minds are entered. It would, thus, be possible to establish that *Ring-Rise, Ring-Set* is, as are most works according to Milner, reactive to a significant degree.

To look more carefully however, reveals the hope and the more complex view of reality offered by this work, which have already been discussed in some detail. First, there is the development in the character, Liza, herself. While the story is told from Liza's viewpoint, it is always possible for the reader to decide that Liza's judgments are not entirely reliable. Indeed, during the course of the book, the reader, who, not being involved like Liza, can judge more dispassionately, gains insight into the fact that there are at least causes and reasons for the depersonalized state of the research station's societal structure. There is regret expressed for this state of affairs by Master Bix, and a resolve to learn from Liza's crisis, to improve matters. Here too, Liza has an actant role, and the possibility of being of significance. The primitive community, while presented sympathetically through Liza's eyes and perhaps

nostalgically by a background narrator or author, is never posited as a simple alternative to technologically advanced modern humanity. In fact, technology itself is not the evil Milner claims it is in the Christopher trilogy. The true villain here emerges as an *attitude* towards science and technology, an attitude of reduced responsibility and deterministic arrogance. Technology will have to provide the solution to the problem of the ring, but it must be, Liza insists (and the reader is justified in hoping), a technology managed by human beings with a proper concern for questions of the value of human life and of responsibility for, born of power over, the physical environment. Finally, the narrative structure is not as simple as it initially appears, because of the complex interaction of the voices within the story. The relationship between Liza and the implied narrator is ambiguous, as has been shown, while Liza herself comes to 'see' things differently as the story unfolds. The People's viewpoint becomes clear as Liza is empathically involved with them. Master Bix has several important interviews with Liza during which Liza and the reader gain important insights into the scientific community the way Master Bix sees it. And in the confrontation on the snow at the end, it is Liza and Master Bix who are at least able to achieve crucial communication about the central concerns, while the others stand on. Significantly, too, towards the end of the story, the telling voice is taken briefly from Liza, and Master Bix is foregrounded in the dome, plotting what will become that final confrontation and dénouement. The hope comes from that encounter, and Liza's achievement is seen as having provoked it.

Milner may be justified in his concern that works which are strongly of the reactive view receive greater currency in the public arena (including schools?) than those of the meliorist view. On the other hand, it is often in the former that glimpses of

'possible salvational futures' can be inferred (Jameson, 1981).⁷

Patrick Parrinder (1980) has pointed out that fables which are dystopian in that their worlds are negatively valued in relation to our own, are often extrapolations or analogies in the form of warnings. Just as frequently, however, they present battered but functioning affirmations of humanity's ultimate humanness. There is always hope, even in the most degraded society, if it produces the outsider to criticize it, reject it, set out to change it or transcend it. In this way, such works as *Ring-Rise*, *Ring-Set*, the 'Tripods' trilogy, or even *Z for Zachariah* are meliorist in an important sense. In *Z for Zachariah* by Robert C. O'Brien (1975), civilization has been destroyed in a global nuclear disaster. But it is not technology itself which has done this; the implication is rather that it is the power-wielding of acquisitive, instrumental and destructive males, personified by Loomis which has brought and continues to bring disaster to the world. This is a surprising novel with quite a powerful humanist argument. The symbolic exchange of roles at the end, when Ann takes the science suit and sets off to find other survivors, as Loomis had done in the beginning, suggests that Ann may get the chance to succeed this time around.⁸ In this book, as in major works of 'adult' science fiction accessible to adolescents, such as Thomas Disch's *334* (1972), the theme concerns life itself, the resilience of humanity, the worthwhileness of continuing despite difficulties. This existential affirmation does not preclude the possibility that humans really are 'younglings' in Engdahl's second stage of development, with further evolution and enlightenment around the corner, but it does reject the nihilistic or entropic world visions of J G Ballard, for example, and much New Wave writing of the nineteen sixties, as well as some modern works such as the 'punk' novel, *Neuromancer*, by William Gibson (1985). While not questioning the undoubted literary merit of some of these

works, it is clear that they are not 'helpful' in educating the young to participate in making sense of the moral problems of the future except, perhaps, in the case of an exceptionally mature or gifted reader.

As part of a school reading program, science fiction may provide works examining both optimistic and pessimistic hypotheses. The important issue is often what use the individual works are to be put to. There is, of course, no question that adolescents need to be, or would consent to be, infantilized to the degree that only shining visions and facile solutions are entertained. Indeed, the concept of the utopia gains its meaning and significance from a clear-sighted image of its opposite, and vice versa. An important point to stress in the moral evaluation of literary works is the integrity of the vision and its truthfulness to its creation, rather than some kind of mandatory happiness engendered out of some desire for suitability to a particular audience or market demand. Peter Nicholls (1979) writes:

The casual insertion of a happy ending
or a few improving messages no more
constitutes true optimism than an
awareness of the difficulties of life
either now or in the future constitutes
true pessimism.⁹

Science fiction deals with moral questions of critical importance to our modern world, from environmental protection to questions of the privacy of individuals in an age of computer data banks. In general, however, it is possible to claim that science fiction sees life as progress, as at least existing in the future, as adapting one way or another to changing circumstances, as something worth writing about.

2.2 ENGAGING IN PHILOSOPHICAL SPECULATION AND DEBATE

Our only hope of understanding the universe
is to look at it from as many different
points of view as possible.

(J.B.S. Haldane)¹⁰

2.2.1 The Opportunities Offered

As moral questions are a matter for philosophers, so too are many of the other issues that form the subject matter of science fiction works, and it is through science fiction, the 'literature of ideas', that its many readers gain insights into, and are able to participate in, profound questions concerning the meaning of life that they arguably would not have access to otherwise. The dichotomy between 'high' and 'low' culture is a political and social phenomenon, and where the social barriers are bestridden, as in the case of science fiction, the issues may emerge powerfully. In science fiction the split between art and science, Culture and the individual may be effectively closed.

Philosopher Robert Myers (1980) has written an extremely thought-provoking article highlighting the parallels between science fiction and philosophy. He uses science fiction texts in his own university philosophy classes, and provides titles to back up his claims. As he writes so succinctly, it may be helpful to quote some of his argument here. After noting that science fiction and philosophy share, at the least, 'family resemblances' of concerns, questions and central focus, attracting people who are 'reflective', who are fascinated by ideas and who have an interest more in possibilities than 'just the facts', he goes on:

For example, practitioners in both fields may ask: *What if*: - this present tendency goes on unchanged? What consequences will follow? - one commitment of our belief-set is indefensible and is changed? - one part of our sociopolitical framework were to change and/or become dominant? -- one of our creations were to win control over its creators? - God were far different from what the main religious traditions have led us to believe? - our thinking process were somehow altered and the accepted criteria for distinguishing truth/falsity were thus changed? - technology were more value-laden (good-evil) than we believe it to be? - human beings were readily expendable and replaceable and thus of little value.¹¹

Myers provides a useful description of the main branches of philosophy: epistemology, metaphysics, logic, axiology (aesthetics and ethics) and the philosophies of specialist disciplines. He correctly and helpfully links each of the branches in their purest academic form with real and enduring questions of meaning concerning all humans, which, he claims, are made accessible through science fiction stories.

Many works of science fiction, and a significant portion of those written for adolescents, address themselves to philosophical matters. These are the works described in Chapter 1 as 'didactive' or as 'fables', those which require of a reader that she engage on a more abstract level, beneath, behind or through the events of the story to infer meanings and significances applicable in some way, and on a more general plane, to the reader's and author's shared construct of the 'real'world. The ways in which a reader may engage intellectually with such works must be discussed at this point. To do this, it will first be necessary to take an (unfortunately all-too-brief) glimpse at some of the opportunities offered the reader by this literature.

It has already been mentioned in this chapter, that to read and understand a didactive work of science fiction is to be invited, if not compelled, to consider other than conditioned alternatives to life's problems. As a body of works, science fiction accepts any premise and denies certainty. Its collective open mind offers and promotes creative questioning, and at its best it overturns assumptions implicit in the television programs and the more banal fiction frequently encountered by adolescents. Science fiction illustrates the strong possibility of things being different from what they are, and promotes tolerance for this difference (Wendell, 1980).¹² Stories function to provide intelligible images of futures or alternative presents

with which readers can inform their understanding of their lives and their world. Thus they may serve, not only to educate the community of their readership in the virtues of societies people may have to live in, as was argued at the beginning of this chapter, but they can also help to prepare people intellectually to comprehend the nature of the rapid changes that will inevitably occur. The tension between permanence and change is the potential energy to be generated by a reader of one of these texts.

Science fiction presents to its readers a stock of possible cosmologies or coherences which shape and interpret the bewildering if not overwhelming agglomeration of raw data assailing the senses. In a series of articles in science fiction magazines and journals, science fiction writer Brian Stableford (1974) has developed his argument that science fiction functions in this way as a tool of adaptation; he thus allows other than literary or aesthetic criteria to govern the criticism and evaluation of this literature. He stresses that it is often the material contained within a particular text, the 'Logos' mentioned by Lewis, which is significant. The quality of the idea, which can be extracted and examined, perhaps reapplied in another context more directly pertinent to the author's and reader's real world, may form a criterion for a kind of evaluation which, no doubt, has purist literary critics shuddering in revulsion and repudiation. Science fiction's 'cosmic perspective', according to Stableford, is useful to readers in adapting to the present, serving both to familiarize readers with the accelerating velocity of change, and to demystify science and its diversification into technology, all of which is very hard for the non-scientist to comprehend, whether in the domestic area or in the world at large. He sees the reading of science fiction as helping the individual to self-reorientate in response to the perception of change. The imaginative landscapes

of science fiction provide the reader with the capability to put real, ordinary life into the context of a cosmic perspective.¹³ While all this has obviously a strong emotional significance, and needs re-examination in the light of the responsibility of educationists towards the affective education of adolescents, it has also considerable implications for an individual's intellectual development (though it is, of course, in reality spurious to attempt to separate the two).

The strong presence of 'worldness' in science fiction narratives can help develop in a reader the ability to see the world as a whole, or a system, and to judge it. 'No other field of the arts', wrote Barthell (1972), 'displays such experimentation by the conscious mind. Entire civilizations can be subjected to experimentation and the results noted'.¹⁴ In this way, then, the reader is given frames to think by and through. The creative, often inspirational openness of the worlds and life forms presented can even challenge the inevitable anthropocentrism of the past and of unexamined notions of the present and future, though it will be seen in Chapter 5 that this is indeed an openness which is an ideal rather than an actual achievement for the bulk of published work.

Adolescents coming to stories offering these kinds of opportunities can gain, in summary, exciting new perspectives on life. They are liberated from the frames governing their daily life. Ideally they may become less conservative, more open and more ready to envisage alternatives. Most importantly, perhaps, they may become involved in the 'not-yet-completed narrative' of the destiny of humanity. In this way, science fiction narratives can serve to *empower* adolescent and other powerless groups and even act as agents of change.

The only way to be convinced of the validity of this argument for science fiction's educative potential, however, is to gain a wide, first-hand knowledge of the literature. Examples plucked from the

many thousands of texts can, no matter how brilliant or profound, illustrate nothing except the works' own individual excellences, though they can at least stimulate teachers to read and find out for themselves. For our particular purposes here, it will be most informative to take Robert Myers's speculative questions (quoted above) as a starting point for a brief journey through science fiction texts an adolescent might easily discover for herself.

Many of the extrapolative works of science fiction speculate on what would happen if a present tendency were to remain unchanged. *Children of Morrow* (1973) and its sequel, *Treasures of Morrow* (1976), by H.M. Hoover, examine a world poisoned by pollution. Only two communities survive, one the descendants of a military establishment which had guarded a nuclear weapons arsenal and had sheltered in a bunker which had protected them, and one a scientific community whose founder had planned underground refuge when the disaster seemed imminent. While the ecological catastrophe is a thematic backdrop to the story, the main interest lies in the exploration of the two societies which have emerged as a result of these conditions, the one patriarchal and rigidly repressive and the other technologically advanced and creative, tolerant and humane. The question of evolution to a higher order with telepathic mutation is considered with interest, and the whole is carefully examined from the point of view of the causes of the differences between the two communities, and the ways in which they have adapted to their changed environment. Within this world, the extremely exciting story of Tia's and Rabbit's escape from the one community to the other is played out.

The question of belief sets is imaginatively examined in another of Hoover's recent works, *This Time of Darkness* (1980). A terrifying world is created where vast underground cities contain uncounted millions of people crowded together in miserable disease-

ridden subsistence. These people believe first, that their city is in a huge tower, and second, that there is no possibility of life in the desolated Outside, which nobody had ever seen because the cities have no windows. Two young children manage, by extraordinary perserverence and intelligence, to escape. Reality emerges shockingly, piece by piece, focussing on the bases for belief, and building a provoking and disturbing fable which points to more than one level of critique of our own society.

The number of books exploring social and political ideas is almost endless. From the utopian spirit of the anarchic society and the decadent materialism of the parallel worlds of Ursula Le Guin's *The Dispossessed* (1974), to the entirely novel, morally defensible caste system in *Heritage of the Star*, the adolescent reader of science fiction will gain striking images of different ways of ordering human behaviour, and different ways of viewing reality, value and truth. On the Earth governed entirely by multi-national corporate states of *Return to Earth* (Hoover, 1980), for example, the old man Galen comments ironically:

Owning *real land* carried a certain prestige,
as did owning serfs - if one was discreet
about it and referred to them as 'base-level
personnel'. Galen smiled at the thought;
it sometimes seemed to him that all reality
could be negated by terminology

(p.11).

The question of the identity of God is frequently translated into the mind-stretching theory that highly-advanced societies will appear godlike to lower ones, and many attempts are made to explain the recorded religious experiences of a culture's youth in terms of early visitations of galactic intelligences, from the Guardians of *Childhood's End* who appeared as devils, to Elana herself in *Enchantress from the Stars*. The evolution of a god or devil figure in the minds of a primitive people is traced sensitively in the three 'Isis' novels

by Monica Hughes (1980-1982). Olwen has been adapted physiologically by her robot guardian so she can survive the harsh radiation and the thin atmosphere of Isis. The colony of settlers interrupting her total isolation on this planet reacts with horror to her appearance. She leaves the area and lives with the robot alone until she dies as a very old woman. She becomes 'That Old Woman' in the minds of the next generations of settlers and is superstitiously blamed for evil and bad luck. This anthropological exploration is given great power by the touching loneliness of the girl Olwen.

The thinking processes, indeed the whole question of the identity of humanity, are themes adolescent readers will encounter frequently in science fiction. A popular book recently made into a film, Philip Dick's *Do Androids Dream of Electric Sheep?* (1968, film title *Blade Runner*), is a short and very readable account of the blurring of the boundary between human and android. The latter have been created by humans and have reached such a high stage of sophistication that they are difficult to distinguish. They desire to live on Earth, from where they are exiled if they do not conform to their rigid behaviour specifications. They struggle with emerging emotions, and attempt to form relationships with humans, but are dangerous and must be destroyed. That is the protagonist's job, but he too becomes sympathetic to what he senses is their emerging humanness, or life. Confounding the issue is the parallel dehumanization of humanity, on an Earth which is rapidly being depopulated, due to poisonous levels of radiation. Those left count the possession of animals as their highest symbol of status, since they are so rare. If a person cannot afford a real animal, an electric one with the appearance of life, is an acceptable substitute. Otherwise, they insulate themselves from reality by dialling comforting mind-states from a mood organ. This is a provoking and accessible speculation

about what constitutes life and what constitutes humanness.

The control of humanity by one of its own creations is the subject of many horror stories from gothic novels onwards, and inspired by the seminal *Frankenstein*. In modern science fiction, this most often takes the form of takeovers by robots or computers. (An extremely popular whimsical story which must be mentioned here, however, is Clifford Simak's *City* (1952) where, over a number of generations, humans decline and the world is populated and organized by an endearing group of domestic dogs overseen by an immortal robot.) The value-laden nature of technology, becoming a pressing issue in the modern world, receives considerable attention from science fiction writers. Most interesting and readable among these is perhaps D G Compton's *The Electric Crocodile* (1970), which tells of a takeover by a technocratic elite with the use of a computer (the negative view) and Robert Heinlein's *The Moon is a Harsh Mistress* (1966), which shows the potential of computer technology in achieving social goals (the positive view). Two frightening and thought-provoking works have been written for adolescents on this topic in recent years. *Tomorrow City* (1981) by Monica Hughes, for younger readers, tells of a city's computer, designed experimentally with the best intentions to abolish inefficiency and social deprivation, which programs itself to take over completely, beginning with the city's children. The problem is that the computer's designers have not understood how a computer thinks and have not probed the logical endpoints of the aims they programmed into the computer. The computer, unaffected by questions of emotion and morality, does so, and the result is extremely dangerous and almost catastrophic. The second, very provocative work also explores the last of Robert Myers's 'what-ifs' and will be discussed in a consideration of the last of his speculative questions.

The expendability of human beings is a recurrent preoccupation of science fiction writers. In Robert Westall's *Futuretrack 5* (1983), a computer is programmed to assist in a monstrous plan to alter completely the population balance of England. This is an ingenious extrapolation from present social trends in England, with the effete aristocracy, the largely 'punk', violent and lawless urban proletariat, a small number of technicians to run the computer, a police force and an imported para-military force, and last, a small group of people living seemingly 'normal' lives in an enclave on the Fens. One man has created a game out of this. The plan, it emerges as the story progresses, is to leave the 'Ests' alone, since they are the inheritors of the Earth, to let the 'Unnems' die out, by violence and by drugs which debilitate them and render them incapable of reproduction, to destroy and empty the rest of Britain through similar means, and to 'breed up' the picturesque Fen people to repopulate the island, with the ultimate aim of a new Feudalism. Scott-Astbury himself never appears directly in the novel, but his scheme appears to be invincible.

Diana Wynne-Jones goes even further in *The Homeward Bounders* (1981). The metaphor of humans being pawns in a game is brought to literal life with some sinister aliens using parallel worlds, including Earth, as enactments of a complicated series of war games. Discovery of this leads Jamie to become a random factor and he must wander the boards, condemned to switch worlds as each move is completed, trying at all times to get back home. Despite the nightmare quality of this idea, and the dark threat of nuclear war hanging over Jamie's world in the future, the book is ultimately optimistic, as Jamie, exiled forever, is able to find a way to control the reality which had been slipping from humanity's grasp.

This brief journey into some of the philosophical speculations likely to be confronted by a young reader of science fiction, relates, of course, to the total range of ideas in this literature as adequately as a jump into orbit around the Earth relates to the total expanse of our galaxy. Critical journals and published works of science fiction history and criticism make fascinating reading, but the only way to appreciate the richness and diversity of the literature, is to become a reader of it.

2.2.2 Science Fiction: A Provocation and a Game

Science fiction was described in Chapter 1 as the literature of cognitive estrangement, and it is to the cognitive element in science fiction that this last section of this chapter addresses itself.

A reader may expect in a work of science fiction a respect for fact, a connection, however tenuous, with what *is*, and she must respond, at least partly, on a cognitive level to the narrative. It is this significant connection which allows for science fiction's stimulus to the initiation of argument. This important point will be developed in later chapters. The ability of science fiction to deal successfully with many philosophical questions facing humanity rests, to a significant extent, in its engagement with 'the fantastic' and its subjection of fantastic narrative elements to cognitive examination.

Irwin (1978) is enlightening on this point:

Of the novelists who represent and interpret the modern temper, many deal in the fantastic. This seems inevitable, for as computers, automation, surgical transplants, various 'mysticisms', pollution, drug culture, poverty and revolution, potentials for mass destruction and foreign policies that gamble with disaster have become part of daily experience, the present has become a time in which the fantastic is familiar as it never was before. It permeates our present culture.¹⁵

Modern humans are exposed daily to things they do not understand, and which, therefore, may as well be magic. This is as

true for most people for the electric light switch as it is for the most advanced computer technology. Science fiction subjects the material of its narrative to cognitive scrutiny so that it is possible for a non-scientist to comprehend the organizing patterns of the imagined world, and even, potentially, the principles of the operation of its component parts, if that is what the author wishes to foreground. In this way, things which go beyond our knowing or proving, may become meaningful. Texts act in this way to overcome a 'crisis of motivation' in the reading public (Habermas, 1976).¹⁶

A reader's sense of fact is respected in science fiction, despite the dangers that exist when extrapolations move far from the known. To engage successfully with the work, as has been mentioned, the reader is required to examine what she believes to be true. This is a role for the reader which is subtly different from that which is enacted when reading a work of ordinary fiction. In the area of philosophical speculation or debate, the reader must accept that the story in question is offered as a hypothesis whether seriously, satirically, speculatively or even gratuitously, for fun. Edward de Bono, inventor of the concept of 'lateral thinking', describes how science fiction can provoke a reader to think philosophically. According to de Bono (1976), works of science fiction create a provocative hypothesis which allows a reader to look at things in a new way, whether for enjoyment or insight. Because it can move into the future, it has total freedom of provocation. However, provocation has to be related 'semi-logically' to the existing stage of affairs, or it is meaningless.¹⁷ The reader must make the connection. In real life, existing concepts are often accepted as inevitable because no alternative is imaginable. It is one of the functions of science fiction to act as a de-patterning device, to offer random juxtapositions or stepping stones from the present to

the fictitious situation. The reader is thus removed from her real situation to see it objectively. A single change in a concept is followed through in many or all its significant implications. As with lateral thinking, it is only necessary to follow them logically, not to believe in them in their own right. The purpose of provocation, according to de Bono, is to take readers on journeys outside their usual mindset - but then to bring them back to the old things seen in a new way. Many writers of science fiction set out to change the *direction* of a reader's vision.¹⁸

De Bono's last comments are similar to those inspired by Ann Swinfen's concept of 'liberated experience' explored in Chapter 1. Here, though, is also the notion of intellectual training, the idea that the literature is a tool for the training of perception, for the development of the ability to wonder. Through disjunction and estrangement, familiar things are perceived through new eyes (McLuhan, 1974).¹⁹ Swinfen's emphasis is, of course, largely upon the quality of aesthetic experience.

To gain a brief glimpse at how this works, it will be helpful to look at an example. Punishment is the subject of 'To See the Invisible Man' (1962) by Robert Silverberg. The protagonist is punished for the crime of coldness by being made 'invisible'. This means that he carries a mark on his forehead and no other member of society is permitted to acknowledge his existence. The story follows him through his year of mental exile, exploring the practical implications and logical consequences of such a punishment. This is a purely imaginative exercise in 'what-if', though part of its strength lies in the powerful image of the invisible man. It provokes an evaluation of its internal logic, its plausibility of execution and, conversely, the logical coherence of existing concepts of punishment in the reader's world with which it will be subconsciously

compared. This is an intellectually pleasurable activity, combined in a story with quite a powerful emotional charge.

This process of comparing of two realities is a common feature of estranged texts, and goes on in most readers most of the time below the level of focal awareness. Only when this is highlighted through reflection or discussion, for example in a school classroom, will the automatic mechanism be exposed to conscious scrutiny. A reader must have this capability in order to engage in any science fiction texts which rise above the banal. To evoke and interpret science fiction works stimulating social critique or philosophical reflection, the reader must participate in a kind of mental game. That is not to say that she may not be emotionally or empathically involved in the fate of a character or the image of a world or an event in the narrative, but that, together with this, is a cognitive stance, a kind of 'disinterest', a monitoring of the narrative elements for their internal logic and consistency, and for their meaningfulness in relation to the real world. Non-belief in the events, a willing departure from the real, is a primary requirement before the reader can engage in 'believing' the fiction. The reader is placed between evoking the story in a personal way, and accepting the objective reality implied by the text. Whatever else it is, a reader's personal evocation of a text is a realization of her experience of 'what life's like'. Together with the evoking of the work comes interpretation, a story retold in the reader's mind. The reader tests the fictitious world of the science fiction story against her knowledge of science, humanity and the world. In this way, both the world of the story and the real world may be framed as theoretical models.

Augusto Boal (1981) defines his term 'metaxis' as the 'interplay between the actual and the fictitious'.²⁰ He is writing about theatre and acting, but the appropriateness of the term to

describe what happens in the mind during reading is clear when the author's and reader's roles are compared. The engagement of both in the creation of the work is characterized by the act of holding two worlds in mind at the same time. If the world of the story can be related satisfactorily, on whatever level, to the real world, the reader can respond 'as if' the fiction were real. This is the element of 'game' that is vital to the reading of a work of cognitive estrangement, and essential to the evocation and appreciation of the particular mixture of poetic and philosophical elements in science fiction narratives. This element of 'game' relates significantly also to the opportunity certain kinds of science fiction narratives offer to develop the capability to read and comprehend irony. This important point will be discussed further in Chapter 4. The notion of 'game' is crucial to the 'fun' of science fiction, a fact that must not be overlooked, since no matter how 'serious' the philosophical impulses responsible for the creation of a particular work, this literature is very rarely solemn!

NOTES TO CHAPTER 2

1. Robert E. Myers, 'Philosophic Insight through Science Fiction: Focusing on Human Problems', in Williamson, ed., *Teaching Science Fiction*, p.181.
2. Alasdair McIntyre, *After Virtue: A Study in Moral Theory* (London: Duckworth, 1981), p.207.
3. *Ibid.*
4. C.S. Lewis, *An Experiment in Criticism* (Cambridge: Cambridge University Press, 1961), pp.132-141.
5. I am grateful to Hugo McCann for discussion on the term 'coherence' and for his helpful unpublished paper 'Reflections on the term 'Coherence''.
6. Joseph O. Milner, 'Oathkeepers and Vagrants: Meliorist and Reactive World Views in Science Fiction', in *Children's Literature Quarterly*, 10 (Summer, 1985), 71.
7. Jameson, *The Political Unconscious*, p.104.
8. To call O'Brien's argument 'humanist' is to call for a redefinition of humanity encompassing a future which is significantly female-identified. Aware readers cannot overlook the perhaps mythic significance of the fact that the only two characters in the book are a male and a female. *Z for Zachariah* has complex, subtle, perhaps ironic layers of meanings which cannot be adequately discussed here.
9. Nicholls, ed., *The Encyclopedia of Science Fiction*, p.438.
10. Quoted by John Brunner, 'Science Fiction and the Larger Lunacy', in Nicholls, ed., *Science Fiction at Large*, p.103.
11. Myers, 'Philosophic Insight through Science Fiction', p.179.
12. Carolyn Wendell's essay, 'Miss Forsyte is Dead - Long Live the Sci-Fi Lady', in Williamson, ed., *Teaching Science Fiction*, pp.102-109, provides some very useful material on teaching science fiction to adults in a course called 'Basic College Writing'.

13. Brain Stableford, 'The Social Role of Sf', in *Algol*, 12 (Summer 1975), 23-26.
14. Barthell, 'Science Fiction: A Literature of Ideas', p.60.
15. Irwin, *The Game of the Impossible*, p.185.
16. Jürgen Habermas, *Legitimation Crisis*, tr. Thomas McCarthy (London: Heineman, 1976). Habermas's work in critical social theory lends itself readily to educational debate, both in educational administration and in curriculum development.
17. Edward de Bono, 'Lateral Thinking and Science Fiction', in Nicholls, ed., *Science Fiction at Large*, pp.54. De Bono does not explain his problematic term 'semi-logically'. It can perhaps be best read as 'logically and by implication'.
18. *Ibid.*, p.55.
19. Stableford discusses McLuhan's ideas on the training of perception through estranged texts in 'The Social Role of Sf', p.24.
20. Quoted in Gavin Bolton, *Drama as Education* (London: Longman, 1984), p.141. Boal discusses metaxis in his *Theatre of the Oppressed* (London: Pluto Press, 1979).

CHAPTER 3: THE PSYCHOLOGICAL POTENCY OF SCIENCE FICTION

Science fiction's great and growing popularity has led some psychologists to probe into the reasons for this phenomenon, from the point of view of the needs it satisfies and the pleasures it affords its readers. In the first half of this chapter, an examination will be made of some of this work, with a view to evaluating what possible psychological grounds there may be for defending the use of science fiction in schools. Science fiction has been described as functioning as a psychological drive to restore meaning and wholeness to an alienated world view.¹ It fills a psychological gap created by the separation of scientific theory, practice and practitioners from human needs and satisfactions and from social values.² John Brunner (1976) quotes J.B.S. Haldane in describing science fiction as approaching dreaming, going far beyond philosophical speculation, because, as he says, its subject is the universe, and the universe is far stranger than we can know.³ Science fiction texts and their readers tread the boundaries of human knowledge and of consciousness.

3.1 MODERN ANXIETY, THE SCIENTIFIC WORLD VIEW, THE SEARCH BEYOND THE KNOWN

The twentieth century, according to Robert Plank (1968), is characterized by a universal existential anxiety, caused by the collapse of humanity's major supporting belief systems. Earth was relegated by Copernicus to an insignificant peripheral body in an unknowably large universe; Darwin reduced humanity, formerly considered to be literally made in God's image, to one of a multitude of animal species evolving from lower forms. Karl Marx insisted that people were only free to think and act within the boundaries created by their social position, and Freud's theories that the human unconscious formed the enormous, unknown and largely unknowable part

of an individual's personality, have gained almost universal currency in this century. All these changes administered successive jolts to the anthropocentric and secure world view which had ordered human progress through history nearly up until this century. Einstein, the space age and the atomic age, too, have fundamentally changed our conception of the world and our place in it, according to Plank, and science fiction is one of the responses to that change. A feeling of individual impotence in the face of superindividual forces, and a sense of purposeless drifting characterize the discomfort experienced by modern humanity. The loss of the reassuring power of the patriarchal religious system which ordered life in the Western world has found some expression in the preoccupation of many modern writers and readers with alien worlds and life forms and with a search for superior beings, father figures to replace the sense of loss. The large number of stories dealing with aliens, particularly 'guardian' figures is, perhaps, a response to the anxiety people feel at the prospect of finding space empty, and humanity alone.⁴

The number of science fiction texts falling into this category is enormous, and some even articulate this aspect of the human condition, through the words of the protagonist. A striking example is in Colin Wilson's *The Mind Parasites* (1967). In this story of an encounter with an alien force which attacks the human mind, Dr Austin is alone at night at an archeological dig in Turkey:

All at once my thoughts took a gloomy turn.
I felt totally insignificant, meaningless,
standing there. My life was the tiniest
ripple in the sea of time. I felt the
alienness of the world around me, the
indifference of the universe and a kind of
wonder at the absurd persistency of human
beings whose delusions of grandeur are
incurable. Suddenly it seemed that life was
no more than a dream. For human beings, it
never became a reality ... I ... was suddenly
overwhelmed with an inexpressible fear. I
felt like a sleepwalker who wakes up and finds

himself balancing on a ledge a thousand feet above the ground. The fear was so immense that I felt as if my mind would dissolve; it seemed impossible to bear. I tried hard to fight it, to understand its cause. It was connected with this world I was looking at - with the realisation that I was a mere object in a landscape ... I suddenly seemed to be taken out of my personality, to see myself as a mere item in a universal landscape, as unimportant as a rock or fly

(pp.30-31).

Stories dealing with aliens, especially superior aliens, act to 'assuage the anxiety of being alone by imagining we are not', according to Plank. Many modern science fiction writers look for strong, able, benevolent beings to save humans from the consequences of their crimes and their loss of direction. A recurrent theme is the arrival of outsiders to halt the drift towards catastrophe. (Sylvia Engdahl's stories of the moral guardians of the universe mentioned in Chapter 2 are very good examples of just this trend.) On the other hand, aliens are also represented as monsters, desiring to destroy or subjugate the human species. Plank claims that this kind of alien is generated from Western civilization's shame at the way it has treated primitive peoples in history, rather than from an interest in alien intelligence for its own sake (though he would no doubt accept that such works do exist). The non-human monsters enable people to deny human responsibility for disaster; therein lies much of their pleasure. It is interesting that in the more popular forms of science fiction and its derivatives, particularly those in pictorial or electronic media, monsters have become a dominant theme. Since it is unlikely that humans will encounter beings from other worlds in the foreseeable future, the figures of the envisaged aliens tell us a great deal about their creators' and perhaps even more about their readers' hopes and fears. If imaginary beings are emotionally

significant to certain people, according to Plank, it is because they ease tensions and pressures in fictive form which the person is working through, consciously or unconsciously, in real life. Thus, he claims, people read stories containing imaginary beings, not primarily out of literary or aesthetic motives, but out of psychological ones.

The emotional impact of these stories has nothing to do with any literary merit they may have. The trashier the story, the more raw and naked the psychological elements.⁵

This last point is not entirely satisfactory as an explanation of what readers may gain from their reading, perhaps because Plank is not primarily concerned with the whole complex story of the act of reading itself. Readers who have achieved a highly sophisticated level of literacy may, of course, experience the same emotional needs and desires as their more naive counterparts, but a particular story may only have emotional power if it can be taken seriously on a cognitive level. This argument will be linked with theories of developmental and educational psychology in the next chapter.

What Plank has to say in general about the emotional impact of stories dealing with alien beings and a populated universe, has particular significance at that stage of development when the individual is emerging from the emotional security of childhood. The anxiety felt by a whole civilization in its perception of its aloneness, accountability and vulnerability, is once again mirrored in the figure of the adolescent, who has come to realize that her own parents are not omnipotent, that the world does not revolve around her, and that she faces an uncertain future, without even the belief-sets of her parents to accompany her. In her search to find out who she is, who she is becoming or might become, she may find in these stories a reflection of her situation in the depiction of the human condition.

Plank has written elsewhere (1980) that science fiction explores yearnings for a more ideal world, and the fear of the opposite. It deals with the generalized concept of existence, beyond an individual's private concerns, and allows a reader to participate in the creation of worlds and societies.⁶ According to Northrop Frye (1957), too, science fiction frequently imagines life on a plane far above us in a 'technologically marvellous' setting. In this literature, therefore, is a 'strong inherent tendency to myth', as its stories mediate between change and its effects on people. This he sees as an important psychological function.⁷ Frye's work has formed a basis for much of the most vigorous science fiction criticism.

The term 'myth' is frequently used when discussing science fiction, with different meanings. Suvin (1973) has clearly articulated some of these differences at the end of his genological survey mentioned in Chapter 1.⁸ For our purposes here, however, it will be necessary to outline some of the very general concepts at work in the use of this term. Much romantic science fiction generically echoes the structure and content of the 'monomyth', identified by Joseph Campbell (1956):

A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow men.⁹

Alexei and Cory Panshin (1981) give the notion of myth a wider and more specifically modern dimension when they write of *mythmaking*, the 'presentation in story and song, ceremony and drama, of accounts of the origin and destiny of things, cast in terms of encounters with transcendence in another world not our own'.¹⁰ Modern myths, then, are ways in which modern humans explain the origin and destiny of the world according to what they know about the world,

or what they believe to be true. The extent to which modern myths use archetypal figures from the mythical past points to the timeless and universal truths of the human identity, in Jung's terms. The extent to which they create and use new and different symbols points to the way myth is, as Marxists and others claim, ideology. The work of sociologists such as Pareto and Georges Sorel and of anthropologists such as Clifford Geertz is of importance in an understanding of this point (see also note 19 in Chapter 1 above). Thus it is possible to write of the 'mythology of scientific ideology'¹¹, and to point to the way in which certain science fiction texts reify this ideology, precisely through their use of the estrangement and transcendence discussed in Chapter 1 of this dissertation. Most importantly for the defence of science fiction being mounted here, other texts offer critiques of this ideology and offer alternative myths. This is of crucial importance for a notion of education which values the *liberating* of young readers from the confines of dominant and unexamined ideology.

The important science fiction writer, Robert Sheckley (1976) sees science fiction as providing an opportunity to participate in the unknown. In the real world, the distance of science and technology from most people's comprehension means that most people are able to participate only as consumers or spectators. Overcrowded with 'repetitious artefacts' and other people's lives all similar to our own, we still experience the impulse to look beyond, to the strangeness of birth and death, time, space and the unknowability of the self. Sheckley, like Frye, sees science fiction as allowing the reader the opportunity to transcend the dull quality of everyday life. He makes the important point that the loss of religion has left a large psychological gap in many people who do, nonetheless, sense that they were born to quest. Science fiction, which never claims to be literally true, is able, he says, to hold out hope of offering truth.¹²

Mark Hillegas (1980) has described the attempts in science fiction to use modern humanity's scientific, objective vision to explain its place in the universe as 'mythic and religious'.¹³ Stableford (1974) explains science fiction's enormous popularity because its landscapes are:

Connected with the slow dying of the supernatural imagination and the concomitant reinterpretation of transcendental concepts and images to suit the precepts of the scientific imagination: *the ongoing translation of languages which codify our beliefs.*¹⁴
[My italics.]

It is significant that it is to this need in the science fiction reading public that many of the most popular works have addressed themselves. Frank Herbert's *Dune* (1966) is perhaps the most outstanding example. The keys to the mysteries of life possessed by the Bene Gesserit order can provide the sense that there is a transcendent plane of existence, establishing, or at least capable of perceiving, cosmic order in the progression of events played out in the world of ordinary people. The Bene Gesserit order of women, and Paul Atreides, the heir to their power, offer a great deal of emotional satisfaction through their ability to influence, if not to control, the course of events through their arcane knowledge and skill. Together with this, there is a sense that, however much evil is abroad during the course of these lengthy volumes, there is a pattern to existence and virtue will have its reward. The universe is wide and awe-inspiring, yet reduced and conceivable in time and space through the structures of the Empire, the Guild and the plans of the Bene Gesserits. Above all, the quasi-divine nature of the power of the Bene Gesserits is represented ultimately as *knowledge* - that which is knowable, given the keys. Paul's abilities, for example, are developed through exceptionally rigorous training to which he devotes

himself for almost his entire life, as much as by heredity and the mind-enhancing characteristics of the spice drug. The mysteries of the mind are mysteries only to those poor mortals (including the reader) who do not possess the knowledge.

Even the first volume of the 'Dune' series is a long and densely written narrative. Its over five hundred pages, however, are read by enormous numbers of adolescents, including some who admit to never having completed a substantial work of fiction in their lives. While some of the other appeals of *Dune* will be examined shortly, it must be assumed that the emotional satisfactions it affords are considerable.

In works of science fiction closer to Earth, the same basic psychological functions can be seen to be operating. The apotheosis of the human race in *Childhood's End* by Arthur Clarke (1953) is achieved quite logically through an unorthodox, unknown yet scientifically developed theory of evolution. The psychological effect of this view of the future on the reader is religious, mystical and cathartic, as the language used by the last human left behind on Earth to describe the event, becomes strained beyond all cognitive grasp.

The raising of science to an experience of poetic, mythic or religious intensity is one aspect of the development of science fiction from the nineteen-forties onwards, and is a phenomenon for which Isaac Asimov, that most widely read of all science fiction writers, is largely responsible. In *Fantastic Voyage* (1966) Asimov relates the story of an epic and mysterious journey fraught with terror, danger and haunting visions. The perspective is microscopic; the landscape, the blood vessels within the human body. The narrative is a logical, physiologically accurate (of course!) account of the protagonists' journey through the body to cauterize a brainclot. The reader is required only to accept that, in the future, human science will be

able to alter the dimensions of physical objects. The images produced by this epic voyage achieve an almost mythic intensity.

Speaking of science fiction in relation to his notion of 'future shock', Alvin Toffler (1976) claims that it enhances a reader's ability to adapt to change. He calls this particular psychological capability 'anticipatory adaptability'.¹⁵

People need to make sense out of their lives, and part of this quest is to understand the meaning of what is going on around them. As adolescents mature, they become more aware of the uncertainties and confusions of life. Novels, according to psychologist Nicholas Tucker (1981), can help create meaningful patterns, more comprehensible and manageable than life, yet vital and meaningful.¹⁶ Works of literature can give templates, models to make sense of things, and thus help to overcome anxiety. Because of the cosmological perspective of many works of science fiction, they deal with wholes, subjecting them, at least for the length of the narrative, to a perfect knowability. According to Toffler, science fiction's special role as an expression of the *Zeitgeist*, is that it questions the assumptions of a dying industrialism - assumptions concerning body and mind, society, technology, politics, beauty, communication and religion. Its important psychological function is described as providing 'no-trial' learning.¹⁷ The most vital questions of meaning and truth are worked through in fictions, so that the reader is not, in any true sense, involved. Even the traditional weakness of characterization and often of narrative style, can work to enhance this function. Because of reduced opportunities for emotional involvement, readers do not have to worry unduly about the fate of characters, or even the story. The tendency towards clarity rather than complexity of plot and characterization is a typical feature.

3.2 CURIOSITY AND TOLERANCE

An important psychological function is performed by science fiction in general, which can have notable effects on the intellectual development of the potential scientist and non-scientist alike, and therefore significant implications for education. Some people are, as has been established, strongly attracted to science fiction and devour it in large quantities. Others, while having, perhaps, only a very vague idea of what they are rejecting, refuse even to look at a book so identified. Plank (1968) is interested in the personality traits which might explain this difference. While he is concerned with wider issues than the reading of certain types of fictions (genuine belief in the existence of aliens, for example, as well as cultism and dedication to scientific endeavour) - his remarks are of considerable interest here. He suggests human personality types may be characterized by the relative strength in which two variables are represented. The first variable is the level of scientific curiosity and the second is tolerance of ambiguity. A person possessing a high level in both variables may well become a scientist, while someone with a high tolerance for ambiguity but only low scientific curiosity will no doubt lead what he calls a 'normal life'. Those with a low tolerance for ambiguity, however, those who feel compelled to accept the first or most inviting explanations for a phenomenon, those who crave to believe and those who refuse to believe in the impossible, may become, on the other hand, cultists (possessing high scientific curiosity) or authoritarian personalities (those with low scientific curiosity).¹⁸ Into this category, more than likely, belong also the easier victims of indoctrination. Spontaneous readers of science fiction are most likely to be of the very first type, whether they eventually become scientists or not. Certainly many scientists read and write science fiction, but it may also be useful to consider that

people whose scientific curiosity is not being satisfied elsewhere, may find reading science fiction emotionally satisfying.

What does not directly concern Plank here, however, are the educational implications of this theory. Few people, surely, would argue against the proposition that education seeks to develop in the young, high levels of curiosity and tolerance of uncertainty. The only alternative to this view would be indoctrination. It might follow, therefore, that those educational aims may be partly met by including science fiction texts in school reading programs in some form. Lest this appear to be an unacceptable imposition on those for whom science fiction has held no charms, it must be stressed that this suggestion be approached very carefully indeed. This is a matter for further discussion in the final chapter. Here, however, two educational beliefs must be restated: the first is that an individual's level of curiosity about the world is high in childhood and that this curiosity can be maintained and nurtured with appropriate educational practice. Second, without the willing and active intellectual and emotional engagement of the student in a given task, no significant learning will occur. Added to this is the reminder that science fiction is a broad enough literary category to appeal to a very wide number of adolescents with different needs and interests, and at very different stages of educational and psychological development; that it is broad enough, in fact, to appeal to a very much wider group of adolescents than those who 'discover' it spontaneously. It will, of course, not be claimed that science fiction is a panacea for any educational or social ill, real or imagined, but that it may take its place as a resource, to stimulate adolescents to examine the world around them more freely, closely and fruitfully, and to develop certain intellectual capabilities, as well as to satisfy certain emotional needs. Crucial here is the relationship between tolerance

of ambiguity and the capability to develop and practise an ironic view of the world. This important point will be addressed in Chapter 4 and again in Chapter 6, where science fiction is examined in the light of its possible contributions to adolescent educational development.

It is necessary now, to take a closer look at the *psychological* development of the individual and at the way science fiction stories can mirror, express and enhance this development.

3.3 ADOLESCENCE: A THEME AND A METAPHOR

Adolescence has been described by psychologists as a stage of development when the young person begins to assert herself as an individual in society. In this process, the individual and society come to terms. This process is described as socialization, and although it goes on throughout life, it reaches a crisis in adolescence. Inkeles (1969) has defined socialization as 'the process whereby individuals acquire the personal system properties - the knowledge, skills, attitudes, values, needs and motivations ... which shape their adaptation to the physical and socio-cultural setting in which they live'.¹⁹ Identity is more rapidly formed through adolescence according to Erikson (1965), by the individual facing crucial learning points in her life, and making irreversible choices, for better or worse.²⁰ Adolescents begin to define themselves in relation to their culture, Robert Grinder (1973) contends, which involves a differentiation of self from society. To do this they often test extremes and boundaries before settling to a course of behaviour or belief. In modern society, adolescence has become a particularly complicated and problematic stage of development because the individual must test and place herself in a society which itself is becoming increasingly unstable, and characterized by rapid and unpredictable change, as has been discussed

above. Grinder points out that concepts of maturity, though helpful, cannot any longer be normative in a time of social change²¹, so that adolescents lack clear, acceptable models in the adults to whom they are close. He points out the three main causes of adolescent identity crises as being hypocrisy, population growth and alienation. Large numbers of adults cannot maintain a coherent sense of values because of conflicting pressures, and adolescents, seeking values, are frequently estranged from public values and institutions, including schools, seeing them not only as irrelevant but also hypocritical. Individuals are under great pressure to develop personally integrated value positions.

It is certainly not coincidental that, as an 'adolescent' literature, science fiction repeatedly picks up these three crisis points - hypocrisy, population growth and alienation, aspects of human self-destruction, and focusses sharply on them in its narratives. This psychological view lends weight also to the claim made at the beginning of Chapter 2, that science fiction may be of significance in the moral education of the young, since it emerges very clearly that adolescents face a lack of clear and consistent moral models in conventional, mainstream cultural forms, and that science fiction addresses itself directly, and intelligibly, to matters of pressing current and future importance. The consequential nature of didactic science fiction combines with the emotional gratifications of plot to provide reading experiences which may be both enjoyable and edifying. Whether texts be what Milner (1985) terms 'reactive' (extrapolations in the form of warnings), or 'meliorist' (analogies in the form of proposals), readers may be empowered to initiate or participate in vital debate about themselves and their possible futures.

Science fiction, too, generally enjoys a position of acceptance in the culture inhabited by adolescents as an identifiable

group in Western society. It is seen to provide an alternative, dissenting voice to the mainstream, authority-bearing and thus often resisted and rejected cultural voice. Just how much of a cultural alternative science fiction really provides will be examined more closely a little later. Here it is enough that it is *perceived* to exist concurrently with, yet separate from, dominant cultural forms. Because science fiction stories are often critical of the contemporary world, they can provide an outlet for frustration and anger felt by individuals rebelling against authority and feeling powerless to control the course of their own life. In the case of the literature from earlier years, such as the stories of A.E. Van Vogt, adolescents are able to respond to these elements which were originally aimed at compensating the aspirations and resentments of a particular class of workers, employed in technical areas, yet condemned to be powerless and nameless components of large, wealthy corporations.

Because of the greatly different ways and rates at which human beings develop, however, it is only very generally appropriate to speak of 'adolescence' as a coherent phenomenon in any particular context. Within any one group of young people joined in classrooms only because of their age, will be individuals at very different stages of physical, emotional and intellectual development, and exhibiting widely different personality traits. One of the problems facing educationists is to provide learning experiences in schools which are appropriate and meaningful to each individual, taking into account interests, purposes, needs and capabilities.

The socialization of the individual has been described as reaching a crisis point in adolescence, as the self and society come to terms. Two different problems face an adolescent, concerned with establishing an acceptable identity. The first is how to be a successful adolescent, and the second is how to become a successful

adult in this world. Many science fiction stories address just these issues directly, with the adolescent protagonist acting as a metaphor for the developmental, future-oriented world view contained in the stories. Perhaps this point will be more tellingly made, if examples are taken from mainline science fiction, before turning to a brief examination of science fiction for adolescents.

In the almost inconceivably alien jungle world of the far future in Brian Aldiss's *Hothouse* (1962), humans have lost their supremacy among life forms, due to the increases in the sun's radiation levels over the ages. The sun is going nova, and in this time, plants have taken over. The humans have become a small, imperfectly adapted endangered species living in the branches of an enormous banyan tree, barely surviving the onslaughts of carnivorous plants of great variety. The man-child, Gren, hovers between childhood and an early adulthood; in this story, the luxury of the no-risk trial period of adolescence is going to be denied him. He takes on adult responsibilities along with a child-wife and baby. His challenge of the adults' authority has endangered the community, and almost as a punishment, it is the adventurous Gren who falls victim to the malignant parasite fungus which proceeds to control his mind. He is imperfectly emotionally equipped to handle the special dangers confronting them, though Yattmur, his courageous wife, sees them through. How Gren and his family survive this testing period to provide what hope there is of the continued life of the species, acts as a metaphor for the progression through future history of life itself as the reader knows it. Gren's odyssey crosses time and cultural and biological barriers to speak directly to those facing periods of trial themselves.

Other examples of this particular story form range from the almost mythical role of Paul Atreides in *Dune*, whose youth is a symbol of the future of the Fremen on the Dune planet, to the humorous

'Stainless Steel Rat' series by Harry Harrison (1979) with its rebellious hero, who becomes a criminal to defeat the system, but ends, in maturity, by becoming its leader.

Themes of maturation and development, alienation, rebellion against authority, trial, the rites of passage and the relationship of an individual to her peers appear constantly in science fiction for adolescents, beginning, most particularly with the juvenile stories of Robert Heinlein in the nineteen forties. Much as with Ursula Le Guin's 'Earthsea' trilogy, the estranged worlds of these stories serve to liberate the perennially human issues from their too-familiar daily context, to show them, in part, as archetypes. This is one of the mythic functions of science fiction which often links it strongly with modern fantasy. The adolescent protagonist is portrayed in two main ways: as a symbol of development itself, with its concomitant hope for the future, as with the learning processes of Elana in Engdahl's *Enchantress from the Stars*, Noren in *Heritage of the Star* or Liza in *Ring-Rise, Ring-Set*; or, alternatively, as a symbol of hope in a world itself gone awry. This last is an important function of many works, such as Hoover's *The Lost Star* (1979) or Ann Schlee's *The Vandal* (1979), again in *Ring-Rise, Ring-Set* and, most recently, in Robert Swindells's *Brother in the Land* (1984).

3.4 THE SUBLIMATIVE FUNCTIONS OF SCIENCE FICTION

The psychological self-reorientation mentioned above, which is afforded readers of science fiction, can play an important part in the socialization of the adolescent. As the individual emerges from the implicit acceptance or grasping and holding of things in childhood, into a period of questioning, science fiction can open eyes, and offer ways of questioning and of formulating questions. The sense of self, the reader's identity, may be reoriented or modified through repeated reading experiences of this kind. Within the genre,

different works of science fiction can, on the one hand, offer gratifications of a most childlike and naive kind and, on the other, lead a reader to ever more sophisticated and subtle constructs of self and society. The same individual has the opportunity to experience and enjoy both, fulfilling different needs at different times. Simple romances such as E E Smith's 'Lensman' series, Edgar Rice Burroughs's 'John Carter of Mars' tales, or the 'Doctor Who' stories, can offer the adolescent (particularly the male) respite from the constant pressures to socialize that are imposed by home, school and society. The simple patterns and easy gratifications can provide a reassuring dip into a lost innocence, a 'refuge from the attrition of day-to-day, face-to-face encounter with reality'²², into a world of strongly and clearly expressed moral and emotional issues. Within the genre, too, the same individual may at another time, wish to engage with a complex matter such as the behaviour of Robin Broadhead in Frederik Pohl's *Gateway* (1977); Broadhead is under great stress as a result of a long-borne guilt and the effects of an alien life style and the book subjects his responses to close scrutiny.

The two types of science fiction stories mentioned earlier, the didactive and the romantic, basically serve two quite separate functions when seen from the point of view of the socialization of the individual reader. While the first offers opportunities for engagement on a cognitive level, the other serves a sublimative function, providing an often necessary gratification of the 'instinctual life'²³, experienced in early childhood and always present behind the rationality of the conscious adult mind. The persistent presence and continued power and popularity of emotionally powerful archetypes such as heroes and monsters in the literature, particularly at its popular level, bear testimony to this function of many works of estranged fiction, including these romantic science fiction stories. They are seen to

'effect some manner of harmony between the literalities of experience and the night impulses of life ..., to deal with human experience as myth - at once our external reality and the resonance of the internal vicissitudes of man' (Bruner, 1962).²⁴ The precise power of science fiction to supply emotional gratification to those approaching an adult view of the world may lie in the fact that the elements of the marvellous are constrained within an objective, scientific world view, and are therefore not seen as fairy tales or 'children's stories' in the impoverished sense in which these two terms are sometimes used. To serve this purpose for a reader, science fiction stories need not possess any literary merit. Indeed, as Stableford has pointed out (1974), even the science 'does not have to be accurate in terms relating to the real world'.²⁵

In this way, too, science fiction has taken over the provision of reading pleasure offered by the explorer books of the great colonial age, that made our culture what it is to a large extent still today. Space travel, colonization, terraforming and starwars are the ultimate modern spectator sports (Plank, 1968)²⁶, and the enormous numbers of stories which have dealt vigorously with these themes since the magazine days, have provided one of the only outlets left for militant enthusiasm. The almost cultish continuing popularity of even the most 'jackbooted' of the early Heinlein works, for example *Starship Troopers* (1959), shows how effective an outlet these stories still are. Douglas Hill's still popular 'Young Legionary' series for children or young adolescents shows how this offshoot of the adult genre has keen followers among the young. The large popularity of recent films claiming to be 'science fiction' is owed, to no small extent, to the intricately stage-managed images of wholesale destruction, created by the special effects teams²⁷, and to the perpetuation of the 'American myth', taken over from the Western and the twentieth-century war story.

One of the chief preoccupations of an adolescent in her exploration of major identity themes, is sexuality, the discovery of the body and its drives. Together with the development of the perception of the need for independence, choice and self-determination, the need to develop appropriate relationships with authority, and a focussing on the way events reflect upon an individual's self-image - sexuality is an issue confronting adolescents that will not disappear. One of the characteristics of traditional genre science fiction is that sex has been conspicuously absent. This follows its genological inheritance from the earlier romances, where the hero's chastity was an essential attribute of his moral purity, and from the fable, with its emphasis on the abstract idea. It may be that for young readers, the imagined worlds, free of overt sexual expression, much like the world of childhood, provide also a refuge from the pressure to function responsibly in a sexualized world. It is interesting to note, however, that in 'adolescent' science fiction, sexuality is often explored together with the many other themes of adolescence, as the development of the protagonist is foregrounded. This follows rather in the tradition of the adolescent novel in general. Westall's *Futuretrack 5* includes explicit expression of sexuality as part of the depiction of the character of Kit Kitson, the young protagonist, while sexuality and fertility, or the lack of it, is one of the main subjects of the plot (the author's and the villain's).

That reading these stories is sexualized in the special, psychoanalytic use of the word, is no doubt true, though a detailed consideration of psychoanalytic theories of reading pleasure, such as those of Holland (1973), is well beyond the scope of this paper. Emotional content, however, is certainly what motivates most people, including children and adolescents, to select their reading matter; this accounts for the low literary worth of much reading spontaneously

undertaken, since emotional elements are most obviously present in simple, repetitive and predictable story patterns. Young people choose books which reflect conflicts and concerns being experienced as the individual matures, and which supply the necessary fantasies (in the psychoanalysts' sense of the word as wish-fulfilment daydreams).

The enrichment of the psyche, which, it is claimed by Bruno Bettelheim (1976), is provided by literature containing fantastic elements, may also provide a justification for science fiction, even of the most primitive or formulaic kind. The rich and varied fantastic elements in science fiction may free the mind from 'the narrow confines of a few anxious or wish-fulfilling daydreams, circling around a few narrow preoccupations'.²⁸ In this way, as in others which will be discussed in the next chapter, the experience of a science fiction text may be akin to dreaming. This argument may serve to link the psychological benefits gained by readers of science fiction with the moral benefits claimed in Chapter 2. Put into sociological terms, appropriate science fiction texts may overcome the 'radical personalism' which is all that is left the adolescent and emerging adult in a dehumanized world (Kohlberg and Gilligan, 1972).²⁹ A principal difference in the two arguments, however, is that whereas readers *may* gain emotional satisfaction by reading the most banal or poorly written work, the moral strength of a work of literature must be judged, at least in part, according to criteria separate from a reader's responses to it. It will also be seen as being closely connected to the work's strengths as a work of literature. It will be seen, in other words, in the discussion of the literary merits of science fiction, that the quality and power of *what* is said will, in part, depend on *how* it is said.

It has already been briefly mentioned that literature which is successful with the reading public, particularly with children

and adolescents, will always contain identifiable features of the reader's own development. These features may exist together with, yet quite independently from any other features by which a work may be judged externally, including its moral values, its power to stimulate speculative debate in adults or the young, or its literary merit. The one element need never interfere with the others; indeed they may be seen to have little to do with each other. The omnivorous reading habits of many young readers may be attributed as much to this fact of literature's hidden satisfactions as to the fact that different kinds of literature are likely to be fulfilling different needs at different times. The individual adolescent often treads a personal path between spontaneously chosen, repetitively patterned, gratifying narratives and a vague notion of 'value' which she may be pursuing under the guidance of teachers or parents.

The many conflicts mentioned above that are being worked through by adolescents are repeatedly dealt with in science fiction, and can be summed up as the individual's grappling with her emerging sense of identity and personal worth. Much of the appeal in these books may lie in the gratifying resolution of such conflicts at the end of the story. Many of the protagonists of André Norton's science fiction works, for example, personify this struggle, together with a sense of holding different values, more appropriate than the established ones, for changed situations. Her characters seek to establish this within the dominant group, but are rejected. They end, however, by being acknowledged among rivals and superiors, for using these new view-points and skills to save the group from external threat. In such works are contained archetypes of modern societal conflict which is reaching a crisis as Western civilization's rapid progress and change alienate one generation from the next. This alone could account for the lasting popularity of works such as

Star Man's Son (1952) and *Breed to Come* (1972).³⁰

Another reason for the popularity of writers such as Norton, however, lies in the narrative patterns a reader may come to expect in the works of a prolific author. These can become enjoyably familiar and reassuring, especially to a reader lacking the confidence to branch out. André Norton is just one of many authors to satisfy this need. Science fiction as a genre in general lends itself to multi-volume works as well as to loosely-linked series. Because they frequently foreground entire worlds rather than individuals, the cosmic perspective allows for grand sweeps of time, space and action. To mention only the two most famous works, Asimov's *The Foundation Trilogy* (1942-1948, not mentioning later additions to this work), and Herbert's 'Dune' series - are of extraordinary and enduring popularity with adult and adolescent readers alike. A reader may re-enter these worlds with a sense of familiarity, participating in events from the inside. In the case of 'Dune' novels, this is because of the vast detail with which the world and its society are created. In the case of the Asimov works, the reader is partially privy to the principles of prediction governing the future history, and can help play the game. (It must, however, be noted that the continuing popularity of these works may be attributed as much to publishing strategies as to their inherent appeal.) Science fiction authors have traditionally been very poorly paid, and have needed to publish large numbers of works to earn respectable livings. When a successful formula has been found, it is often adhered to. Whatever the literary merits of this phenomenon are, it is certainly true that the repetitive and predictable patterns and narrative style in the works of individual authors, provide enjoyment and satisfaction to many young readers, who may not, otherwise, read at all. In this way, the entire science fiction genre may act as a familiarizing device, providing predictable kinds of

reading experiences and an often quite close intertextuality, so that when a reader wishes to advance from the work of one author, she may move within the genre. Shelving policies in bookshops and some libraries assist this process.

Together with specifically adolescent conflicts, appear many archetypal figures found in fairytales and stories for children, yet persisting in this peculiarly adult-acceptable package. Heroes continue to quest, whether they be scientists, starship captains or rebellious youths triumphing over the outmoded or corrupt power systems of the elders of their world. Ugly duckling stories, stories of the possessors of great secrets and cinderella stories abound, providing fantasies of resentment (Disch, 1976), yet clothed in realistic story frameworks. These are particularly common in works written for adolescents. Anne McCaffrey's works, for example, highlight these conflicts strongly, especially in the figures of Lessa, Menolly and Piemur in her 'Dragonriders of Pern' series, and of Killashandra in *The Crystal Singer* (1975). While only some of McCaffrey's works are directed specifically at adolescents, they are extremely accessible narratives for even quite young readers. Monica Hughes, too, exploits some of this power in her creation of Olwen, alone on Isis, and it is strongly present in Hoover's *Children of Morrow* in the waif-like figure of Tia, who blossoms in the warmth of Morrow, and develops her extraordinary psychic powers. It can be found, too, in the figure of Cat, in *Psion* (1980) by Joan D. Vinge. Cat, the alienated outcast, discovers his secret powers and develops a confidence and sense of worth through their exploitation and through the discovery of his true heritage.

One of the psychological functions of literature is in the construction and reconstruction of the self by the reader. Apart from the opportunity to extend and enrich the reader's stock of ways

of being and acting beyond what is available to her through daily life, literature can serve the important emotional function of personality compensation.³¹ In general, the individual reader is enabled to live through experiences in the persona of different characters. Certain types of science fiction narratives can serve quite specific compensatory functions. Historically, as was mentioned earlier this chapter, stories provided compensation for class resentment, which make them particularly suited to the emotional state of a rebellious adolescent. But the compensatory functions of science fiction are wider than this.

First and perhaps most important of these functions is the traditional attraction to readers of the affirmation of the strength of the imagination in science fiction narratives. As well as participating in stories enacted often by strong heroic figures, the reader may gain the message that the imagination is a free and powerful thing, free from the contingencies of fact and physiological determinism, and also an instrument of truth in science and art.

The possibility of heroism in the real world of the twentieth century has become rather remote, with the end of imperialistic confidence and the beginnings of racial shame experienced by members of Western society, particularly since catastrophes such as the Vietnam War. There are no unknown lands for men to discover and conquer, and the political and religious subjugation and indoctrination of Third World peoples is no longer enthusiastically applauded. Wars have been revealed to be horrifying and disgusting rather than heroic and splendid. Indeed, they became all but impossible to contemplate since the destructive capacity of nuclear weapons became appreciated. There is no longer a realistic practical context for heroism for the ordinary person in the real world, nor in the world of mainstream realistic fiction. There is nowhere for the fictional questing hero

to take his reader but back into the past of myth and history or into other worlds in fantastic fictions. In science fiction's unknown, dangerous and challenging universes, individual heroic actions are still possible. Individuals may, in these stories, act upon these worlds, and do not merely endure their circumstances as victims, as many readers may feel to be their own personal situation. Heinlein's heroes are outstanding among this large group of science fiction works, from Elihu in *The Puppet Masters* to Johnnie in *Starship Troopers*. The obvious maleness of this aspect of the literature will be discussed further in Chapter 5. There are some important moral questions, too, which need to be addressed by teachers and other adults, concerning the nature and the actions of 'popular' science fiction heroes. In common with fantasy heroes such as Thomas Covenant, and the superhuman heroes of fantasy games books, many science fiction heroes pursue paths of irresponsible and gratuitous violence, and prompt a flight from reason and responsibility in a reader.

The more mature and complex concepts of heroism which have emerged in some modern science fiction, together with the de-heroized world views in such works as John Brunner's *Stand on Zanzibar* (1968), do not, of course, offer the reader such comforting or exciting compensatory visions. These works are only for adults or adolescents at their most confident and speculative, extending rather than merely satisfying emotional expression in the reader. The concept of the hero as a literary phenomenon in science fiction is far more complex than can be treated here. The particular hero envisaged here has not changed greatly since the romances of Verne or Kipling; he inevitably triumphs in quasi-fantastic manner over almost insurmountable odds, and the reader is never left in any doubt as to whether or not he deserves his prize.

Literary critics may in general regard the compensatory functions of literature to be of a low order of importance in their constant search for quality. These functions can, however, help to identify some significant sociological and cultural phenomena. Influential writers in recent years have pointed out that the majority of people in modern Western society have only an impoverished experience of the orally transmitted folk tales, fairy tales and myths which, until industrialization and urbanization, formed their culture, and that nothing has satisfactorily arisen to take their place.³² Culture is, therefore, fragmented. What happened in America in the nineteen-twenties and what, in part, is still happening, is that the lost mythic figures were transferred into, among others, scientific romances. Thomas Disch (1976) points out that many of the English and continental European working class immigrants at that time were still very close to the oral traditions of their homeland. This meant that they responded to these stories with naive wonder and willing belief.³³ Heroes, donors, villains and monsters were transposed into stories of space travel and wonderful inventions. Scientific objectivity appeared to be maintained and affirmed, allowing modern, urban, technically increasingly sophisticated readers to accept the stories and enjoy the emotional gratification offered by the predictable patterns, safe resolutions of terror, and delivery from evil and danger. This phenomenon is identifiable even in later, more sophisticated and complex works, as well as the early magazine stories, and helps explain the popularity of such works as Fred Saberhagen's 'Berseker' series (1967 onwards), with their terrifying alien machine-monsters, or Heinlein's *The Puppet Masters*.

Finally, the optimism, the exuberance and the 'innocence' of much science fiction may continue to provide a reader with compensatory fantasies for life itself and for lost innocence. This

is perhaps particularly significant for many adolescents, for whom the loss of their relative moral innocence is a new and painful thing. At their simplest level, science fiction stories can still provide a world view of strongly and clearly marked distinctions between good and evil, an affirmation of the ultimate triumph of good, and a glimpse of a higher life. For adolescents, too, science fiction can satisfy a maturing desire for 'real' and meaningful stories based on adult-significant power structures such as science and technology, while at the same time providing a solace for the yearning of the immature to be able to act in the real world. An adolescent has no power and little capacity for independent action, and must wait, for what must seem like eternity, until 'education' is replaced by 'real life'. The fact that real life rarely fulfils expectations means that appetites continue to be assuaged for many in adult life by such romantic tales, which take on the function of dreaming (Disch, 1976).³⁴

3.5 THE SCIENCE FICTION COMMUNITY

At the conclusion of this chapter, a unique attribute of science fiction as a cultural phenomenon of the twentieth century will be mentioned briefly, since it can also help to explain its particular appeal to the reading public. While some literary masterpieces have been produced within the genre, its authors have, in the main, continued to live, and indeed thrive, in the literary ghetto, particularly in the USA, where the bulk of works has been written. The lack of mainstream critical attention in earlier years meant that first the writers, then 'fans' who frequently also became writers, banded together to form a community, which continues to exist, world-wide to the present day. The dissociation, even alienation felt by the majority of people in Western society from mainstream literary movements is thus reversed in science fiction; much of its appeal stems from the personal relationship its readers and fans can

develop with the works and with the authors themselves. Fan clubs and conferences draw authors and public together, even in Australia. Authors, who still depend directly on the public's approbation for their continued success, as much as on disinterested critical acclaim, frequently seek direct contact at public gatherings. The dissociation of sender and recipient which has grown up in traditional literary circles need not exist for the reader of science fiction. Many fans have corresponded with writers, and appear to feel that they are able to discourse with them in a mutually satisfactory manner about the literature, and the ideas with which it occupies itself. Science fiction is a literature which ordinary people are willing to discuss with each other. Magazines still thrive in the USA, providing a public forum for letters, not to mention, in principle, publication for new authors. This situation can, of course, provide real ways of engaging students in schools in a vital, continuing debate about literary, intellectual and moral matters, far removed from the completed cultural artefacts that frequently confront them. Despite the identity problems facing science fiction as a literary genre in recent years, there is a forum for readers to be found nowhere else, to participate in the 'not-yet-completed narrative' which is science fiction. This can, of course, provide some people with a great deal of emotional satisfaction. Finally, apart from the ordinary reader engaging with science fiction, is the 'fan', frequently to be met, if sought carefully, in secondary schools. He (it is usually a male) will come under closer scrutiny in Chapter 6, but the intense relationship he has with his reading is an interesting psychological phenomenon deserving brief mention here. This relationship, as Stableford (1974) has pointed out, appears to fulfil some inner need in the reader, helping him, in some important way, recreate the 'piece of fiction' that is the narrative of his life.³⁵

This chapter has pointed out some of the psychological benefits that might be gained by promoting the reading and discussion of certain kinds of science fiction among adolescents in schools. Perhaps more importantly, however, it has stressed some of the strong and significant emotional elements within even the crassest or most banal science fiction stories, that may be meeting certain needs in their young readers. This section of this defence of science fiction for adolescents, then, has been an attempt to promote a greater understanding of and tolerance for what adolescents read, why they read it and what they might be gaining from it.

NOTES TO CHAPTER 3

1. Smith, 'Literature of the Socio-Scientific Age', p.168.
2. *Ibid.*, p.169.
3. Brunner, 'Science Fiction and the Larger Lunacy', p.103.
4. Robert Plank, *The Emotional Significance of Imaginary Beings* (Illinois: Charles C. Thomas, 1968), esp. p.39.
5. *Ibid.*, pp.82-91 and p.131.
6. Plank, 'Science Fiction and Psychology', p.166.
7. Northrop Frye, *Anatomy of Criticism: Four Essays* (Princeton, N.J.: Princeton University Press, 1957), p.49.
8. Suvin, 'The Genological Jungle', pp.266-270.
9. Quoted by Alexei and Cory Panshin in 'SF and the Dimension of Myth', *Extrapolation*, 22 (Summer 1981), 127.
10. *Ibid.*
11. Smith, 'Literature of the Socio-Scientific Age', title of Chapter 4.
12. Robert Sheckley, 'The Search for the Marvellous', in Nicholls, ed., *Science Fiction at Large*, pp.189-193.
13. Mark Hillegas, 'Science Fiction in the English Department', in Williamson, ed., *Teaching Science Fiction*, p.99.
14. Stableford, 'The Social Role of Sf', p.26.
15. Alvin Toffler, 'Science Fiction and Change', in Nicholls, ed., *Science Fiction at Large*, p.118.
16. Nicholas Tucker, *The Child and the Book: A Psychological and Literary Exploration* (Cambridge: Cambridge University Press, 1981), p.181.
17. Toffler, 'Science Fiction and Change', p.118.
18. Plank, *Imaginary Beings*, p.141.
19. Quoted by Robert Grinder in *Adolescence* (New York: Wiley, 1973), p.4.

20. *Ibid.*, p.5.
21. *Ibid.*, p.3.
22. Dick Cate, 'Forms of Storying: the Inner and Outer Worlds', in *The Cool Web*, eds. Margaret Meek, Aidan Warlow and Griselda Barton (London: The Bodley Head, 1977), p.29.
23. Kate Friedlaender, 'Children's Books and Their Function in Latency and Prepuberty', in *The Power of Story*, p.89.
24. Quoted by Wendy Jago in 'A Wizard of Earthsea and the Charge of Escapism', *The Power of Story*, p.45.
25. Stableford, 'The Social Role of Sf', p.25.
26. Plank, *Imaginary Beings*, p.4.
27. Susan Sontag, 'The Imagination of Disaster', in Rose, ed., *Science Fiction*, pp.116-131.
28. Bruno Bettelheim, 'Fear of Fantasy', in *The Power of Story*, p.49.
29. Lawrence Kohlberg and Carol Gilligan, 'The Adolescent as Philosopher: the Discovery of the Self in a Post-conventional World', in *12-16: Early Adolescence*, eds. Jerome Kagan and Robert Coles (New York: W.W. Norton and Company, 1972), p.166.
30. Norton's popularity as a writer and the continual in-print status of many of her works are testified to by Roger C Schlobin in 'André Norton: Humanity Amid the Hardware', *The Feminine Eye: Science Fiction and the Women Who Write It*, ed. Tom Staicar (New York: Frederick Ungar Publishing Co., 1982), pp.25-32.
31. Marnie O'Neill, 'Functions of Response to Literature', in *English in Australia*, 68 (June 1984), 27.
32. See, for example, Geoffrey Bantock, *Education and Values: Essays in the Theory of Education* (London: Faber and Faber, 1965).
33. Disch, 'The Embarrassments of Science Fiction', p.149.
34. *Ibid.*, pp.144-147.
35. Stableford, 'The Social Role of Sf', p.25.

CHAPTER 4: SCIENCE FICTION AND EDUCATIONAL DEVELOPMENT

4.1 SCIENCE FICTION AND GENERAL EDUCATIONAL DEVELOPMENT

The discussion in the previous chapter has focussed in part on the importance of understanding the emotional issues involved in young people's learning processes, particularly in the area of reading. In this chapter, both emotional and cognitive elements will be considered in an exploration of educational development. Clearly, an argument is being prepared for the use of certain types of material and, perhaps more significantly, certain styles of teaching, as being more appropriate than others in the education of adolescents. Not only will narrative in general be given a position of vital new significance for learning, but science fiction itself will be re-examined in the light of the contribution it might make to the development of capabilities considered here to be educationally worthwhile.

While the satisfaction of wish-fulfilment or compensatory fantasies discussed in the last chapter may not in themselves be considered worthwhile educational aims, it can be strongly argued that unless these emotional needs are met, worthwhile material in literature will remain inert for the individual. Nicholas Tucker (1981) points out that the emotional response to literature in immature readers is largely stimulated by repetitive and predictable generalized patterns, the excitement of vicarious danger, for example, accompanied by the certainty of ultimate success. 'No author of fiction', he stresses, 'can afford to get too far away from plots which echo popular personal fantasies'.¹ 'Good' literature for the young must take into account the emotional needs in its readers, not necessarily always merely satisfying them, but rather extending, modifying or transforming them. It is possible to argue for quite different criteria of evaluation to be used when judging the appropriateness of specific works of literature for children or adolescents, from those judging the works

purely on their own merits. Young people's thinking and learning are in significant ways quite different from those of adults, especially adults with a high degree of intellectual sophistication and maturity. This crucial issue must be investigated carefully here, for on it depends the validity of a defence of science fiction for adolescents on educational grounds. First, a coherent and appropriate theory of educational development must be examined.

4.1.1 An Exploration of Kieran Egan's Theory of Educational Development

Kieran Egan (1979) identifies four stages of development in the young, which may be realized in varying degrees of completeness in the mature individual. His work is valuable because it seeks to relate emotional and cognitive development to the design of appropriate curricula in schools. While he gives approximate ages for the manifestation of each stage, he stresses that elements of each stage may be realized in varying degrees and at different times by individuals of any age. Thus, certain circumstances may cause an adult who has largely achieved most of the characteristics of the last stage, the 'ironic', to respond to events at a particular time and in a particular context in ways characteristic of earlier stages. The complexity of this view means that educationists must expect adolescents, who are developing extremely rapidly, to exhibit the characteristics of all four stages; they must respond with appropriate curriculum material and strategies. Most adolescents, however, will be at the second and third stages, and it will be helpful to look at these to see their implications for a defence of science fiction.

In the 'romantic' stage (approximate ages 8/9-14/15) the young student achieves a perception of the world as separate and different from herself, developing for the first time concepts of self and of an autonomous and objective world. Reality may therefore

become threatening and the individual often desires to transcend it, while securing her identity within it. There is a strong preoccupation with finding out what is *real* and what the limits to reality and possibility are, while the student demands a strong personal association with whatever is learned. As with the 'mythic' stage, stories are identified by Egan as the best way to do this. While exploring the nature of reality, the student is fascinated with exotic stories, fiction or fact, with otherness, with things that are as different as possible from everyday experience, yet connected in transcendent ways to things she can associate with. Following from the mythic stage, there is still an emotional need for conclusions to stories which clarify how the reader should feel, though the need for the assertion of strong binary opposites, of good and evil, for example, is no longer so apparent. Students at this stage still have little conceptual defence against the everyday world, and educational material dealing directly with it may bore or alienate them. The further removed the material, the fresher the perspective and the more relevant the knowledge is to the individual's *development*. The immature, Egan contends, require immature concepts and methods of enquiry. Finally, students at this stage gain a great deal from fixing on one topic and exploring it in great detail, controlling it, accruing masses of factual knowledge in any discipline area. This is part of the mental process of working inwards from extreme outer limits to the self.²

A student who reaches the 'philosophic' stage (approximately 14/15-19/20) becomes aware that reality is a single, complex story, rather than a series of unconnected ones. She becomes aware of herself as part of an historical process and she occupies herself with trying to discover the general laws whereby the world works, its natural, social, psychological and historical processes. The particular details and facts, esteemed by younger children for their own sake, derive

their meaning from their place in the general scheme of things, while the student's access to particular things is through the general. The adolescent student tries to discover 'the truth' and she forms ideologies and metaphysical schemes to which she becomes committed, to explain her proper place in the world. Learning takes place through the challenging of the general schemata set up by the individual by new material. To develop secure schemata, she searches to identify regular and recurrent patterns, essences and orders. Education should, according to Egan, provide ways of developing schemata by presenting information as a loosely connected, implicitly teleological story, but should also carefully set up anomalies to challenge, refine and modify the schemata. The effectiveness of any schema will depend on the amount of information the student has to defend it with. That in turn depends often on what she has learned in her romantic stage.³

The importance of understanding each of the four stages becomes apparent when Egan stresses the way in which children progress through them. Only by fully realizing and exploiting the characteristics of each stage, he claims, can the individual be equipped to pass into the next one. Imperfectly realized stages will lead to only partial acquisition of the capabilities of the next one. An adult may only arrive at a complete expression of the ironic stage by being permitted to develop the three preceding ones fully, because the ironic stage is the accumulated contribution of the three previous stages under ironic control. Educational material presented in inappropriate ways for an individual at whatever stage will not be effectively assimilated; it will not be an 'aliment' to their educational development. If it belongs to a stage the individual has already transcended, it may be entertaining, but it will not contribute to her development. If it belongs to a stage the individual has not yet reached, it will remain inert. This implies

boring or alienating the learner. The practical implications for the responsibility of teachers and curriculum designers to respond to their understanding of these stages and the educational needs they imply are clear, though detailed examination of these is outside our immediate concern at this point. The point which must be expressed most strongly is that educational material must, at least in part, be judged not according to external, adult criteria of accuracy, truthfulness or aesthetic quality, but according to criteria of its usefulness *for educational development*. Of course, the real issue is more complicated, since moral and what can perhaps best be termed political matters should probably receive separate attention. As well as this there is the question, particularly at the philosophic stage, of the importance of the actual curriculum content. Since many people never progress beyond this stage, those schemata they are operating with must be adequate as they may never be rejected or modified under ironic control. Since the notion of 'adequate' must be defined by the teacher or the educational institution according to overt or covert criteria of values, teaching can clearly be seen to be an ideology with inherent dangers and responsibilities.⁴

It is in general terms possible, therefore, to justify the inclusion in a school curriculum of material, concepts and approaches which are chosen for their appropriateness for educational development rather than any other reason. Children in the mythic stage, for example, may be told that one idea is 'good' and another 'bad', since only by this crude binary opposition can they engage in an issue at all. This has far-reaching implications for the education of students of all ages. 'There are', writes C.S. Lewis (1961), 'no variations except for those who know a norm, and no subtleties for those who have not grasped the obvious'.⁵ The arguments of Lewis and others in defence of the reading of literature which may not be 'Literature'

will be outlined in Chapter 5.⁶ For the purposes of this argument, it is merely important to point out that a student's developmental needs are independent from questions of the intrinsic quality of the educational material. This will be illustrated in the following paragraphs.

Egan specifically mentions science fiction narratives as being particularly suitable forms of story to be what he terms an 'aliment' to educational development for students in both the romantic and the philosophic stages, but that for each stage, different kinds of stories will be appropriate. The romantic preoccupation with exploring limits, with other worlds, alien societies, the boundaries of reality, the bizarre and the marvellous, means that the imaginary worlds in many science fiction stories are very appealing, especially those which are 'romantic' narratives in Scholes and Kellogg's sense of the word. They may help the student create or develop frameworks to make sense of their own world within a non-threatening frame. The complete cosmologies, with every detail carefully generated, may appeal to the collecting mania of some young students.⁷ This also helps explain the popularity of many science fiction films with their meticulous attention to the minutest visual details. Even highly complex works of so-called 'adult' science fiction may appeal to students in the romantic stage for much the same reason, through their intricate, technical, almost photographic preoccupation with detail. Arthur Clarke's *Rendezvous with Rama* (1973) with its marvellously conceived alien artefact, or Larry Niven's *Ringworld* (1970) with its artificial planet, may well succeed with a romantic reader at this level. While both contain a very satisfying story structure, they are also both long and complicated narratives. Accessibility to young readers may be through the way the material is presented, its particular form of cognitive organization, as well as its emotional appeal. The fact

that there are serious philosophic speculations about the nature of the human species and its primacy in the universe, may or may not be 'aliment' to a young reader. Speaking from an educational viewpoint, of course, this does not matter.

In the philosophic stage, didactive works of science fiction may provide an aliment to the schema-developing predisposition characteristic of this stage. Hypotheses about natural, social, psychological and historical processes and philosophical or moral principles are frequently presented within narrative structures accessible to young readers. The genre is broad enough to encompass the needs of students passing from one stage to another, while individual works are frequently rich enough to provide an aliment in different ways to individuals in different stages. The phenomenal success of *Dune*, mentioned before, may in part be attributed to this fact, too. The world is realized in sharply-focussed and riveting images, alien enough and minutely detailed enough to satisfy the most romantic reader. The mythic forces of good and evil contend in ways which are relatively unambiguous and the reader can understand how she should feel. The conclusion to the conflict is satisfying without being as absolute as a fairy tale, and this alien world is connected in intelligible ways to elements in the real world with which the reader can associate; through, for example, social and political organization, family relationships and religious systems. A reader in the philosophical stage, however, may assimilate and enjoy these aspects of a novel while engaging with it on the deeper levels which it also offers, for example the nature of historical processes, the role of the individual within these processes, and the evolution of the human species. A reader in the philosophic stage may encounter stories which, through their strongly and unambiguously fabulous intentions, enable her to realize what is often a revelation to a young reader: that a literary

story may present a problem which is relevant to her and her world!

While Egan's work is extremely helpful in many respects, it is necessary here also to express a few reservations concerning some of the assumptions implicit in his theories. The four stages imply a hierarchy of complexity as they are achieved by the maturing individual. It may, however, not be appropriate to consent to this being a hierarchy of veracity, if this is indeed what his theory also implies. The ironic control of the final stage, which Egan seems to value for its freedom from the self and from narcissism, also implies an uncommittedness which can be questioned from a moral viewpoint. In Chapter 2 of this dissertation, it was clear that no issues, including educational ones, are morally neutral and free of value assumptions. The question of whether it is desirable or even possible to function as Egan describes in his ironic stage is an open one. Its chief value may be seen to reside in its continual questioning of the validity of accepted categories.

The emphasis on development of a particular kind here, also implies a hierarchy of value placed on ways of knowing. It may be that Egan's progression of stages is itself culturally determined, implicitly influenced by the overt and covert values expressed by the society and the educational institutions the child grows up in. It is possible that intuitive, poetic, mythic and romantic ways of knowing are superseded through the *value* and *prestige* attached to intellectual activity of other kinds, much as Egan might seek to deny this. In reading, for example, mental activities of a very interesting kind go on below the conscious surface. Egan describes children progressing through the mythic and romantic stages as 'using the world to think with'.⁸ In works of estranged literature, from the simplest to the more complex, precisely this activity is being implied. The notion of 'world' itself is distanced and recontextualized in repeated

experiences with estranged texts; the world becomes the metaphor of the author's and reader's thinking in ways that resemble that of the child. Nor is this precisely an exploitation of a mythic characteristic under ironic control. Indeed, often the strange attraction and power of those created worlds is in their appeal to uncontrolled and largely unknown, yet potent aspects of the mind and the emotions. Ironic control could perhaps best be valued as one of a number of ways of thinking and being. A discussion of whether reading science fiction itself can develop and practise ironic thinking will occur later in this chapter. At that point, since Egan's identification of the characteristics of ironic thinking are a little unclear, it will be useful to compare his work with an examination of irony from another viewpoint.

4.1.2 The Importance of Narrative and Some Particular Claims For Science Fiction

Egan stresses in his analysis of all four stages, the central importance of story to educational development. Different stories are appropriate, and will serve different functions at different stages, but in general, story forms the organizing principle in the development of any curriculum item. He provides some very good illustrations of his theories within his text. Egan is aligned here with those from Barbara Hardy (1968) to Harold Rosen (1982) who stress the crucial importance of recognizing and acting upon the educational implications of the predisposition of the human mind to make sense of the world through narratizing. This must, in its turn, be examined briefly here, since in order for a defence of science fiction to stand on educational grounds, the general importance of literature in the school curriculum must first be established.

Harold Rosen (1982) describes narratives as 'the outcome of a mental process which enables us to excize a meaningful sequence,

then verbalize it'.⁹ A person attends selectively to events, Rosen explains, in order to interpret causes, relationships, motives, feelings and consequences and thence to make meanings. An individual's identity can be imagined as the accumulation of stories, heard and told, whether formal or spontaneous. The exchange of experiences with others, together with the private story telling called thought; the recall of the past and rehearsal of the future; the fantasizing, and of course the dreaming - are the basic patterns on which literature is based. Literature, then, is essentially linked to the process of living, and will, it is to be hoped, eventually topple from the artificial and remote podium on which it became placed as it gradually became known as 'Literature' and became yet another aspect of the alienation of many people from mainstream Culture, and from the school curricula which are often seen as protectors and preservers of this cultural heritage. Rosen's work is significant here, chiefly because of the implications it points to for change in educational priorities and for the opportunities offered for a consideration of widely accessible literary genres such as science fiction.

As a cognitive resource, narrative is basic to humans, Rosen contends, but it will only work effectively if it is developed. Children learn quickly and effectively at an early age, many of the different ways of telling stories, or diverse 'story grammars' of their culture, but as their schooling proceeds, story becomes replaced by what are traditionally considered more appropriate and serious discourses, especially 'objective' academic expositions and analyses, while narrative is relegated to a status of untruth or entertainment or suitability only for children. The fact that oral and written narrative is such a potentially fruitful, as well as being a completely natural heuristic or tool for the development of thought and understanding is thus traditionally ignored and certainly not exploited in school

curricula. Rosen points to the fact that, if this knowledge were taken seriously by schools, education programs would look quite different. He directs strong criticism at the 'closed' nature of school curricula, and argues for 'full story rights' to be conferred on pupils in classrooms, so the narrative mode of meaning can take its rightful place.¹⁰

Rosen's paper points to some clear directions for a discussion of science fiction in school. First, oral and written literature might, in theory, take its place as one of a number of narrative forms, not only, or even principally, in the English classroom, but in the science laboratory or the computer room. It may contribute to the ways in which issues may be focussed and explored. Knowledge through literature possesses a powerful heuristic potential, and as more is understood of the narrative base of argument and exposition, a strong case may be prepared for the use of narrative in many curriculum areas. In particular, certain science fiction narratives with their consciously fabulous or didactic intentions may be used to provide the complexity and anecdotal concreteness necessary for effective argument. The 'virtual experience' (to use Susanne Langer's term (1944)) for the reader of such narratives may provide the material for verbal engagement in abstract issues. Such engagement may facilitate an entry for a young student into more abstract written models for her own discursive writing. These issues will emerge again in Chapter 6.

Second, the integration of speaking and listening, reading and writing in imaginative production must be developed and extended. In the traditional secondary school curricula, emphasis is placed on a one-way process of learning. The student listens, reads material selected by teachers or curriculum designers, then recites, writes or rewrites much of the same material to demonstrate 'mastery' of it. Speech may occasionally also be assessed as a performance. School

programs based on 'full story rights' will include the student's capability, right, perhaps even obligation to initiate and direct material to be discussed, read or written in class. Listening will involve students' and teachers' open-minded attention to the utterances, narrative or otherwise, of other students. At least some of the curriculum content will be the joint responsibility of classmembers under the guidance and ultimate direction of the teacher. The potentialities as well as the limitations of each of the four language acts will be appreciated and exploited in balanced activity. The continuity between life and art is affirmed because they are seen as parts of the same human process of making meaning. Third, a different social climate will exist in any class where 'story rights' are conferred on students. The practical implications of this will be examined more closely in Chapter 6 of this dissertation.

It has been briefly stated that science fiction is *perceived* as a dissenting voice, one which does *not* reify the dominant culture. It is accessible to many young people through their informal acquaintance with at least some of its conventions in cinema and television; it spans, as was claimed in the Introduction, the gaps between the disciplines and has taken its place readily, it seems, in university courses all over the world in such subject areas as the physical sciences, computer studies, the social sciences, history, philosophy, religious studies and even in military academies! Its stories frequently integrate disciplines and dramatize their concerns. Through the medium of these stories, young readers may actively engage in making meaning of many fields of knowledge which would otherwise be opaque, resisted and inert because of the inappropriate methods of presentation in school. The story may provide the images with which the issues come to carry meaning.

Science fiction as a genre has a significant advantage over any other single literary form: its range and variety, and the vast numbers of authors and texts available and continuing to appear. A student *can*, by herself, come to know this literature, without the necessity for intervention by a teacher. The advantages of this situation are several. First, it is possible for any individual to find a text which will act as an 'aliment' in her educational development, whatever stage she is in. The almost endless source of texts means that the reader may, at any point, gain as many lateral reading experiences as she needs or wants, while the literary quality of much science fiction offers experiences which are not necessarily obviously stereotyped or too repetitively formulaic. The series and the multi-volume works fulfil this function particularly well. Most texts are relatively short and quick to read, and students with functional reading ability may choose texts confidently and optimistically from the whole heterogeneous range commonly available. This heterogeneity means, too, that a reader may choose to read simple or trivial texts at any time and for any reason, but that she may be led to engage also with more stimulating or difficult texts which might enjoy the benefit of a reader's acceptance of the genre, but which may take any of the satisfying conventions of the simpler work and transcend them. In this way, for example, a teacher may exploit a young reader's long-enjoyed encounters with Terrance Dicks's 'Doctor Who' stories by sensitively and carefully introducing other stories of space travel, such as Ray Bradbury's *R is for Rocket* (1962) or Heinlein's *Have Space Suit - Will Travel* (1958); other conceptions of aliens, such as Hoover's *The Lost Star* (1979) or *The Delikon* (1978) or Norton's *Iron Cage* (1974), or other, more stimulating and provocative accounts of the clashes of good and evil forces. The initial, spontaneous response to and enjoyment of the simpler stories

may provide the way, within this genre, for the development of a more complex literacy. Some of the significant ways in which science fiction texts can help develop literary capabilities will be examined shortly. Here, the crucial principle of engagement must be restressed. Rosenblatt (1978) is particularly adamant on this point, insisting that the point of departure in any reading enterprise be the reader's capability to engage spontaneously with the text, and underlining the pointlessness of any other approach. Rosenblatt goes on to express her belief articulated significantly also by C.S. Lewis (1961) before her, that a literary text should always be judged in the context of specific readers in specific cultural situations, according to its capacity to engender a full and personal literary experience.¹¹ This matter will be considered in more detail in Chapter 5.

4.2 AN ARGUMENT FOR THE STUDY OF A GENRE

Close acquaintance with a literary genre may itself have considerable educational benefits. If this is so, then science fiction is in a position to offer a unique opportunity to adolescents, because of the readability and 'knowability' of this literature, because of its power to engage. To investigate this claim, it will be necessary to delve briefly into some of the complex theories about literature and reading, including the concept of genre itself.

In order to recognize a literary genre, readers, whether they be teachers or students, must perform several complex tasks. The first involves constructing an intelligible framework within which to begin making meaning from the text. This framework must be constructed in a reader's mind after initial contact with the text, and may possibly be reinterpreted a number of times in the light of later textual and contextual signals and previous textual experiences. This process stresses the active rather than substantive implication of the word 'frame'; it is thus more accurate to describe frame-

making as an activity, than to consider frames as given or existing inherently in the texts themselves. Interpretive frames are designed by a reader on the basis of her general knowledge about the world she lives in, the evaluative principles she operates under and by awareness of specific literary conventions.¹²

A reader may thus construct the generic frame 'science fiction' upon recognizing an author's name, 'reading' the cues in the cover illustration and the external packaging, or seeing the actual label on the cover or in the area where the book is shelved. From this initial recognition and construction the reader creates meaning from the text. Most readers have some previous acquaintance of other works within a generic frame, and can anticipate plausible and possible interpretations in the light of knowledge gained indirectly through other media or through the osmotic process of learning that goes on through conversations and other informal channels. Everyone, including teachers, after all, has an idea of what science fiction is, even if they have never read a single book, because as a term, it is to some extent in the possession of popular culture.

This initial frame-devising activity alerts the reader to the need to participate in a particular way in the literary event. She will allow certain things to happen and will be unconsciously shutting out other possibilities, such as, for example, the expectation that the world being introduced will be the 'real' one, surrounding the reader as she reads. The signals in science fiction stories frequently occur within the first few pages and take the form of a disjunction from the known or the recognizably real. H M Hoover's novel for adolescents, *The Delikon*, presents a superb example of this, with its opening sentences structured along traditional folk-tale lines. Five sentences into the narrative, the jolt is administered:

In a northern land stood a palace encircled by the arms of a gentle river. To the east were temples; to the west, cypress-guarded tombs. A white road led to the river and crossed the high bridge.

In the palace gardens were reflecting pools and an enclosure for tigers. Three children played in the garden; Alta was ten, Jason was twelve, and Varina was three hundred and seven

(p.7).

The reader must register 'science fiction' through the juxtaposition of the concept of 'child' and the precisely enumerated age of Varina. A state of readiness for the relevant information, perhaps stimulated by a period of further mystification, will be established. Other works exploit different techniques. Vonda McIntyre's *Dreamsnake* (1978), for example, proceeds as a naturalistic narrative, and the truth about its setting must gradually dawn on the reader. Some of the tasks required of the reader of this subtle text will be examined further a little later in this chapter.

A further, hypothetical instance might serve here to illustrate more clearly the precise nature of the evocative and interpretive activity required of a reader of a science fiction text. Mention has already been made of the tendency for science fiction stories to literalize metaphor. This means, in fact, that a reader must re-allocate meaning from its familiar context by shifting frames. Ian Reid (1984) mentions, while writing on the topic of literary frames and reader/writer expectations, a pilot study where an unstructured writing task on the topic 'A Change of Mind' was given. The undergraduates, without exception, chose a sequential and realistic mode for their stories.¹³ If that topic were the title of an existing science fiction story, its reader may expect to have to re-examine this familiar phrase, to assign it new potentialities of meaning, to anticipate some of the quite horrible connotations and possibilities

implicit in a literal interpretation of the words.

The problematic and ambiguous nature of generic framing, however, is revealed when a reader develops a set of expectations based on a limited or lop-sided exposure to just one aspect of a literary genre. The task of functioning within a genre is an extremely complex one. It is not possible to write of 'unity' or 'wholeness' when considering the generic properties of an individual text. Reid (1984) points out that many texts are 'formally promiscuous', containing a 'mix of diverse registers without resolving these into a fully cohesive "whole"'.¹⁴ This corresponds to Dubrow's more polite term 'host', mentioned in Chapter 1. Suvin (1973), too, writes of genres manifesting a 'dialectical permeability to themes, attitudes and paradigms from other literary genres, science, philosophy and everyday socioeconomic life'.¹⁵ It is the reader's role to create the sense of wholeness in evoking the literary work, by blending the textual signals with the enduring sense of identity and understanding of the world she brings to the text, and the discourses at her disposal.

It is even less valid to conceive of an entire literature as a unity or a cohesive whole. The disparities within the genre 'science fiction' will have become clear through the exploration in Chapter 1, but it is a point worth repeating. Only by acquaintance with works from the 'Superman' stories or the magazine science fiction of the nineteen-thirties, to the 'hardware' of Van Vogt, Heinlein, Asimov and Clarke; from the 'mainstream' works of Orwell and Huxley to the quasi-mystical explorations of religious theories in Ian Watson's work or the radical feminist polemic of Joanna Russ - can a reader begin to gain a multi-dimensional, mature and adequate construct of what the term 'science fiction' might signify within the interpretive community of its readership. The more comprehensive the knowledge of the range of literatures implied, the greater must be the reader's

awareness of the fluidity of the generic framework she constructs. How, then, can a teacher or her students function both intelligibly and with integrity within this 'jungle' as Suvin has termed it?

The term 'science fiction', blithely brought out as an identifying label by many in absolute terms, is used by critics rather as a 'heuristic model' than as a 'metaphysical entity'. Suvin (1973) insists that, in order for rational and meaningful investigations to take place *at all*, in this field, a heuristic model must be constructed of the concept of 'genre' as a socio-aesthetic entity. Suvin defines a heuristic model as a 'theoretical structure based on analogy which does not claim to be transcendently "real" ... but whose use is scientifically and scholarly permissible, desirable and necessary because of its practical results'.¹⁶

The pedagogical implications of genre theory for teachers as well as students become clear when placed in the perspective of current literary discourse. While some theorists seek to ascertain that all interpretation is dependent on socio-historical phenomena and thus reducible to products of hierarchies of discourse, critics continue to use generic frames as intelligible models with which to understand literary work. Jameson (1981) points to both the opportunities and the dangers implicit in the heuristic model. Genre has, according to Jameson, a mediating function. The individual text is interpreted in the perspective of the deeper narrative structures inherent in a socially created generic construct. Genre is a 'social contract' between a writer and a specific public, a replacement of the perceptual signals of oral discourse with conventions, which are used for constructing meaning. This, as Jameson points out, may fall casualty to a market economy, where genre becomes transformed into brand names.¹⁷ Indeed, this phenomenon can be clearly seen to be occurring within science fiction.

The concept of genre, then, may *mediate* between the author and the reader, enabling meaning to be made. However, the 'permeable' nature of the generic constructs, which becomes more apparent the deeper the contact of the reader with a variety of texts, is at odds with the labelling fetish of mass-marketing bodies. A teacher and a student are to some extent in similar situations in negotiating meaning with texts and with each other. It seems clear that an individual reader's concept of genre and her operative definition of a particular genre must serve as a starting place in the process of learning about and within the generic frameworks. This, however, should be seen as a point in a process of 'coming to know', in gradually more sophisticated transactions with texts, rather than a limitation to ignore or to reject or as an obstacle to destroy. The focus on the *procedures* of learning rather than on the existing body of knowledge, for example, as here, the concept of 'genre', or the concept of 'science fiction' - can serve to transcend the dichotomy between text and reader implicit in an epistemological model, and to underline the principle of a literary work being an event in time, to use Rosenblatt's description. 'It is not an object or an ideal entity', she writes; 'it happens during a coming-together, a compenetration of a reader and a text'.¹⁸ Science fiction itself has a special role to play here, with its sense of community, where authors and readers are drawn together. All analysis of literature must be firmly rooted in a reader's own responses, according to Rosenblatt, and this must surely be interpolated here as a timely reminder of desirable and effective educational practices, even though it will receive more detailed attention in Chapter 6.

A teacher needs to be capable of responding to and evaluating the generic constructs she has created in her own evocation of literary work in a mature and self-aware way, so that she may enable her students

to move from their own first, spontaneous, personal constructs to more publicly valid and shareable ones. Her first responsibility is to familiarize herself with a wide body of literature, in particular, of course, the literature that adolescents read and that which she believes they should read. She should be aware of the way in which personal knowledge, evaluative principles, the concept of self and the consciousness of literary traditions come together in her (or any reader's) act of making literature.

By engaging students in a wide study of works recognized as belonging to a particular genre, a teacher can help them to a position of intellectual independence from such external forces as publishers, as they acquire the capacity for discrimination and judgment. Perhaps even more importantly, students may gain some measure of useful independence from their teachers, who often act as indispensable yet mystifying dispensers of knowledge. A competent reader, as Heather Dubrow (1982) points out, brings generic expectations to a literary text, and needs to be familiar with the conventions of a genre before being able, for example, to comprehend the meaning of an author who evokes these expectations in order to subvert or overturn them.¹⁹ A reader's responses are always affected by previous experiences with a particular literary form. To be capable of responding adequately to the signals explicit or implicit within the text, a reader needs literary experience that is both wide and deep.

Knowledge of genre, in conclusion, on the part of both teachers and students, appears to be a vital condition on which meaningful exchange about literary work must be based. Perhaps it is necessary to acknowledge Ian Reid's concerns that too strict an adherence to formal generic frames might be an inhibiting factor in the reading, evaluation, criticism and writing of young people (Reid, 1984).²⁰ However, it is conversely also true that to deprive them of the

experience of a genre is to deprive them of the opportunity to develop the capability of categorizing, discriminating and evaluating in an adequate way independently of the adult authority figures whose apparent omniscience they are frequently forced to accept.

To return briefly to Egan's theory of educational development, it is clear that young readers will develop awareness and knowledge of generic constructs in different ways at different stages of their development. Two significant points concerning the study of genre emerge. The first point is that the accumulation of wide reading experiences necessary for the development of adequate generic constructs will most profitably occur during the romantic stage, coinciding with a strong attraction to stories, as well as the desire to know something exhaustively, frequently manifested in the reading of series or the entire oeuvre of a particular author, as well as the specialization in particular fields such as science fiction, fantasy or ancient mythology. The romantic student's preoccupation with the exploring and testing of limits may be expected to lead her to construct, at first, rather wide and inclusive generic frames. In the philosophic stage a student is likely to become more aware of the concept 'genre' and seek to relate individual works to her particular constructs. She may redefine earlier frames and may be preoccupied with developing more refined and exclusive schemata. Without the crucial breadth of reading experience begun during the romantic stage, the student will most likely not achieve adequately the capabilities characteristic of the philosophic stage.

The second point defends Suvin's notion of genre as a 'heuristic model'. Not until the ironic stage will a reader be able to conceive of the 'story' of a genre as being a useful rather than a 'true' one. Students in secondary schools, on the whole, are ideally developing the fullest expression of the romantic and then the

philosophic stages and will need to commit themselves to such schemata as generic frames and develop within them, while the teacher's task will be to introduce anomalies carefully and sensitively, to refine and develop the schemata, to allow them to mediate successfully and rewardingly between reader and author. It is therefore possible to argue that students *need* the shapes and boundaries imposed on them by generic frames, and that these may liberate and enhance their reading and writing, rather than inhibit it, as Reid suggests.

4.3 SCIENCE FICTION AND THE DEVELOPMENT OF SPECIFIC LEARNING CAPABILITIES

From a pedagogical perspective, then, science fiction can be seen to provide significant opportunities for educational development. This literature can, in addition, contribute to the acquisition and refinement of specific capabilities, and it will be worthwhile here to take a closer look at what these might be and how this might happen. First, though, the term 'capability' needs to be scrutinized more closely. It appears to be particularly helpful in recognizing how and what adolescent readers might be learning when engaging with certain kinds of science fiction texts. Whereas the terms 'capacity' and 'ability' appear to refer to latent qualities which may be pre-determined, 'capability' has been identified as *anticipatory* and also *generative*. Rather than being specifically task-oriented (as with the term 'competence'), the notion of having a capability points in an open-ended way to probable future success on the completion of tasks in related areas.²¹

A consideration of learning in terms of the acquisition of capabilities has important implications for a whole model of education which will be addressed further in Chapter 6. It seems clear here, however, that didactic science fiction's extrapolative and propositional (or analogical) models both prompt readers to acquire or refine predictive and openly speculative capabilities. Such

capabilities may be valued in an educational model which itself values students' success in meeting anticipated needs and purposes.

The discussion in the remainder of this chapter will prepare the way for an appropriate evaluation of science fiction as an educational literature for adolescents (to be outlined in Chapter 5). It should also allow for the construction of a coherent model for student response in Chapter 6. Until then the following two questions need to be kept in mind: what should students of science fiction be asked to respond to? In what modes should they respond?

4.3.1 Conceptual Change, the Acquisition of Knowledge, the Personal Dimension

It has already been mentioned that science fiction is a socially acceptable literature to many adolescents, even if they feel quite ignorant as to what it actually *is* in any depth. Definitions of literature, reading and schools and their curricula, which are in danger of being rejected at this crucial stage in the development of many individuals, do not appear to specifically include science fiction, which is part of a wider, more informal cultural definition shared by adolescents and the wider world they inhabit. Successful teachers may stimulate students to respond to and talk about this literature in class or more informal contexts such as in clubs, or in private conversation. This process of verbalizing about the created worlds and societies of science fiction texts necessitates that the speaker develop and refine concepts about the structure of her own society and the real world. To verbalize about created cosmologies requires adopting a cosmological perspective, acquiring a concept of cosmology. It requires carefully refined constructs of human identity to verbalize about the humanness or otherwise of a science fiction character, such as Fors, the protagonist of André Norton's *Star man's Son* or the 'human' and android figures in Philip Dick's

Do Androids Dream of Electric Sheep? The 'otherness' of science fiction narratives provides a way for the reader to define herself and the world, and also to see and understand the relativity of structures and values, including her own; to see that they change in response to changes in time, space and technological advances. It allows her, after a wide experience of reading such works, to see the ideological force of 'version'. A note of caution may be appropriate: what learning takes place here may be deeply concealed from obvious methods of evaluation. It may be in danger of destruction if subjected to normal kinds of testing, since it relies on a continuing engagement on the part of the reader, with what is seen as a living cultural form. That is a topic for Chapter 6.

Because authors typically submit their hypotheses to more or less rigorous cognitive scrutiny using the methods of modern science, their stories can provide serious intellectual challenges in emotionally satisfying forms. Readers can explore the ideas through to their logical conclusion in ways not available to them in the 'pure' and impersonal forms of information presented to them in science or social sciences curricula. Intellectual and emotional involvement in the narrative can lend a personal dimension to learning which may be a vital factor in achieving educational success for many young people, and which is very frequently overlooked in secondary school curricula. The story framework presents meaningful, vivid images within which ideas are explored. Science fiction is often extremely attractive to readers *and* educationally worthwhile because it is both concrete and complex. Science in school is frequently abstracted and necessarily oversimplified and, as such, inert as a source of educational development to many students. It is also typically seen as a distant, already-completed product of the labour of experts, rather than a process, or a way of thinking. That readers of science

fiction can develop the capability of hypothetical-mode thinking has already been discussed. As well as this, it is possible to claim that readers can acquire knowledge from their reading. Knowledge acquired through reading science fiction texts is dynamic, a product of the active participation of the reader in the construction of the work of literature from the text before her. It takes two forms. The first is specific and direct, involving the transmission and reception of factual material. Examples of this are numerous. *The Andromeda Strain*, with its data on viruses has already been mentioned. Heinlein's books frequently include large amounts of scientific information in action-packed adventures. In *The Moon is a Harsh Mistress* (1966), the reader may learn about computer logic and capabilities, the moon's gravitational relationship to the Earth, the physics of catapulting rocks from one to the other. In Arthur Clarke's *2001: A Space Odyssey* (1968), the latest in space technology is outlined and carefully extrapolated upon. These are all texts highly accessible to, and widely read by adolescents. It is worthwhile pointing out here, too, that adolescents have necessarily a narrow view of and limited knowledge about the world. As C S Lewis (1961) points out, therefore, they may gain a lot of general knowledge from their reading, a fact perhaps overlooked by some when evaluating literature for young readers.²²

Other ways offered of coming to know in science fiction are more difficult to pin down. The field of microbiology with its methodology and its systems of thought may in some way 'come to life' in the mind of the reader of *The Andromeda Strain*. The actual experience of being in space, and the image of Jupiter at close quarters may be realized (in the fullest sense of the word) by a reading of the text of *2010: Odyssey Two* (1982) by Clarke. The reader of *The Moon is a Harsh Mistress* may gain direct insight into a polyglot

community whose social structure and behaviour has successfully adapted to the alien physical environment of the Moon. Cause and effect can be studied and assimilated in these images; they can be seen to be operating in ways much clearer than anything in the real world. Stories show what abstractions and generalizations look like in something like the fullness of living detail. What may be gained here is a sense of the 'whole story' or defining structure of any particular science, as well as a sense of the interconnectedness and mutuality of the sciences and other organized bodies of knowledge. Readers of science fiction may become capable of adopting a reflexive, metaphoric, intuitive and imaginative *stance* towards science. The fact that the hypotheses explored in these stories are subject to cognitive scrutiny, means, too, that they lend themselves to ready conceptualization and verbalization by readers in public response. Reading this literature may be seen to enhance the growth of consciousness of an individual's own abstracting processes which is so valued by Moffett (1968).²³

The combination of complexity and concreteness characterizing the accessibility of this material, means a complexity and detail in response which is largely unparalleled in other fields. The visible outcome is that young readers appear to be able to cope with very complex works of science fiction indeed, without apparent difficulty; they frequently gain great pleasure in the acquisition and display of facts and concepts connected to specific fields of knowledge. Even if some of the information thus acquired is pseudo-knowledge, for example the wilder extrapolations about time- and space-travel, psionic ability or genetic engineering, the confident and positive attitude of the reader to new forms of information and the intellectual openness and reflexivity required to make sense of at least internally consistent knowledge systems - are beneficial, learning-enhancing

by-products of science fiction reading. This process could be called 'poetic learning' intimately connected to the combination of science and fiction in these stories, and the close and active engagement of the reader in the construction of meaning and in conceptual refinement and change.²⁴

The 'conceptual change' model of scientific learning currently being explored by anthropologists (Hewson and Hamlyn, 1985)²⁵ suggests a rewarding study of learning through science fiction that could be carried out in the future. The combination of science and fiction mentioned above links the capabilities required of a reader to improvise, intuit and infer meaning from a fictional narrative, with a concept of what science is. This may act to open the mind of the student or the scientist further, and change or modify the reader's concept of science or of a particular science.

4.3.2 The Use of the Imagination

Science fiction is, of course, a literature which powerfully affirms the strength of the imagination. To read it means to evoke constantly images of what is not present, has never been experienced and does not (yet) exist. The educational benefits of a further development of imaginative capabilities perhaps needs no defence here, though brief mention of recent work by Margaret Meek (1985) may serve as a warning that it is an axiom worthy of more study, and certainly not to be taken for granted as a result of the familiarity of its articulation. Meek writes of the linking of imagination with desire in young children, who use objects and actions outside themselves in the search for a central definition of themselves. The transgressions of the known and the sense of 'glorious irresponsibility' gained from experimental play with the recognizably unreal help, perhaps paradoxically, to define the boundaries of the real and develop a awareness of the here-and-now. This use of the imagination

is also linked with a desire to articulate things differently, to discover the unknown and expand the boundaries. Meek points out that what young children enact in play is often a function served by reading in older children and adults.²⁶ This parallels much of what Egan posits in his theories of educational development, particularly of his mythic and romantic stages. Egan's notion, discussed earlier in this chapter, that the child at the mythic stage uses the world to think with, seems to underline Meek's point here, while the idea that this function is transposed into reading in older students points to what can be seen as quite an important learning-enhancing function of estranged literature.

4.3.3 Learning Analytical Inference

The technicalities of learning to read, and of how a reader acquires a more complex and sophisticated literacy are not the subject of this dissertation. When a claim is made, however, such as that science fiction can help a reader develop the capability of inferential interpretation, then an attempt must be made to defend it. Inference has been defined by Carroll (1969) as:

The act of correctly deriving from verbal material, some idea that is not directly stated in the material itself ... The inference must be a correct and logical derivation from the statements we hear or read.²⁷

In her study of children's reading for inference, Bunbury (1980) is concerned with a practical demonstration of how children of different ages infer meaning from a story. She refers to the capability termed by Balsa 'analytical inference' as being typically developed from the age of twelve years onwards, and thus of particular significance to a study of adolescents as readers. Analytical inference involves the use of logic and suppositions to sustain and support inferences made outside a reader's concrete experience. This corresponds in time to the development of the Piagetian cognitive stage of formal

operations. It is important to note Bunbury's contention that this capability cannot be simply assumed to develop, but that it can be taught.²⁸ Perhaps it should be most surprising to teachers to contemplate the number of young readers who *do* grasp analytic inference without aware and systematic teaching in secondary schools. The concerns of psychologists such as Kohlberg and Gilligan (1972) that developmental psychology is simply not taken seriously in the design of secondary school curricula²⁹, may be well founded. That the estranged nature of science fiction can foster analytical inference will be explored now.

Elizabeth Calkins and Barry McGhan have taught science fiction in an American high school, and the paper they published after their collaboration is especially interesting in its considerations of pedagogic issues. They claim that science fiction is a 'particularly effective vehicle' for teaching inference and for helping students learn to 'escape from the literal'.

The reason SF is especially good for developing comprehension of subsurface levels of meaning is partly because of its relatively simple structure; it contains fewer literary elements than other fiction commonly used in high school. We do not mean that SF is simple or that it is suited for simple-minded people - far from it. It is simpler than other categories of literature because the out-of-this-world settings of most SF stories require the author to devote considerable attention to developing the world of the book (its *Weltanschauung*, if you will). This necessity, for example, causes him to focus on the outer social action and conflict of his characters rather than on their inner personal life ... Furthermore, the author's attempt to develop the book's world in the reader's mind is often carried out through a kind of symbolism which is commonly used in SF as a shorthand for conveying concepts, and thus presents the student with many instances of its use.³⁰

Calkins and McGhan cite several examples, among them the references to Madison Avenue in Pohl and Kornbluth's *The Space Merchants*,

but do not manage to convey the widespread nature of this technique in science fiction narratives. The bestowing of metaphoric and symbolic resonance on place names is just one of the techniques utilized to imply the world of the narrative and its transcendent association with readers' concepts of the 'zero' world. Names in general take on a special significance, being able to refer to selected aspects of the author's and reader's present, or historic or mythic past. The Judaic names of the characters, Isaac and Moshe in *The Ennead* (1978) by Jan Mark signal that an understanding of what happens in this world in a system named after the nine Egyptian deities may be enriched by stories from Earth's past. In Vonda McIntyre's *Dreamsnake*, the reader must infer the true story of this world through the accumulation of small clues. The real nature and cause of the black rocks and harsh landscapes becomes clear through repeated allusion. The reader must fill in the 'telling gaps' (to borrow Reinbert Tabbert's term (1979)), to create the future, post-nuclear Earth with its small pockets of people surviving with the small amounts of scientific knowledge left them, and its mysterious 'Centre', a walled-in city which communicates with off-worlders. In this apparently naturalistic narrative, the 'estranged-ness' must be inferred by the reader for much of its length. In contrast to many naturalistic texts, inference is an *obviously* essential factor in an adequate reading of a work such as *Dreamsnake*. The reader may at times become consciously aware of her activity of adjusting the story *she* is constructing when reading the words on the page, in order to achieve coherence. The story builds up an agglomeration of disjunctions and anomalies from the known, which force the reader at some point, to face her own interpretive activity. This point, where the story ceases to make sense, stimulates a recasting of the text so far read, in the light of the new meaning being inferred.

It is probable that the reader will reflect at some length on the nature of her reading. Opportunity may exist here for a reader to be brought to a realization of the way meanings are made, and, significantly, of the invitations openly extended in many works of literature, to inferential analysis.

The use of synecdochic linguistic elements is particularly widespread in genre science fiction texts, requiring through a kind of shorthand, that the reader supply appropriate sets of reference acquired frequently through acquaintance with other works within the genre. This intertextuality means that the reader creates appropriate constructs of 'Old Earth' for example, or 'the Empire', or a 'conapt' (an apartment in a high-rise building with its own life-support system) which can transfer from one text to another, thus increasing the awareness of the idea or hypothesis being tested through the medium of the story. Nicholls (1979) has pointed out that the term 'conapt' is a particularly good example of the shorthand used by genre science fiction writers. The term was invented by Philip Dick, used in most of his works and later taken up by many other writers.³¹

Calkins and McGhan believe strongly that inferential reading may be taught, and outline some of their techniques for doing so. These would reward public discussion and debate. Their central assertion is that considerable rigour should be developed by readers and teachers in the pursuit of understanding of referential detail and implication in science fiction texts. Texts should be subjected, they contend, to a fully conscious appraisal of all the meanings and levels of meaning implied within them. At the very least here, it is necessary to note that this principle needs to be applied with a great degree of teacher sensitivity, lest other ways of learning, discussed above, be jeopardized by such an approach.

Science fiction, in summary, appears to offer three particular forms of stimulus to the development of inferential reading. The first is the strong appeal to the reader's imagination. New worlds are created from the author's mind and recreated in the reader's, out of the assimilation of concepts, experiences and feelings about the real world. The reader is evaluating as well as evoking the creations, in response to the author's rhetoric, and in the light of her sense of fact and her understanding of codes and how they operate. The second stimulus to inferential reading is the frequent use of metaphor and symbol. From the literalizing of metaphor discussed in Chapter 1, to the metaphORIZATION of whole worlds and systems, science fiction texts engage a reader in an act of reading liberated from the 'function'-bound use of 'subliterary' and much spoken language (C.S. Lewis, 1961)³² The reader is frequently made to pay attention to the language itself in this way, thus making and analyzing connections with what she knows of literature and of life. A study of the reader's role in Vonnegut's 'Harrison Bergeron' mentioned in Chapter 1 will make this clear. Third, the measuring of a science fiction world, particularly satirical or fabulous creations, against the real one with the requirement of 'metaxis', invites or even compels a reader to recreate or infer much of the significance of what is said in terms appropriate to the known world, in much the same way as she has learnt to do in parables or fables from the past.

4.3.4 Developing and Practising an Ironic View

At this point, however, the question of the relation between metaxis and irony requires some examination. If, as has been considered earlier in this chapter, the ability to comprehend or hold an ironic view is to be valued in educational terms, then thought must be given to how this can be developed or taught. It seems clear that metaxic reading implies the capability of a mind *open* to irony, as it requires

that the reader hold or balance two views. The ironic stage of development in Egan's terms (see discussion on pp.125-127 above) means the student is capable of adjudicating among the schemata shaping the world she lives in. It implies the capability to select fitting or appropriate schemata for the purposes of constructing possible futures; as such it implies a position of individual empowerment and control which may be valued in educational and moral terms. Science fiction texts which present hypotheses and provocations in the ways discussed in earlier chapters invite reading and interpreting activities congruent in an important sense to Egan's ironic stage.

Robert Plank (1966) seems to have been suggesting something similar in the value he implicitly places on high scientific curiosity and high tolerance of ambiguity (see pp.95-97 above). The latter quality indicates a readiness to entertain alternatives without the emotional need to make unequivocal closure, while the former implies an active search for meaning. However, whereas Plank regards these as personality traits, and as such presumably innate, Egan's emphasis is developmental and anticipatory, compatible with a view of ironic thinking as a *capability*, according to the definition above.

If it is true as Egan claims, however, that eighty percent of Western populations presently only develop minimally beyond the romantic stage³³, then another kind of hegemony is operating; the real freedom to choose among myths of modern life is denied the majority of people. Science fiction texts which provoke readers into entertaining notions of otherness, which present critiques of modern myths and ideologies, and which prompt speculation as a form of intellectual game (see discussion at the end of Chapter 2), appear to offer the possibility of providing an aliment for young readers to develop beyond the romantic stage and into the philosophic and ironic stages. It also appears possible that at least some of the characteristics of

the ironic stage might be attainable at an earlier age than the nineteen or twenty that Egan suggests. Ironic thinking is a complex and ambivalent matter, as was indicated earlier in this chapter. It will be helpful to consult another view.

Definitions of irony, outside Egan's rather specialized, if vague use, are notoriously slippery, but perhaps Wayne Booth's may be useful here. Booth (1974) first evokes Erich Heller's use of the term implying a middle position, an uncommittedness. Booth then goes on to identify two kinds of irony, stable and unstable. The first might best be described as a literary device, the use of ironic negation to imply commitment to an alternative set of values. Unstable irony, on the other hand, is that middle position, which views no belief or value system as true or absolute, and which avoids commitment of any kind. Unstable irony is itself a world view, often a black, cynical or pessimistic one.³⁴

Though it is not possible here to explore the whole field of science fiction in detail to examine its potential for ironic reading, it is necessary to assert that, on the whole, according to Booth's definitions of unstable irony, science fiction is not an ironic literature, though some exceptional writers, notably Thomas Disch and Samuel Delany have become known as ironists. 'Serious' science fiction largely spans a continuum between genuinely open-minded and curious intellectual speculation, and passionate political or moral commitment. Irony, frequently used rhetorically, is of course to a large extent stable irony in Booth's terms. Huxley provides science fiction studies with what has become a paradigm in the genre with his *Brave New World* dystopia. The positive or negative valuing of an imaginary society in much didactic science fiction is realized by metaxic mirroring against the real world by the reader; the relation between the two may be but need not be ironic.

It is probable that a developing reader may need to recognize and practise reading irony of the stable kind before being capable of perceiving or tolerating unstable irony. Leaving aside questions of the moral desirability of encouraging an ironic world view, it seems clear that stable irony is a rhetorical device which could be developed during the earlier stages described by Egan, since it is compatible with commitment to over-arching schemata or organizing principles. Science fiction's foregrounding of such organizing principles in its created worlds also offers the opportunity of foregrounding the use and power of irony in this special sense. Part of the particular nature of an estranged text is the tendency to draw attention to its own organizing principles, rather like a building with its supporting structure outside the finished walls. Often the very lack of subtlety in a science fiction text can be an aid to the development of sophisticated reading capabilities in inexperienced readers. All successful teachers will recall the pleasure expressed by young readers when they grasp that works like *Nineteen Eighty-Four* or *Lord of the Flies* exist in part as critiques of our society.

In summary, then, the overdetermined metaxis operating in the reading of a didactic science fiction text, while not itself implying irony, may allow a reader to develop an openness and flexibility of approach to possible meanings, which is an essential part of the capability of ironic thinking. Such a capability may indeed develop at a much earlier age than Egan and others have suggested, given appropriate texts. This point will emerge briefly again in the Conclusion of this dissertation.

4.3.5 Developing the Capability of Aesthetic Reading

There are many adolescents who do not read for pleasure, and for whom, therefore, the heuristic potential of literature is unavailable. A significant group of these adolescents appears to

have acquired the belief, implicit in the positivistic orientation of many secondary school curricula, and clearly articulated by Rosen, that narrative is an entertainment, not a source of knowledge. The more 'serious' discourses of objective and academic description and analysis are those appropriate to the real, adult world. Their stance to any form of written material is, to use Louise Rosenblatt's term, 'efferent' rather than aesthetic. This means that the reader focusses on what will be retained after the reading is finished. The reader attempts to be impersonal and transparent, actively seeking information, concepts or guides to action. This is the stance appropriate to empirical expositions or school text books. A hallmark of writing which invites such a reading stance is that the same concepts or information could be just as accurately conveyed by a rewording, and that the sense of the whole can be contained in a paraphrase or summary. In contrast, aesthetic reading is concerned with what actually happens during the event of reading. The reader's attention is centred on what she is experiencing in her relationship with the text. The particular way the text has been written is an essential component of the lived-through experience, and is unique and irreplaceable. The importance of identifying the reader's stance is clear when Rosenblatt claims that the same text may be read both ways.³⁵ There are some important educational implications arising from these helpful theories.

An adolescent who has not developed or who has suppressed the capability of reading aesthetically, has often over-emphasized the efferent stance. Rosenblatt claims that such an over-emphasis means that 'the richly-diffused cognitive-affective matrix is pushed into the fringes of consciousness'³⁶, and she joins with Rosen, among others, in criticizing educational systems which do not truly assist the development of aesthetic capabilities. Metaphoric-mode thinking,

for example, with all its potential for science and other organized knowledge forms, can only be developed with an assumption of an adequate aesthetic attitude. It appears to be of urgent importance to find ways of overcoming the resistance of that particular group of students, predominantly male, and particularly those oriented to the sciences, to aesthetic activity. This is necessary not only for the rather nebulous and hard-to-pinpoint purpose of their general development as fully mature and adequate human beings, but also for the sake of developing a more appropriate, imaginative, intuitive and integrated stance towards scientific learning itself. Science fiction may perform its most valuable service in the educational development of these students.

The unique blend in science fiction of Scholes and Kellogg's two narrative elements, the empirical and the fictional, allows an insight into the mediatory function this literature can serve to readers who resist aesthetic involvement. Science fiction texts typically foreground empirical narrative elements as part of a hypothesis which is presented in fictional form by a disjunction of the real. As has already been shown, a reader may consciously gain a large amount of actual, empirical information from certain types of science fiction texts. The intertextuality of the science fiction literary world means the reader may use knowledge gained from one text to evoke another more fully. A criterion for the success of individual science fiction texts for these readers is that its empirical components be adequate and convincing. Writers such as Fred Hoyle are esteemed because of their status in their own fields and the corresponding (assumed) scientific accuracy of what they write. These readers may gain their reading pleasure from a sense that what they are actually engaged in doing is acquiring knowledge of this kind. Their reading stance is, for a considerable proportion of the

time, likely to be efferent. However, even the 'hardest' of Hoyle, Asimov or early Heinlein texts contains a story which will engage a reader aesthetically. The emotional elements fuse with the cognitive and empirical in a unique way, so that while basic, largely unconscious wish-fulfilment and compensatory fantasies may be being satisfied, a large amount of aesthetic pleasure is conversely gained from contemplation of the scientific narrative elements. Adventure often arises from the scientific quest for knowledge, from research and development, trial and error and the drama of discovery. Science itself is presented as an exciting drama, and is frequently transposed into a quest myth, as in Asimov's *Fantastic Voyage*. Scientific language itself, as was mentioned in Chapter 1, changes from its purely denotative to often richly connotative functions, signalling to a reader that a change in stance is appropriate. It is probable that the reader's stance may change from efferent to aesthetic and back again in quite a complex relationship with the text.

Recognition of this particular state of affairs can be exploited profitably by educationists in at least two ways. First, technically oriented, non-literary students may be introduced or reintroduced to literature by being provided with texts which can fulfil the most stringent empirical requirements characteristic of an efferent attitude. Students may read science fiction texts efferently, but are possibly engaging with them aesthetically despite themselves, a situation which could be developed further through increasing levels of textual and allusive complexity within the genre. Second, those students who are already avid readers of 'hard' science fiction may be led profitably to texts offering alternative views and richer opportunities for aesthetic engagement, within the science fiction genre or without.

NOTES TO CHAPTER 4

1. Tucker, *The Child and the Book*, p.171.
2. Kieran Egan, *Educational Development* (New York: Oxford University Press, 1979), pp.28-49.
3. *Ibid.*, pp.50-81.
4. *Ibid.*, p.78.
5. Lewis, *An Experiment in Criticism*, p.103.
6. Barbara Herrnstein Smith (1978) has pointed out that a work of 'literature' is not essentially but only situationally different from other human utterances. The distinction is the context in which it operates. 'Literature' is a function of a combination of the author's intentions and the reader's response. The conferring of the title 'Literature' to any particular utterance, then, is largely a matter of convention (*On the Margins of Discourse: the Relation of Literature to Language* (Chicago, University of Chicago Press, 1978), pp.81-2). Ian Reid concludes that a 'unified concept of discourse' is thus appropriate when teaching literature in school (in *The Making of Literature: Texts, Contexts and Classroom Practices* (Adelaide: Australian Association for the Teaching of English, 1984), p.17).
7. Egan, *Educational Development*, p.49.
8. *Ibid.*, pp.14-15 and p.28.
9. Harold Rosen, 'The Nurture of Narrative', in *Stories and Meanings* (London: N.A.T.E., 1985), p.10.
10. *Ibid.*, p.16.
11. Rosenblatt, *The Reader, the Text, the Poem*, p.140.
12. Reid, *The Making of Literature*, p.58.
13. *Ibid.*, p.69.
14. *Ibid.*, p.61.
15. Suvin, 'The Genological Jungle', p.251.

16. *Ibid.*, p.252.
17. Jameson, *The Political Unconscious*, pp.145-156 and pp.105-107.
18. Rosenblatt, *The Reader, the Text, the Poem*, p.12.
19. Dubrow, *Genre*, p.37.
20. Reid, *The Making of Literature*, pp.58-65.
21. Bevis Yaxley and Hugo McCann, 'Anticipating Discourse: Capacity, Competence, Ability and Capability' (Centre for Education, University of Tasmania, 1984), pp.4-6.
22. Lewis, *An Experiment in Criticism*, p.75.
23. James Moffett, *Teaching the Universe of Discourse* (Boston: Houghton Mifflin Company, 1968), p.28.
24. 'Poetic learning' stresses the active and personal nature of the learning act. The term 'poiesis' itself means 'making'. This notion shares some important elements with George Kelly's 'personal constructs' theory (helpfully described and interpreted in D. Bannister and F. Fransella, *Inquiring Man* (Harmondsworth: Penguin, 1971)). The learner constructs interpretive frameworks, which are *fitting*, in several senses: as personal constructs they must be personally meaningful; they must *fit* the learner's sense of the nature and shape of reality; they must be coherent - *fit* together. These metaphors have profound implications for a theory of teaching: learners must be able or enabled to *make* knowledge; the nature or shape of that knowledge may remain hidden from and perhaps vulnerable to ordinary methods of assessment. Chapter 6 will begin to address these points.
25. Mariana G. A'B Hewson and Daryl Hamlyn, 'Cultural Metaphors: Some Implications for Science Education', in *Anthropology and Education Quarterly*, 16 (Spring 1985), 31-46.

26. Margaret Meek, 'Play and Paradoxes: Some Considerations of Imagination and Language', in *Language and Learning: an Interactional Perspective*, eds. Gordon Wells and John Nicholls (London: The Falmer Press, 1985), pp.41-57.
27. Quoted by Rhonda Bunbury in 'Can Children Read for Inference?', *The Power of Story*, p.149.
28. *Ibid.*, p.150.
29. Kohlberg and Gilligan, 'The Adolescent as Philosopher', p.175.
30. Elizabeth Calkins and Barry McGhan, 'Science Fiction in the High School', in Williamson, ed., *Teaching Science Fiction*, p.84.
31. Nicholls, ed., *The Encyclopedia of Science Fiction*, p.134.
32. Lewis, *An Experiment in Criticism*, p.30.
33. Egan, *Educational Development*, p.98.
34. Wayne Booth, *A Rhetoric of Irony* (Chicago: University of Chicago Press, 1974), p.151.
35. Rosenblatt, *The Reader, the Text, the Poem*, p.25.
36. *Ibid.*, p.40.

CHAPTER 5: AN EVALUATION

5.1 THE LITERATURE

The first section of this chapter will seek to indicate very broadly some of the main issues involved in an evaluation of science fiction in literary terms. To essay more than this is to step away from the pedagogic concern of this dissertation, to attempt in any case, the impossible for reasons which should by now be apparent, since science fiction is not a literature at all, but a loosely-connected collection of many individual works, themes and styles. A perusal of some of the main collections of critical essays published recently will reveal that no-one has attempted to answer comprehensively and definitively the question of the literary value of science fiction. Indeed, it is unanswerable. On the other hand, critics such as Parrinder (1980) call to task those who seek to use science fiction in educational programs despite admitting their belief that it is a literature of low quality. This, according to Parrinder, is an unacceptable evasion and an irresponsible exploitation. He insists such pedagogues 'cannot opt out of the business of artistic judgments'.¹ Parrinder is willing to say little more, however, on the question of literary evaluation, and a reader of his paper is left with the problem of accepting that, although 'science fiction' is written about as if 'it' were an identifiable entity, only individual works may be subjected to detailed critical scrutiny when it comes to a question of artistic judgment. Reality is, of course, quite different, and a reader of any genre, including science fiction, is constantly evoking, then reinterpreting and revaluating both her *concept* of the genre, and the genre itself, in the light of the individual work being read. A reader operates according to a collection of procedural principles, which are required to stand up to the scrutiny of each reading, and may be discarded or refined in the light of new information.

5.1.1 The Development of Criteria for Evaluating Science Fiction

The next problem confronting a student of science fiction is the question of the criteria to be used when making literary judgments. Comments such as those of Robert Conquest (1963) are commonly found in critical literature about science fiction. Conquest is critical of literary judgments being made by those with formal literary training, since their criteria of evaluation are not pertinent to literature outside the narrowly defined mainstream 'novel of character' tradition of the past two centuries. 'Literary training produces', writes Conquest, 'not a natural good taste but simply certain conditioned responses, adequate only in familiar fields'.² Conquest wants his readers to accept that other criteria must operate, yet he appears to accept certain traditional literary standards or ways of writing when judging individual works. Certainly he does not define his own criteria for judgments. In the same article he writes of Van Vogt's 'best' work and of the 'better writing' produced after the early days of the magazines, without indicating how his judgment was made. Though he does not manage to articulate clearly his hints about alternative evaluative criteria, he does give a typical example of the process in action:

It was Anatole France, himself an enormous stylist, who pointed out that the best authors often do not write very well. Though there are fine stylists and workmanlike artificers, it is true that some of the most effective writers have major faults of a more or less superficial nature. Van Vogt, to my mind one of the most extraordinary in the field, is an example ...³

Though Conquest goes on to outline the 'faults' in Van Vogt's writing, he cannot be so clear about the reasons for its 'extraordinary' quality. Unfortunately, the claims of many critics of science fiction do little to solve the problems of evaluation. Nicholls (1976) criticizes Conquest and others for their lack of rigour and their

indulgence of science fiction, born, he claims, of their affection for the literary ghetto of its origins. He points out cogently, also, that much science fiction criticism suffers from the problem of not knowing who its readers are. Critics, even those as eminent as Brian Aldiss in *Billion Year Spree*, appear to be frequently unsure whether they are addressing fans, opponents, open-minded scholars or the general public.⁴

Suvin (1973), characteristically, has achieved perhaps the clearest articulation of the point Conquest was struggling with ten years earlier. Suvin identifies two criteria for the evaluation of science fiction. The first is that any individual work must be judged from *within* the genre, according, in other words, to the masterpieces which are acknowledged as its finest expression. To achieve through his rhetoric a wide critical acceptance of this criterion, Suvin has to rely on the substantial critical attention and widespread public recognition of the quality of the 'masterpieces' of science fiction in the last decade. He is thus able to clear the way for an articulation of just what literary elements might constitute the value of these works. Suvin himself does not attempt this here. His second criterion is that a work of science fiction must be wiser than the world it addresses. A work of science fiction is 'good' to the extent that the average reader does not feel that the principles or facts on which the imaginary world is created, are naïve, outdated or false.⁵

A possible problem with Suvin's second criterion lies in establishing the identity of the 'average' reader. Magazine readership surveys are the only real evidence available, and they are of limited value. The individual reader does not appear, according to this criterion, to be competent to judge the quality of either her own readership or of the text. It is also open to question whether a work of science fiction whose operating principles appear naïve,

outdated, false or indeed incoherent to an *expert* could ever be judged 'good'. Stableford's (1975) question 'good ... for what?' discussed in Chapters 2 and 3 demands consideration here. Suvin's first evaluative criterion, too, raises questions of wide significance to which critics must address themselves. Though a work of science fiction may usefully be judged from within its generic frame, it is important to consider the necessity to be able to judge the frame itself. A complicated hierarchy of discourse is thus revealed when establishing the nature of the criteria to be used when generic frames themselves are to be evaluated.

Despite these questions however, Suvin's work, among others', has done much to ensure a closer and more open and creative study of science fiction in recent years. The generalized indulgent and indiscriminate affection of early critics such as Amis or Conquest is rightly criticized by Nicholls as being harmful to a developing literature claiming to be more than trivial. The ignorant condemnation of outsiders, while perhaps less directly harmful, is also not helpful. Through the last decade it is possible to trace the emergence and development of significant science fiction criticism, chiefly through journals such as *Extrapolation*, *Foundation* and *Science Fiction Studies*. Influential bodies such as the Modern Language Association of America have involved themselves with the study and criticism of science fiction in recent years, and in the publication of journals such as *Extrapolation*. Science fiction receives far more critical attention, indeed, than other forms of 'popular' literature⁶, and while this is in itself no proof of the literary quality of the genre as a whole, the fact of its improving literary status may serve to highlight science fiction as a modern phenomenon compelling close study. Much of this attention may be attributed to the inevitable bandwagoning that occurs with the development of a new and fashionable field of study. However,

the sheer volume of texts, both modern and traditional, which are being reprinted and re-issued by publishers such as the Greenwood Press and Hyperion for use in academic libraries, makes it impossible to dismiss this phenomenon casually.

Thomas Disch and Peter Nicholls (both in 1976) have separately attempted literary judgments of science fiction according to criteria developed from within the genre as Suvin has suggested, and their work is lucid and valuable. Nicholls, in particular, when writing of 'The Monsters and the Critics' of science fiction, begins to do what few others have attempted: to survey the whole literature and list some of its chief faults, the 'monsters' lurking ready to attack all but the very best writers. It is perhaps Nicholls's encyclopaedic work of that time which allowed him the breadth of vision to encompass this task. Contrary to what its title may suggest, the essay is not merely a carping and depressing enumeration of irremediable faults. Rather it points the way to the transcendence from the power of each of these monsters, from the unexamined anthropocentrism of 'The Insufficiently Monstrous Alien' or the infantilism of 'The Sentimental Stylist'.⁷ While some of these monsters are specific to the genre of science fiction, others, such as the latter, belong properly in an evaluation of all literature. Nicholls stresses the real continuity between science fiction and traditional literary forms. He stresses equally the need for stringent criteria of evaluation.

A literary evaluation must concern itself with what is said as well as how it is said; the accuracy, originality and appropriateness of the content and form of the text. In naturalistic fiction these two elements of a narrative may be so intertwined as to make them totally mutually interdependent. Estranged fiction, on the other hand, often exerts a fascination on a reader of a less radically

personal kind. It is for this reason that it is difficult to judge such literature in conventional, purely 'literary' ways. Conquest's claim that even the most effective writers have many faults is echoed by Disch (1976) who, from a writer's point of view, puts this critical point very succinctly:

Altogether too many of us, even the true giants like Philip Dick, are willing to trust our powers of improvisation untempered by powers of retrospect and analysis. We accept the interest paid to *the over-riding fascination of our subject matter* as a tribute paid to our talents, which in few cases have been exercised to anything like their full extent.⁸

[My italics.]

It is unavoidable that readers and critics often judge science fiction according to its subject matter and its power to communicate certain facts, principles or values - according to its power as a tool rather than its quality as a literature. Disch, again, provides a striking example of this, underlining many of the points made in earlier chapters of this dissertation. Disch is writing about Tom Godwin's well-known 'The Cold Equations' (1954), a story of an eighteen-year-old girl stowaway on a spaceship, who must be jettisoned as no allowance has been made for her additional mass in the fuel calculations:

As a specimen of English prose [writes Disch], of character portrayal, of sociological imagination, the story can only be judged as puerile; yet within its own terms, as a fable designed to convey to very young people that science is not a respecter of persons, it is modestly successful.⁹

5.1.2 Good Texts: Good Reading

Disch's comments lead inevitably to a consideration of the evaluation of literature in relation to particular readers. Several times in the last chapters it has been stated, using the writings of C S Lewis and Louise Rosenblatt, that literary texts should be

evaluated in terms of specific readers in specific contexts. Good literature, then, becomes literature 'which permits or invites good reading'.¹⁰ While Lewis is at pains to elucidate just what 'good' reading is, he is not, of course, concerned with the educational question of how good reading can be developed. Rosenblatt, as has been stated, insists that the *first* criterion of evaluating a reading is that it be spontaneous and personal. Good literature in Lewis's terms will be honest to its own visions, and will reward a reader's engagement, that surrender of the self in the aesthetic act that Lewis values so highly. The role of the teacher in the teaching of literature should, consistently with these theories, be that of enabling a student to engage in a good reading of a literary text. In the context of each specific student and occasion, the evaluating of both the text and the reading will vary. The aim of the process must be to develop the capability of good reading to be undertaken independently throughout the reader's life. While it is to be hoped that the discussion in Chapter 3 of this dissertation will promote tolerance and understanding of many young readers' need for stereotypical works, it is also clear that a teacher (or parent as Margaret Meek points out (1982)), should take the role of developing the reader's confidence to move beyond the stereotypes.¹¹ Rosenblatt (1978) expresses the critical importance of these points very succinctly in the following quotation. On the basis of the principles enunciated here lies the entire defence of science fiction for adolescents mounted in this dissertation:

Such an effort to consider texts always in relation to specific readers and in specific cultural situations, and to honor the role of literary experience in the context of individual lives, has powerful educational implications, which cannot be

elaborated here. At least this can be indicated: a primary concern throughout would be the development of the individual's capacity to adopt and to maintain the aesthetic stance, to life fully and personally in the literary transaction. From this could flow growth in all the kinds of resources needed for transactions with increasingly demanding and increasingly rewarding texts. And from this would flow, also, a humanistic concern for the relation of the individual literary event to the continuing life of the reader in all its facets - aesthetic, moral, economic, or social.¹²

Lest the switching of focus from the text to the reader be seen as just that evasion of the question of quality that Parrinder warns of, it must be remembered that Lewis's concept of a 'good' reading cannot be engendered by anything but a 'good' book; the text, therefore, is judged by the reading that can be created from it. Educationally, while the concept of 'good' acquires a value relative to the specific student in question, there is implicit in the developmental approach a recognition of the capability of 'good' reading which the teacher has, it is to be hoped, to a significant degree developed herself - a personally developed literacy which is capable of standing up to the scrutiny of a public community of readers.

The claim can be made that science fiction invites readings of a higher quality than most other forms of literature encountered by young people, and that its breadth and variety provides the opportunity for ready development from one stage to another, as was discussed in Chapter 4. The invitations to cognitive, moral and emotional engagement outlined in Chapters 2, 3 and 4 stand as invitations to a rich aesthetic experience. An example will be analysed shortly to illustrate some of the possibilities for aesthetic engagement

inherent in science fiction. In principle, good science fiction texts can contribute to the development of the capacity for good reading in a number of specific ways. Some of these have been examined in Chapter 4 (4.2.1-5). In these sections it was seen how science fiction texts could offer opportunities for significant conceptual development and change; for engagement on other than literal levels (analytical inference, the reading of irony, satire, fable and critique), and for developing an intuitive and imaginative, personally integrated stance towards bodies of information. Present moral, emotional, social and intellectual concerns are thus co-created through metaxic mirroring of the projected world against the author's and reader's world by the reader. A 'good' text is a text which permits, invites or compels aesthetic engagement on the part of the reader in co-creating and integrating these many impulses into one aesthetic experience. Science fiction is perhaps most remarkable in its power to develop the *generalized* capacity for good reading through the foregrounding of and focussing on the structural principle of estrangement. Only when the author uses this principle for purposes which are honest to her own vision and in a manner satisfying outside cognitive criteria, can a reader's aesthetic engagement in a good reading be possible.

In the now-famous 'Sturgeon's Law', the very successful science fiction author, Theodore Sturgeon, proclaimed that ninety per cent of all literature was likely to be rubbish.¹³ His point is that, while twentieth-century literature in general cannot be judged by the bulk of published works, which are formulaic, repetitive and stereotyped, neither on the other hand can science fiction, since the same is likely to be true. Science fiction suffers from a too-easy identification as a unified literary genre. The acquaintance of the uninitiated with the genre is more than likely to have been through the medium of the vast bulk of its 'rubbish'. As a purely

literary judgment, Sturgeon's comments may be justified if backed up with close and detailed analysis, but they are not particularly helpful in explaining science fiction's usefulness, its value, its fascination or its capacity to engender or develop good reading. Disch's judgment of 'The Cold Equations' must be remembered here.

This 'puerile' specimen of prose was judged a 'modestly successful' conveyor of a moral principle *for some readers*. Much of the argument in the preceding chapters has led to the conclusion that science fiction has other than purely literary attractions and values. It is not, in fact, a purely literary phenomenon at all. More often it is the subject matter, the ideas or the articulation of modern emotional conditions that give it its energy, its exuberance and the rhetorical power of its prose. The aesthetic engagement is often intense, though mention must be made again of the blatantly formulaic and exploitative works of science fiction or fantasy, of which John Norman's twenty-volume 'Gor' series is a good example. Honesty to its own visions is perhaps a fundamental criterion to use when judging science fiction, as any literature. Against Gor, then, which gives the impression of having been conceived mainly as a mild titillation for teenage boys, should be placed the vision of the planet Winter on Le Guin's *The Left Hand of Darkness* or the future Earth of Aldiss's *Hothouse*.

Some criticisms of some science fiction must be catalogued here in the interests of a balanced picture. Perhaps the best way to approach this is to suggest that certain types of science fiction texts will *not* offer certain opportunities to readers. While in the next section of this chapter, some questions of ideology will be examined, the focus is here on the inadequacies in literary style to be found in many texts. Many works of so-called popular literature, have been criticized by Roland Barthes and others for being 'readerly'

(lisible), that is, closed, not offering the reader the chance of significant individual evocation and interpretation. The text 'tells' the entire story directly. That this term oversimplifies the active nature of the reader's role in all reading events, no matter what the text, is clear from a study of Rosenblatt's work in this field, and she is right when she points out that the problem of the closed text becomes one of degree rather than kind.¹⁴ When, however, the problem of the closed text is compounded with the particular task the science fiction author faces in communicating information about an invented world - the problems may become acute. The lack of skill of many authors in the use of what is called the 'referential code' often creates a stilted and unsatisfactory prose.

To pick a single example to illustrate this widespread phenomenon is perhaps unfair, but *Space War* by Neil R Jones (1967) was at least randomly chosen. Jones has the problem of bringing the reader up to date in a book which is the third in a series. He is at pains to do this quickly and efficiently, and also to tell the reader just what to think about the alien being described. The reader is told on the first page:

[Zora] was a flesh and blood Zorome, representative of the species from which the brains of the machine men were taken. Zora had many years yet to live before the official time arrived for the transposition of her brain to a machine body. Zor maintained a propagating species to replace the expeditions of Zoromes that never came back and renew the numbers of those depleted expeditions which did return. The machine men who had gone forth under the leadership of 25X-987 and returned under 744U-21 had finally reached Zor, the home world

(p.8).

And on the second:

Still, little thoughts in the professor's mind, beyond the perception of Zora's mental attunement, rapidly compared her with Earthly standards of pulchritude, the standard which had existed during the earlier half of the twentieth century. To staid, Earthly inhabitants of forty million years past, Zora would have appeared as a weird monstrosity. Yet her features, her curved, undulating lines and graceful waving tentacles were harmonizing and symphonious to the eye

(p.9).

It is not Jones's choice of words that is at issue here, but his desire to leave his reader with as little to do as possible. The reader is led by the hand through the entire story. The characters resemble figures in science fiction television series, and the dialogue is a curious, rather naive mixture of alien-ness and over-familiarity. Zora thinks and speaks like a white, middle-class North American child. In such works as *Space War*, Parrinder's complaint that 'familiar reality is replaced by an all-too-familiar unreality'¹⁵ - is probably quite justified. The particular problem of establishing a believable register for speech for the imaginary beings on the projected world is often the unavoidable end point and expression of a general inability to imagine sufficiently different ways of thinking and being from human ones. It is illuminating to compare for a moment the development of this narrative with the subtle evocation of otherness that emerges hauntingly in *Dreamsnake*, discussed in earlier chapters. Attempts at completely alien projections often succeed in being little more than the quite familiar monsters of the human unconscious. True otherness is possibly only attainable within fine distinctions and disjunctions from the real and the known.

5.1.3 Reading Science Fiction for Adolescents

The question of evaluating *for young readers* science fiction texts of the quality of *Space War* is a crucial one. It may be going

too far to call this work 'rubbish', though Peter Dickinson's comments in his 'A Defence of Rubbish' (1970) are pertinent and very helpful here. Dickinson defends the reading of literature of low quality for various reasons, among them that freedom to choose to read rubbish is an essential prerequisite for the ability to compare and discriminate.

His claim is that as long as such works are not 'deleterious' to young readers, they should not be discouraged from reading them. Rubbish, he says, has absolutely no quality; it is neutral.¹⁶ Dickinson does not define what he means by 'deleterious'. This point will be considered later this chapter. No doubt much of the science fiction picked up spontaneously by adolescents falls into this category, though an important defence to be mounted for science fiction above other 'popular' genres here, is the opportunity for transcendence which it offers its readers - the opportunity for acquiring critical standards within the genre. This is a point which Dickinson also makes. Whether Dickinson is correct in his assertion of the neutral quality of rubbish is a point which will be examined in the second section of this chapter.

Science fiction written specifically for adolescent readers is in the ambiguous position of actually belonging to a different literary body, 'adolescent literature', as well as being frequently catalogued and marketed as 'science fiction'. Neither term is particularly helpful in defining this literature, though in the last decade, enough science fiction for adolescents has been written to have created a separate sub-section of the adolescent literature field. Even here, the range is enormous, and Douglas Hill's works, or Nicholas Fisk's, have little in common with those of Hoover, Hughes, Jan Mark or Sylvia Engdahl. The important new *Brother in the Land* by Robert Swindells with its urgent warnings about the imminence of nuclear war, is separated from Hill's militaristic 'Young Legionary' series by much

more than just the period of time in which they were written.

(Swindells's book would reward detailed examination of the profound moral questions raised.) It is, therefore, equally impossible to make an enveloping literary judgment of it, although as little as fifteen years ago Sheila Egoff was able to claim that 'science fiction for children is not literature'.¹⁷ The peculiar position of adolescent science fiction, however, has meant that works within this sub-genre are evaluated together with books for adolescents which are not science fiction. This, of course, does not happen in science fiction proper, where literary prizes are awarded from within the genre by the community of writers and readers. John Christopher, Monica Hughes, Madeleine L'Engle, Robert O'Brien, Lee Harding in Australia and, most recently, Robert Swindells - have all achieved major children's literary awards for their works of science fiction, in competition with more traditional kinds of literature for young people within the last decade. This alone might indicate that the quality of much of the science fiction written for adolescents is high according to criteria which have been developed to judge literature for young people. It is perhaps due to the fact that science fiction for adolescents is a newly developed and as yet still quite obscure sub-genre, that its major writers, such as Hoover, Hughes, Engdahl and Schlee, are only now receiving critical attention in England and Australia for works written up to a decade ago. This can be seen as an echo of the late start all science fiction suffered in gaining widespread recognition. Much work of high quality was produced from the nineteen-forties onwards, yet it was the nineteen-seventies before science fiction gained any general middle-class and academic acceptance.

The literary qualities valued as desirable in science fiction for adolescents are those which constitute the hallmarks of all good science fiction, perhaps all literature: the stimuli administered

within the texts to jolt readers out of conditioned, unexamined ways of viewing reality; the defamiliarizing of the familiar. Perhaps an example discussed in some detail will serve best to show how this works.

A critical 'adult' reading of *Crisis on Conshelf Ten* by

Monica Hughes (1975) will reveal this to be a work of patchy literary quality and unfulfilled promise. The dialogue is stilted, and the protagonist, Kepler Masterman, while showing embryonic signs of life at the beginning, never achieves his potential. He is subjected to over-rapidly developed and unconvincing relationships with others and some too-easy opportunities for heroism in the underwater community where most of the action takes place. There are scenes reminiscent of the indulgent infantilizing of adolescent protagonists' 'adult' role assumption characteristic of much American television and popular fiction. This is something Hughes outgrew in later works as her characters took on vigorous lives of their own. The ghostly gillmen form powerful and moving images that offer the opportunity for more profound investigation. The Moon colony, apparently involved in a fascinating social evolution in adapting to its environment, does not receive the author's full creative attention even in the sequel, *Earthdark* (1976) which is set on Moon. Yet it is the extremely readable *Crisis on Conshelf Ten* that offers a useful example of how the disjunctions of estranged fiction can act upon a reader and how the reader might act upon the text.

Kepler Masterman is travelling to Earth with his father, the governor of Moon colony. He is fifteen and the first of the children to have been born on Moon. The first ten pages deal with Kepler's trip from the space station in orbit just above Earth, to his first landing on the mother planet. Accurate scientific data are used to create the impressions and physical and emotional experiences

of Kepler during this approach. Hughes achieves the most immediate and fully realized expression of this experience through a series of cleverly managed and largely implicit reversals designed to foreground the unfamiliarity to Kepler of what the Earth-bound reader has taken for granted, and vice versa. The first of these is the understated use of the concepts 'up' and 'down'. Through the view room of the space station, Kepler views his Moon, now as small as the silver identi-disc around his neck; the familiar size, that is, to the reader. Yet Kepler thinks of Moon's surface as 'down':

Right on the edge of the terminator I
could see Kepler, the crater in which
Lunar Lab was built. Home! Down there
a new Moon-day was just starting

(p.10).

The juxtaposition of the physical evidence of the senses and Kepler's ingrained personal orientation and perspective provide this initial disjunction to be worked on by the reader. The quiet but constant reminder on this page ('down' is mentioned four times on page 10) - keeps the reader focally aware of the *difference* and *alienness* of Kepler's experience and knowledge. Building on this initial sensitizing of the reader, Hughes then turns to view Earth through Moon eyes. What emerges, startlingly, riveting Kepler and the reader in the shock of the vision, is *water*. Its reverse, utter waterlessness, is held in mind as the lens through which this is seen:

I craned my neck eagerly and looked through
the port. I recognized the narrow spindle
of central America and then the steely
shimmer of the Atlantic lay beneath us.
It went on and on.

'The planet's all water!' I gasped.

'Seven-tenths of it is', Father agreed.

'But ... but. Oh, wow!' It was feeble, but what words could I have for it? A world that was seven-tenths water! Why, on Moon, water was harder to get than oxygen, much harder. Breathing was free. You could breathe as deeply and as often as you wished. Now that the hydroponic gardens were going we didn't have to pay for our oxygen any more. But water was something else. Every ounce of it was ~~worth its weight in Moon minerals.~~ Dirt was removed by electrostatic filters in the labs and living units. Washing was a luxury and drinking a special delight ...

... I had grown up thinking water was the most precious stuff in the Universe. Now with my own eyes I could see that Earth was covered with the stuff - slopping over with it

(pp.13-14).

What the reader experiences is, of course, different from what Kepler perceives. For the reader, keeping two realities in place at once, there is a shock of *recognition*, a heightened awareness of the realities of air and water. The reader, normally only subsidiarily aware of such normal presences, may entertain a notion that things might be different from what they are.

Similarly, Kepler's experience of weighing six times what he had on Moon is tellingly transferred to his impressions of the elegant stewardess. While Kepler experiences walking as 'a nightmare of wading through glue' (p.15), he wonders how the stewardess can glide so lightly as she brings him icepack for his blackened eyes. To him she looks 'no heavier than a grain of moondust' (p.15). The stormy noises of loud Earth voices are in the same way, from Kepler's perspective, contrasted to the vast silence of Moon; the shocking presence of life ('A sudden white shape plunged and screeched' (p.11) - will also startle a reader who is likely by this stage to be quite sensitized to Kepler's state of mind. Hughes has achieved in this writing what can only be called the 'feeling' of Kepler's experiences, a strong sense of the personal dimension to the events taking place. Polanyi's notions of focal and subsidiary awareness would also provide

useful ways of looking at what might happen in a reading of a text such as *Crisis* (Polanyi, 1969).

To evaluate writing like this for our present purposes requires more than a minute examination of the text. For young readers, this often routine and unremarkable prose can offer exciting opportunities for aesthetic engagement. It is clearly and quite simply written, so that a large percentage of readers could evoke and interpret it personally and adequately without difficulty, yet to do so requires taking a very active and creative role to make the meanings that are implicit in the text. Finally, the text rewards this effort with the power of the images it implies. Of course, the reader of this little book will also be in a strong position to approach confidently and enjoy, not only Hughes's *Ring-Rise*, *Ring-Set* or the 'Isis' stories, inherently more profound and rewarding works, but also other challenging and exciting works of science fiction.

5.2 SOME QUESTIONS OF IDEOLOGY

5.2.1 Some General Comments

Despite the fact that science fiction has become acknowledged as an important means of dramatizing social enquiry, much of it, particularly science fiction written before 1960, has often been condemned on the basis of its political conservatism, or its overriding sexism, militarism, middle-class bias or white American chauvinism.¹⁸ On the whole, the science fiction of the first half of the century did express an almost absolute fidelity to established values. Paradoxically, it was science fiction's position on the outside of the mainstream that contributed to the perpetuation of this conservatism. The magazine phenomenon, with its commercially-g geared editorial policies, as well as other modes of publication in the early years, strengthened the conventions and traditions binding science fiction authors. The coterie readership made strong demands on authors

which were at odds with social change. The powerful commercial pressures for large production and repetition of successful formulae tended to discourage free conceptual exploration in general, but particularly in the field of social and political organization. Over and over again writers such as Asimov created new worlds functioning under early twentieth-century forms of free capitalism. There are very few poor people mentioned in traditional science fiction, though it is rare to find adequate explanations for their invisibility or their disappearance. Indeed, as Robert Bloch has pointed out, these works, chiefly remarkable for their energetic preservation of the status quo, offer a discerning reader 'the most important kind of social criticism - unconscious social criticism'.¹⁹ In this way, they may reward study from an historical perspective alone.

Maureen B. Smith (1978) has pointed out that one of the main causes of this conservatism is the 'mythology of scientific ideology'. In her chapter of this title, she explores the way in which 'the myth of the objective consciousness' created fictions which were ideologically equivalent to the experience of the scientific world view as it was enacted in real scientific endeavour. The instrumental method of solving problems, the means-end action, necessarily meant a repression of personal, subjective and incalculable experiences, intuitive judgments and irrational acts. With the suppression of feeling came a de-eroticization of the fictional worlds and a necessary suppression of women and sex. Science, according to Smith, was mystified and symbolized in acts of domination and the romanticization of the hero-scientist figure.²⁰ These, of course, were the hidden effects of the scientific optimism pervading much early twentieth-century life and thought, and particularly of the technological view of science. This is perhaps most apparent in the science fiction written at that time. For striking evidence of these points, there

are no better works than the short stories of John Campbell himself, editor of *Astounding* during its most successful and influential years, and powerful practitioner of a hard-core editorial policy. Campbell has been almost deified by Isaac Asimov in his most recent collection of essays in science fiction (Asimov, 1982).

If science fiction had never developed beyond its 'hard-core' identity of the nineteen-thirties and forties, it would not be sufficiently important to be presented as a literature worthy of energetic defence for adolescents today. Many factors, historical and literary, have combined to change and multiply the directions science fiction has taken and the theoretical and ideological underpinnings of its creation. Most obvious literary factors were the 'New Wave' in England in the nineteen-sixties, the growing use of the 'soft' sciences, sociology, anthropology, ecology, psychology - and a more open and speculative approach to moral and philosophical questions. The number of women writing science fiction is a striking phenomenon worthy of detailed analysis, especially as many of these are now among the most successful in the field. The visions of many modern science fiction writers are frequently more genuinely radical than those of their forebears in science fiction or, for that matter, in any literature. The rich potential of the 'speculative paradigm' for the fusion of vision and criticism has come much closer to being realized and exploited in the works of the last two decades by the most significant writers.

The problem with evaluating earlier science fiction and some hard-core modern science fiction from an educationist's viewpoint is that judgments may often turn out to be ambivalent. While one of Campbell's works, for example, may well fulfil criteria of cognitive complexity and provocation, or it may function sublimatively in any one of the ways mentioned in chapter 3, its reactionary social

and political vision may offend any educationist who would claim to hold to liberal humanitarian principles. Whatever subject is being taught, teachers are involved (whether they like or realize it or not), in educating the young in questions of modern social and moral values. It can hardly be possible to recommend wholeheartedly for study in any discipline in a school, a work which expresses the often savage stereotyping of most of the magazine men of the thirties, or of writers like Heinlein, unless indeed its anachronistic value positions are treated separately, from a consciously historical perspective. This always runs the danger of destroying the aesthetic engagement in the work, especially if issues are presented in ways inappropriate to an individual student's stage of educational development. This is, of course, a subject requiring much care in the education of the immature, who themselves frequently tend towards conservatism if for no other reason than their as yet limited ability to see issues from any viewpoint other than their own, and their lack of opportunity to have challenged many of the assumptions on which that viewpoint has been built.

One of the most interesting, yet most vexed questions confronting science fiction criticism today is that of the role of women in the texts, the authorship and the readership of science fiction. It is here, if fact, that careful study will reveal one of the most convincing reasons for its defence as an educative literature for adolescents. As an important example of the way science fiction's estrangement as well as its position of freedom on the outside of the mainstream can enable it to be truly innovative and truly illuminating - the urgent issue of women will be briefly examined here, in conclusion to this evaluation.

5.2.2 Science Fiction and Gender Issues

Until the nineteen-sixties, few women wrote science fiction. Some, such as Leigh Brackett and C.L. Moore, achieved modest acclaim, but more often than not women writers took on masculine pseudonyms or used initials, and frequently wrote the only kind of science fiction likely to be successful: what could with most accuracy be termed 'men's' science fiction. Even Ursula Le Guin, to her subsequently publically expressed shame, resorted to using the name U K Le Guin, in the publication of one of her stories in *Playboy* in 1969. *Analog* and *Locus* magazines' regular readership surveys reveal that men still form the majority of science fiction readers, though the proportion of women readers increases each year. Before 1960 it is widely accepted that ninety per cent of readers was male. Peter Nicholls (1979) cites over 60 significant modern women science fiction writers, while *Extrapolation* has listed 217 women in its 'Selective Checklist of Modern Women Writers of Science Fiction Through 1980' (*Extrapolation*, Spring 1982). These changes in the authorship and readership of science fiction have inevitably had a profound effect on the character and quality of what was written, and such changes are continuing to take place today.

As characters in science fiction stories, women were traditionally stereotyped and given only minor roles. Nicholls identifies these as chiefly 'Comforter or Victim, Sadistic Amazon Queen or Girl Next Door. She is seldom merely an adult'.²¹ She was seldom a protagonist, of course, even in much science fiction written by women until recently. The absence of female characters from many science fiction stories and their treatment when present are certainly more extreme forms of sexism than those found in most mainstream literature. Apart from a scarcely human starship captain, women appear at a distance two or three times in Heinlein's *Starship Troopers*,

for example. They appear to have the sole function of implying sexual arousal, and their presence stimulates an episode of fighting involving the protagonist, Johnnie, in each case. Nicholls is probably right, however, when he claims:

Most sexism by men writers of sf has been thoughtless, a matter of cultural conditioning, rather than deliberately derogatory or malicious; this, of course, makes things if anything more difficult for women, who if they complain are apt to be met by a bewildered and hurt stare or its literary equivalent.²²

Masculine response to the growing body of feminist science fiction and science fiction criticism is also extremely interesting to study. It has been pointed out that men's distrust of women seeming to possess arcane knowledge and power persists in science fiction criticism, where the more radical feminist authors are referred to as 'witches'.²³

For a brief but succinct summary of many of the issues concerning the role of women as authors and characters of science fiction texts, Nicholls' article can be recommended. Feminist critiques of science fiction are now frequently published in journals such as *Extrapolation*, and writers and critics such as Joanna Russ are extremely influential within and outside their field.

Science fiction may take its place as just one of the contributors to the debate about gender issues in education. The whole question of gendered reading is, of course, a larger and more profound one than can be adequately treated here, and it certainly goes beyond the individual issues addressed by Nicholls - the presence of female protagonists, the treatment of female characters or the numbers of female authors and readers of science fiction. However, to repeat C.S. Lewis's point which was cited earlier in the context of children learning to read: 'There are ... no subtleties for those who have not grasped the obvious'. In educational discourse, 'the

obvious' - in this case the gendered nature of most learning material - must be made very clear to practitioners before meaningful changes can even be contemplated. Moral and other value judgments made by curriculum designers, authors of text books and teachers often remain unchallenged because of the unseen assumptions implicit in much

'dominant' cultural thinking and writing. The absence of females in accounts of history in schools, for example, will not shout any more loudly to educationists or their students, than anything else that is absent is likely to do, unless this point is treated in some way to expose its very familiarity to examination through new eyes. Joanna Russ has recently used her experience as a science fiction writer to advantage in the Introduction to her *How to Suppress Women's Writing* (1984). Here, an alien race of Glotologs is observed by a space traveller, who cannot comprehend the prejudices of the ugly whelk-finned group against the equally ugly crescent-finned, spotty or mottled groups. While no differences in the performance of their peculiar art-form 'frument' may be discerned, one group persistently suppresses, abuses, ignores, patronizes and falsely categorizes the other, generally pronouncing that its own performances are the only proper ones. Here is a good use of estrangement and parody to defamiliarize and mirror the familiar, to liberate it from historical necessity.²⁴

The most powerful ideological tools are those which remain implicit. In literature, texts in which sexist assumptions remain embedded are likely to have been regarded unquestioningly or at least tolerantly by the majority of readers until very recently as 'entertainment'. 'Entertainment', according to socialist theorist and critic, Ariel Dorfman, consists of value judgments supporting dominant ideology, whereas texts expressing the views and values of marginal interest groups, are likely to be termed 'propaganda'.

Dorfman (1983) is particularly illuminating on this and similar points in his examination of the social and political assumptions in American popular culture.²⁵ His work points to the need to question Dickinson's claim that the reading material he wants to define as 'rubbish' is neutral, without values. If Dorfman is right, young readers may be bombarded with messages from the 'rubbish' they read, as well as other literature written specifically for them. Dorfman would claim that these messages are likely to be mutually reinforcing, and that if they were to be made explicit and subjected to examination they may give cause for considerable concern. Umberto Eco's examination of the 'Superman' myth, for example (1979), reveals that Superman's famed civic consciousness is in reality strictly limited to the maintenance of established societal structures, while his notions of good and evil clearly and strongly reify white North American hegemony and reinforce cultural and gender stereotyping.²⁶ Superman is, of course, by no means alone. A whole 'science fiction' and fantasy paraliterary tradition follows in his slipstream, just as Superman, Dorfman would claim, echoes the value systems of giants in other paraliterary genres, such as the Lone Ranger and the creations of Disney. Nor is much difference to be found, in political terms, in much of the more serious early science fiction written chiefly in America in the early years.

Recently there has occurred a virtual flood on the popular juvenile market of science fiction and fantasy war games books, based in their turn on the fantasy board games currently enjoying such popularity among the young. Perusal of these books will reveal the reasons for the almost totally male participation in these games which has puzzled some educationists. The protagonists and all significant characters are male; the only females are timid maidens, sex objects or witches, all either impossibly beautiful or impossibly ugly, and

appearing, in any case, only fleetingly. Societies are organized without exception, it seems, along strictly patriarchal lines; opportunities for heroism are always in terms of violence (often organized and militaristic) and available only to the young men (see for a good example Page and Dever's *Grey Star the Wizard* (1985)).

To read this (and of course much other) literature, female readers must 'become' male in order to understand these quite fundamentally male experiences. In books such as *Grey Star*, naturalistic familiarity of setting and action are stripped away, along with many 'unnecessary' narrative and stylistic elements, so that the reader has only stereotypes to operate with. In addition to this, 'becoming' the protagonist in these gamebooks involves literally creating the character in significant ways, intervening in the progress of the story, being responsible for decisions. It is small wonder that girls either have little taste for or feel inadequate to try on these savage and alien roles in the positive and active way demanded of them. The extent of the mental warping required can really only be comprehended if the opposite is posited: that a male attempt to participate in a story created out of every compensation fantasy, wish-fulfilment dream and stereotype imagined by *girls* through history.

Often, the gendered nature of much literature for young people resides more directly in the author than in any particular actions of the characters. The maliciousness of the violence done to the alien invader in Nicholas Fisk's *Grinny* (1973), for example, is attributed to the child characters, especially Beth, the young sister. It is improbable, however, that a modern female author would have chosen the figure of an old woman to be the object of that quite gratuitous violence, or that she would have found it quite so funny. In adolescent science fiction alone, characters in the created worlds of John Christopher, Douglas Hill, Fisk, early Monica Hughes,

Robert Heinlein and others, have to contend with their authors' presumably unquestioned acceptance of the inevitability of patriarchal power structures. In these worlds while many externals are changed, the hidden agenda of male dominance and its implications for social organization remain.

It is in much modern science fiction, including science fiction for adolescents, however, that some of the most encouraging developments in the overcoming of sex-role stereotyping and male-gendered reading have been achieved. Part of the reason for this lies in the estranged characteristic of science fiction itself. The speculative paradigm allows in theory the completely open and ready contemplation of alternative societies. For feminist writers such as James Tiptree Jr, Joanna Russ, Suzy McKee Charnas and Vonda McIntyre, to name just a few, this has meant the chance to 'try out' radical theories of social change, to experiment with as well as to illustrate and demonstrate their ideas and beliefs. In literature for adolescents, a more unilaterally didactic role has been assumed by many authors. This didacticism has the opportunity of being convincing because of the power of the rhetoric of the estrangement. It is easier to accept, for example, the strong presence of women of power and different vision in an imaginary society than in the 'real' world, where life experience teaches that such things do not exist. The differences and changes creating the disjunction from the real facilitate the transcendence from such universals as the masculine gendering of most oral and written discourse. This potential of science fiction is beginning to be exploited in science fiction for adolescents, notably by writers such as Hoover, Engdahl and Hughes. Perhaps the most interesting thing to note in general, however, is that opportunities exist in this flexible genre for much more exploration and experimentation of this kind.

Philosophical, social and moral concerns can be seen to have strong implications for an aesthetics of science fiction, indeed of all literature. The aesthetic engagement of a reader in any text beyond the purely trivial is at least partly a function of engagement with such concerns which form the content and also the generative background of the text. The views of women displayed in science fiction texts can profoundly affect the way in which a reader can relate aesthetically to the work. It can be difficult, for example, for a modern reader to enjoy a full and mature aesthetic experience with a text which presents once embedded and hidden but now outdated gender stereotypes. This is doubtless more true for the stylized and modalized forms of literature designated here as 'popular' (see note 1 of Introduction), than for surviving masterpieces of mainstream literature. As an important expression of the *Zeitgeist*, popular literature is often a receptacle or a vehicle for conveying the crudest and most stereotypical expressions of its myths. As times and consciousnesses change, discarded or outdated myths and ideologies become exposed and may function as a disruption to a reader's aesthetic engagement. Recent feminist literary criticism, following from influential works such as Kate Millett's *Sexual Politics* (1970), however, has had the profound general effect of heightening awareness of the gendered nature of all readings and texts, so that questions of female readings of literature *must* now be addressed.

To return to science fiction, it is necessary to suggest that the thoughtful reader now takes on, at least in part, the role of an aware 'modern' female, a role often not implied in the original text. This unintentional disjunction can inhibit aesthetic engagement. It is, of course, one of the reasons why women still do not read science fiction as much as men. Its very definition has been, through history, masculine.

The question of the presentation of female experience in modern science fiction written by women is a complex one. Problems may arise for a reader when evoking, interpreting and evaluating texts when the discourse is other than the dominant masculine mode. Marginality and difference (as in most forms of female or other minority cultural expression) may be equated with low quality or even incoherence because of the gendered (or otherwise culturally determined) nature of the operating definitions and evaluative criteria considered to be universals. A 'good' reading of 'Houston, Houston, Do You Read?' by James Tiptree Jr, for example, requires the reader to 'become' female, altogether a more radical and difficult thing to do than its opposite. Though not written for adolescents, this work nonetheless rewards mention here, since it underlines the vital reality of gendered reading. The mistaking of this author for a male, together with a 'masculine' reading of the text, has in one famous instance (as well as repeatedly since its publication), led to a complete misinterpretation and reversal of the author's intentions (see Chapter 1, pp.28-29 for a very brief outline of this story).

In societies where gender and power relations are *conceived and organized differently*, female characters do not have to act out male roles to be strong and positive figures. Some writers, however, have considered it fruitful to create sex-role reversals to illustrate a point more dramatically. A striking example of this is Joan D. Vinge's 'Tin Soldier' (1979), not specifically written for adolescents but eminently accessible to them. In this world, women explore space while men are prevented from participating in this important activity because of hormonal instability, and must remain at home. The story revolves primarily around this power-reversal. A man who has formed an attachment to a space woman is movingly portrayed waiting throughout his life for her periodic returns on leave. The situation is given a further twist

as a result of the time-warping that occurs in space travel. The semi-cyborg 'tin soldier' must wait twenty-five years for his lover each time she makes her two-year trips. Vinge uses the resonances in past literature and song of waiting women, reverses it, and in doing so turns the images to illuminate relations between genders in past and present.

Generally in the science fiction written in the past decade and a half, it has become possible for a female vision to inform the development of the stories, and for female experience to assume significance in the scheme of things. Certain trends become apparent when science fiction written for adolescents during this time is explored. First, a great many of the significant writers are women. Second, female protagonists emerge quite naturally and assume important roles quite different from those of their male counterparts a generation back. Third, certain themes emerge as common issues binding many of these works together, despite their obvious and considerable differences. Some of these are: a concern for ecology and the balances of nature on Earth and other worlds (for example, in *Ring-Rise*, *Ring-Set*, or Hoover's *Another Heaven*, *Another Earth* (1981)); human responsibility to other life forms (in Hoover's *The Lost Star* or André Norton's *Iron Cage*); a rejection of bureaucratic or scientific determinism (in *Ring-Rise* or Hoover's *Down to Earth*); a concern for the value of human personal relationships (in many works, but outstandingly in Hoover's *The Rains of Eridan* (1977); freedom from repressive or corrupt societal structures (*Children of Morrow*, Jan Mark's *The Ennead* or Anne McCaffrey's *Dragon Song* (1976)); the development of more responsible moral systems (especially in Engdahl's *Enchantress From the Stars* and *The Far Side of Evil*), and finally a strong personal commitment to individual actions and decisions (in Vonda McIntyre's *Dreamsnake*).

It is significant that all these moral, social and philosophical issues combine to form consistent and mutually supporting principles for present or future societies, despite the differences in the individual authors and their works. Two other features are shared by these works cited above, as well as a large number of other works.

The first is a relatively gentle feminism. Female experience is foregrounded and indeed presented as an important addition to, or alternative to the male mind-set. Men, on the other hand, are invited in most cases to share this essentially humanistic vision for the future of the world. Nowhere is this more strikingly apparent than in *Ring-Rise, Ring-Set*, with which this second section of the dissertation began. Liza's challenge of Master Bix is a challenge of the masculine system he represents, yet the strong suggestion is for an *integration* of visions. Female marginality can be seen in such works to take on the significance of universality. The second feature is a particular use of the developmental theme common to literature written for adolescents. While individual female protagonists are often shown undergoing significant learning experiences bringing about a growth in personal maturity (Liza, again mirrors this) - the notion of development is frequently applied to the societies with which these protagonists are often at odds. Engdahl's historical-moral theories have systematized this principle of development, as was discussed in Chapter 2. H.M. Hoover's *The Lost Star* provides an example with which to conclude this brief exploration. Lian's insight into and empathy with the sentient beings on the planet where she is working, causes their emergence from a long-term catatonic state. Her behaviour is contrasted to the moral immaturity and inadequate understanding of other humans, including the male scientists, journalists and her own emotionally repressed and male-headed mother. Fortunately, Lian's alliance with the aliens reactivates the computer on their hidden

spaceship which had brought them to this planet; the resulting power that they achieve overcomes threats and opposition and the more open-minded scientists begin to learn the dangers of their hitherto anthropocentric and chauvinistic attitudes and behaviour.

Stories of the future or of parallel worlds or alternative presents have the potential to expose and illuminate the ideological power of historical developments and of versions of past and present reality. They may help to free the present from the limitations and inequities of unexamined ideologies. Some women are using science fiction to foreground the issues of the position of women in modern society and to point to ways in which this might change in the future. Until now, other suppressed, disadvantaged or marginal groups have not yet done this to the same extent. However, the recognition being paid to the recent work of Afro-American science fiction writer, Octavia Butler, indicates that this too might change.

Whether these texts are extrapolations in the forms of warnings, such as Suzy McKee Charnas's *Walk to the End of the World* (1974) or analogies of human societies in the form of ameliorative propositions, such as Sally Miller Gearhart's *The Wanderground* (1984) - their authors are using the principles of estrangement to liberate the reader's experience from a passive acceptance of the here-and-now and to suggest possibilities of otherness.

NOTES TO CHAPTER 5

1. Parrinder, *Science Fiction: Its Criticism and Teaching*, p.134.
 2. Robert Conquest, 'Science Fiction and Literature', in Rose, ed. *Science Fiction*, p.43.
 3. *Ibid.*, p.39.
-
4. Nicholls, 'Science Fiction: The Monsters and the Critics', in Nicholls, ed., *Science Fiction at Large*, p.162.
 5. Suvin, 'Poetics', p.71.
 6. See note 1 of Introduction.
 7. Nicholls, 'The Monsters and the Critics', pp.169-176.
 8. Disch, 'The Embarrassments of Science Fiction', p.155.
 9. *Ibid.*, p.143.
 10. Lewis, *An Experiment in Criticism*, p.104.
 11. Meek, *Learning to Read* (London: The Bodley Head, 1982), p.216.
 12. Rosenblatt, *The Reader, the Text, the Poem*, p.161.
 13. Commonly quoted as 'Ninety percent of everthing is crap'.
See, for example, *Ghastly Beyond Belief*, ed. Neil Gaiman and Kim Newman (London: Arrow Books, 1984), pp.169-170.
 14. Rosenblatt, *The Reader, the Text, the Poem*, pp.170-171.
 15. Parrinder, *Science Fiction: Its Criticism and Teaching*, p.74.
 16. Peter Dickinson, 'A Defence of Rubbish', in *Children's Literature in Education*, 3 (November, 1970), 73-76.
 17. Sheila Egoff, 'Science Fiction', in *Only Connect*, eds. Sheila Egoff, G.T. Stubbs and L.F.Ashley (Toronto: Oxford University Press, 1969), p.390.
 18. Smith offers a detailed discussion of these points in her chapter entitled 'Science Fiction as Mythology of Scientific Ideology', in "Literature of the Socio-Scientific Age", pp.145-174.
 19. Quoted by Parrinder in *Science Fiction: Its Criticism and Teaching*, p.71.

20. Smith, 'Literature of the Socio-Scientific Age', p.156.
 21. Nicholls, ed., *The Encyclopedia of Science Fiction*, p.661.
 22. *Ibid.*
 23. Phyllis J. Day, 'Earthmother/Witchmother: Feminism and Ecology Renewed', in *Extrapolation*, 23 (Spring 1982), 12-21.
-
24. Joanna Russ, *How to Suppress Women's Writing* (1983; reprinted London: the Women's Press, 1984), p.3-4.
 25. Ariel Dorfman, *The Empire's Old Clothes: What the Lone Ranger, Babar, and Other Innocent Heroes do to our Minds* (London: Pluto Press, 1983), esp. p.192.
 26. Umberto Eco, 'The Myth of Superman', in *The Role of the Reader: Explorations in the Semiotics of Texts* (Bloomington: Indiana University Press, 1979), pp.107-124.

PART 3 - SCIENCE FICTION IN THE SECONDARY SCHOOL

CHAPTER 6: RESISTANCE OR ENGAGEMENT? A GLIMPSE AT AN
ALTERNATIVE FUTURE FOR SECONDARY SCHOOLS

6.1 EDUCATION AS PROCESS

Schools can be seen as places where immature human beings are sent in large numbers to receive from a small number of specially trained, mature human beings the knowledge and skills necessary to take their place successfully in the outside world. If, however, this were an accurate or adequate model of the educative process, then it would be reasonable to assume that it could have been perfected at some stage, and that there would be no further need for educational research, debate or reform. In reality, of course, vital matters of structure and curriculum content are historically and culturally defined and are felt to be inappropriate and meaningless by many of those who are, or perceive themselves to be, on the margins of these definitions. Many individuals reaching the self-awareness of adolescence reject in one way or another, the educational institutions they are required to attend.

Any examination of the values present in educational discourse must begin with identifying the models of humanity and the nature of knowledge which are operating or which are to be adopted. These two questions are fundamental to an understanding of how learning takes place. Here, education will be viewed as a *process* involving, first and foremost, learners. Schools have developed historically as structures built around the prominent and central figures of teachers. For a successful process approach, teachers need to diffuse the focus of these structures, to practise their acknowledgement that classrooms are occupied by often arbitrary and always diverse collections of many individuals, with all that this implies.

Teachers should possess knowledge and understanding of the ways people learn; the particular stages of development and the needs

and purposes of the young, as well as expertise in the subject area they are working in. All too frequently, unfortunately, it is only the last of these three items that teachers are equipped with in any systematic way. Learning is something that people *do*, and this emphasis must serve to override other, more static models of what education

has been seen to be. The 'empty vessel' metaphor, for example (implicitly often still in action, despite being discredited in name), casts no light at all on just *how* the brain assimilates and processes data; how, indeed, the learner *makes* knowledge. An 'objectives' model of education, favoured traditionally by behaviourists, sees the accumulation of previously selected and processed quantities of 'knowledge' by the learning organism, through a process of stimulus and response controlled by the teacher. The learner has little choice but to accept what is given, since she is given no opportunity of learning *how* to select or process data herself. A model much more respectful of an individual's rights and needs, and also much more congruent to the ways learning takes place in the less artificial environment outside the institution, is the process model. The focus is less on choosing a particular content of information to be received and remembered, than on the *processes* by which the information came to be discovered or arrived at by its original author. This principle has, in fact, led to some rather inept practices in recent years, particularly in the design of science courses, but it is, nonetheless, sound, and the implications for teaching literature are very clear, as will be seen shortly.¹

A successful process model will teach learners how to learn, with the aim that they be able, equipped with the necessary capabilities, to proceed in life to acquire whatever particular body of knowledge is appropriate to their needs and interests. It aims at dismantling the often mystifying knowledge-bearing authority of the teacher. Students in secondary schools, as has been mentioned in earlier

chapters, are often deprived of any real power base and much disruptive or apathetic behaviour can readily be interpreted as a resultant crisis of motivation. Ways in which students can come to control what they learn, then, are surely of extreme importance in the conception and construction of secondary school curricula.

Ian Reid (1984) stresses the central role that should be played by *exchange* in schools. He refers to exchange among students, exchange among teachers and exchange between student and teacher. Reid is not writing here of something that is just socially desirable; exchange, he stresses, is one of the chief ways that people learn. He goes on: 'Knowledge in the Workshop is less a personal acquisition than an interpersonal production: rational, collaborative, and more specifically a matter of exchange'.² Reid's Workshop model of classroom learning will be examined shortly in the specific context of the introduction of science fiction to the school program.

The most important point of all, perhaps, is the *future-orientation* of the process model. It is anticipatory, focussing on the acquisition of valued capabilities. A process approach, according to Bevis Yaxley and Hugo McCann (1986):

focuses on developing the student's powers to recognize the frames through which a student is construing the world, to explore alternative frames, including those provided from the culture's past, and to revise those frames of reference on the basis of their predictive failure and success in meeting anticipated needs, interests and purposes.³

The appropriateness of didactic science fiction texts for a process approach to education has been well documented in earlier chapters. Whether of the extrapolative or analogical/meliorative model, serious science fiction is future-oriented in the sense that it deals with *possibilities*, whether negative or positive, and with proposals for alternative ways of thinking and being. It offers, in the words of the paper cited above, alternative frames of reference for the

student to explore, through the distancing and focussing of estrangement. This in turn has particular implications for teaching which will be addressed in the body of this chapter.

The teacher's role in a process model of learning is crucially different from that of earlier, less 'user-friendly' models. In general,

then, the *man* of learning standing before Hirst's (1974) discipline-based theory of knowledge, or the provider of the suitable stimuli to which students must respond (in a behaviourist's model), must give way to a person who, first and foremost, learns to know her students. She must concern herself with finding out what they already know, how and at what rate they learn, what their needs and purposes are. She must be aware at any point, of what they perceive that they are in fact doing; their view, in other words, of the process of their own education. To these complex data must be added the teacher's own view of the capabilities she believes her young students should develop while engaging with the material and the activities going on inside her classroom. She must realize that learning begins at the place best described (in summary of the above points) as where the individual student is 'at', simply because, as drama teacher Dorothy Heathcote (1984) sensibly points out, it cannot start where the student is *not*!⁴ (It is, however, astonishing that, however much ready lip service is paid to this axiom, it is so frequently submerged in historically reinforced practices, apparently too difficult to deconstruct.) Time spent in learning these things will be well spent, in order to overcome the depressing immunity game often played in reality by both teachers and students, who perform almost empty, ritualized movements without engaging as persons, to avoid difficulties or confrontations. Every teacher, surely, has experienced surprise at discovering an absorbing passion or expertise of a student she thought she had known for three or four years, and about which she had never heard a word.

The lack of control over their own learning leads some students to treat the process as if it were happening to someone else, and certainly as someone else's responsibility. The alternative must involve a serious consideration of the personal dimension of learning.

Much valuable insight can be gained through an examination of how people learn in 'ordinary' life, outside the institution. Students already have many frames which they have constructed to make sense of the world by the time they arrive at secondary school. Many of these have been gained through television and other popular media. There may be a powerful argument for the inclusion of curriculum material which 'speaks' to students in terms of their informal cultural frames, yet which contains within it the capacity to extend or transcend these frames. Too often, curriculum material, belonging particularly to the mainstream cultural canon, rejects these 'pluralistic and polyphonic' frames (Reid, 1984)⁵, thus openly violating the principle articulated by Heathcote above. Again, much of the resistance expressed by students in secondary schools can be traced to a lack of engagement with the curriculum content itself, brought about, at least in part, by the same factors causing the dichotomy manifested in the wider community between popular or marginal and 'high' culture. This is true, not only of literature and the arts in general, but also the sciences. Science, as was discussed in Chapter 4, is perceived by many as quasi-magic, as a body or artefact, more often than not opaque and mystifying, 'owned' by the experts. It is typically not related effectively to what students do in science classrooms, nor to the way they think about the world around them.

Few schools can express their pedagogical principles and priorities openly in a manner intelligible to the students and the communities they serve, not to mention the teachers working within them. When it comes to relating any particular curriculum item,

process or strategy to an overall schema expressing both principle and best practice, the reality turns out to be far too complicated to encapsulate. While this might not be an absolute or necessary condition, it is almost inevitable given the immensity of the task and the scarcity of time and resources available within a functioning school. It may be possible, theoretically, and may indeed at some stage be considered valuable, to devote time to developing a coherent statement of the relationships between educational theory and practice in a particular school. The results could be illuminating. Quite apart from the ambiguous power base on which a school operates, placed between government and client, much of the curriculum structure and content exists because of historical precedent. This means that assumptions implicit in the operation of the curriculum are not as susceptible to open and rigorous examination as they would be if they were proposals for reform. The process of defamiliarizing the familiar in order to see it clearly and freshly is as vital to a creative critique of a school curriculum as it is to a writer who creates a work of literature in order to submit an aspect of the world around her to close inspection.

From these general principles, it is now possible to move to a final focussing on some of the implications and outcomes of introducing science fiction into a secondary school. The next section of this chapter will examine opportunities afforded by this particular field of knowledge for open-ended revision and reform of methods of presentation, teaching styles, modes of student responses and (perhaps most vital for its long-term and wide-reaching implications) the social climate in the classroom.

6.1.1 Literature and Learning

Many of the following observations and suggestions regarding the directions that might be taken in teaching science fiction, apply

equally well to the study of all literature in school. In an effort to stress the possible continuity between life and art, and its value in education, the following, initial general comments are offered.

'Literature' as has been seen, is a vague term (see note 6 in Chapter 4). It can be understood to mean those works written throughout history

that satisfy certain criteria of quality. Alternatively, it can be seen to contain no particular qualitative connotations, referring simply to what is written, and thus leaving evaluation to another process.

The second, more inclusive meaning stresses there is no essential difference in the *process* undergone by a child writing a story from that of a great or famous author. Literature is something that people do. It is clear that this is a helpful notion for the development of a process model of literary studies. It means that a learner can discover how literature is made, by attempting and being helped to refine the process of authorship, rather than by being made to receive and accept mystifying pronouncements made from positions worlds removed from the learner's lowly one. A further development in the meaning of the word 'literature' occurs when the reader is secured as the essential evoker and interpreter of what is seen as an event in time, rather than an artefact. Literature, then, is something *readers make* in conducting a transaction with a text.⁶ The influence of the one on the other is mutual and inseparable; the processes of reading and writing are processes of making meaning. The implications for a learning model are clear here too: a reader must engage with the teacher and others in the process of moving from a personal, spontaneous, possibly inadequate interpretation to a more public, plausible and communicable one. There is, therefore, no point at all in regularly 'giving' students the supposedly correct, highly complex results of the meaning-making processes of someone else (whether that be the teacher or the published critic), since the student has no insight into how

these interpretations were arrived at, and is not able to share in the interpreter's general knowledge, evaluative criteria, personal identity, preoccupations and preferences or literary experiences. These are the things of which literary responses are made, and it is to these that the teacher's attention should be drawn as she directs

the development of literary capabilities in her students. This is not, of course, to deny that the literary interpretations of teachers and published critics form *part* of the literary universe of discourse in education. A possible role for teachers in this area will be considered shortly. It may be fair to stipulate that students confront such inevitably more sophisticated analyses only if and when they have first experienced a close and fruitful encounter with a particular text or author or genre themselves.

6.1.2 Science Fiction and School

Because of its unique position in the general cultural context, however, science fiction will reward separate attention, particularly in the light of an examination of the roles of the student-reader, the text and the teacher. One of the most striking recurrent themes in science fiction critical discourse is perhaps best referred to as the *energy* generated by this literature. It is frequently spoken of in terms of reader enthusiasm, excitement and even passionate devotion. Writers and critics (themselves readers of science fiction) rarely express themselves on the subject without mentioning their own earliest personal encounters with the literature and the strong feelings they often still have about it. That this situation must be taken into account when considering teaching science fiction in school, cannot be overstated. It is possible to argue that in general, there is very little educational point in any reading that is not undertaken willingly, or enjoyed in some way. This point requires some urgent thought in the case of science fiction, where strong emotional responses are so

often foregrounded. A reader's *purpose* is both the fuelling and the steering mechanism for any learning that is to occur through reading, yet basic truths about readers' purposes can easily be overlooked in planning and carrying out curriculum strategies. In the following quotation, Ted Krulik (1981) encapsulates precisely the problems

encountered when a literature which has evoked such strong personal responses in him is brought to school, where his capacity for responsiveness has been spent. He writes first as a learner, then as a teacher:

When I was young, I absorbed George Pal's film version of *The Time Machine* and read the books of Isaac Asimov and Robert Heinlein before science fiction was spoken of openly, before teachers grabbed it as a sort of literary goldmine, before people took science fiction writers to be serious thinkers and philosophers, and before it was taught as an English course in high schools and colleges. I loved it with a feeling that went beyond the artificiality of a blackboard, wooden seats, and a dangerously benign teacher counting off the minutes of a silently ticking watch. That natural love is important to me.

Transmitting that love of science fiction is also important. But how do you do that in a high school, elective English course to students cooing at each other from across the room, asking for the bathroom pass, finishing their geometry homework, and gazing impatiently out the window wondering how many minutes before the bell will ring.⁷

Krulik goes on to write of the need to take students out of the classroom and *into* the world of science fiction. He recognizes that special teaching styles must be used to achieve this. In addition to what he calls 'developmental' discussion-type lessons he proposes 'enrichment' lessons which 'involve the students directly with the inner workings of science fiction through the use of problem-solving, debates, committee-research and presentation and self-involving writing assignments.'⁸ Krulik's suggestions in his article, based on his own success in tackling the problem of student engagement, will be seen

to agree in essence with those which will be outlined a little later in this chapter.

In the Introduction to this dissertation it was stated, by way of a warning, that great care will need to be taken when science fiction is brought to school. It should have become clear from the discussions presented in the subsequent chapters that an opportunity exists here that should not be missed. Neither, on the other hand, must it be mis-used. Krulik's experiences can readily be envisaged by those with experience in teaching in secondary schools. Science fiction's vigour as a cultural medium, its power to engage, stimulate and educate students may appear fragile or tenuous if swamped by the long-incubated realities of an individual's relationship with institutional life. At first observation, indeed, it might seem that if school is resisted and rejected, then science fiction in school runs the same risk. However, a second, crucial point must be raised. It may be impossible to *prove* whether resistance to school is wholly determined by the two unavoidable 'truths' of adolescence and institutionalized education, or whether these in their turn are defined by values operating within the greater cultural context. It is, however, possible to develop cautious optimism if it is accepted that it is the prevailing *definition* of school which many adolescents are resisting. This definition is a complex and covert product of tradition and the behaviour of bureaucrats, teachers, students and the communities they belong to, over periods of time. If the behaviour of those individuals with power within the institution changes, then there may be a chance that definitions may change. It should, however, be clear that teachers cannot expect schools to exist in isolation from their community, and that community definitions of what a school is and should be exert a powerful and enduring influence on individual students' expectations. A student's view of what she is doing, of

the process of her own education, can provide a perspective that is always enlightening, and sometimes startling to teachers. It seems, unfortunately, to be seldom consulted.

It is possible that many active or passive school resisters in the upper grades of secondary school have not completely given

up hope of fruitful engagement in their schooling, so that they may be able to respond positively to change. On the other hand, it is logical to direct efforts at change at those younger students who, as a group, have not yet begun to define themselves in *opposition* to the school.

The extremely formal arrangements of time, location, deployment of teaching personnel, personal relationships and curriculum content to be found in most secondary schools may be inimical to the fostering of genuine, personal engagement in the learning process. If an informal and pluralistic cultural form such as science fiction is fitted to a school structure that has largely remained unchanged since it was devised last century to lecture the children of the wealthy in the disciplines of the dominant cultural heritage, then the problem aptly described by Krulik above will inevitably arise. It will be seen shortly that the existing system appears to flourish on an artificially maintained series of dichotomies which must be broken down or transcended, before the educative potential of science fiction or any other stimulating curriculum material can be realized. Patrick G Hogan (1972), for example, questions whether the 'inviting horizons' of science fiction should be restricted to the x-number constituting a specific class in a given institution. He suspects the existence of a formal course in a school with its assignments, tests or examinations and the necessity for assessments, may take the 'fun' out of science fiction, despite any amount of intense teacher enthusiasm, precisely because such a course cannot possibly parallel the spontaneous

discovery of the literature that is in all likelihood motivating the teacher. He believes that it may be simply self-flattering to assume that teacher enthusiasm alone will elicit desired responses from students.⁹ While Hogan's nervousness may be justified, it appears to stem from a rather negative definition of school which, as has been shown above,

may not be an absolute or necessary one. It is clear that, in order to fulfil science fiction's educative potential, those concerned with its introduction must develop a clear and coherent, though flexible, theory of teaching it and teaching with it, that is honest both to a general operating educational theory within the class or school, and to the literature itself. Some practical implications of this point will be examined shortly.

Hogan goes on to suggest that science fiction would be more fruitfully treated in the context of informal science fiction clubs, where a climate more closely akin to spontaneous discovery might reign. A thriving science fiction club would, of course, be an immeasurable asset to any school, but it cannot take the place of the more structured, yet conversely potentially more open environment of the class. If science fiction is considered educationally worthwhile, it should not be restricted to those often gifted or otherwise advantaged students who are able to 'discover' it for themselves. Schools, after all, whatever their structure, must function to put opportunities for fruitful engagement in students' way, with something less than the haphazardness of ordinary life, and with some expectation of success.

6.2 DAMAGING DICHOTOMIES AND A VIEW OF AN ALTERNATIVE

It was briefly mentioned above that students may be enabled to engage actively in the process of their learning if certain alienating dichotomies are broken down. These may be seen to operate in different degrees of specificity, yet with the outcome of denying the vital personal dimension to learning being argued for here. In this way, it can be

seen that a traditional secondary school curriculum fosters a reader/text dichotomy, a learner/'knowledge' dichotomy and a student/teacher dichotomy; texts, 'knowledge' and teachers line up on one side, the adolescent on the other.

6.2.1 The Reader and the Text

To break down the reader/text dichotomy implies giving full credit and emphasis to the role of the reader in evoking, interpreting and evaluating the text. This point has been made and elaborated in depth throughout this dissertation. Text-centred approaches to the teaching of literature mitigate against an understanding of student readers and what they are in fact experiencing. Such approaches 'institutionalize' literature into a high-status phenomenon, according to Audrey Grant (1984), possessing a privileged position within the school curriculum, yet irretrievably distant from the student's personal experience.¹⁰ To transcend that dichotomy, it is necessary to move into 'the potential space between the individual and the society of the world'¹¹, and to focus on the processes being undergone by the student-reader. Science fiction offers particularly exciting opportunities for this kind of transcendence. First, texts may be found and read with relative ease by most students. Students may buy books cheaply and exchange them, particularly if a facility is made available within the class, so that, even in physical terms, science fiction is not seen to be a possession of the school. This can underline the sense of partial possession already felt by many students towards this literature. A student who has never owned books may begin to experience this special pleasure. In a particular class, diverse reading experiences may be valued, so that students may read texts unknown to others or to the teacher. The breadth of material encompassed here may be organized for different purposes by teachers, and it gives not only the opportunity, but a genuine need to share texts and responses

to them in public gatherings.

Chapters 2 and 3 of this dissertation examined ways in which many science fiction texts explore and offer templates to their developing readers by which they might make sense of present realities and possible futures. It was seen how these texts might meet and match the need of many adolescents to engage in finding structure and coherence in their experiences of living. This coincidence of theme and preoccupation means that in science fiction, many adolescents may be able to explore and develop, through their reading, their own 'identity theme' (Grant, 1984). This may influence what adolescents might read and how they might read, providing sensitive teachers with ways of understanding and enhancing the learning that may be taking place, as well as helping the student to a more confident, personal stance toward reading.

That feeling of personal acquaintance with at least some of the generic conventions of science fiction from cinema and other media, which has been mentioned earlier, means that students can feel, to a certain extent, at home with and in control of their readings of science fiction texts. Reading and discussing science fiction can, in an important way, be seen as the literary equivalent of 'talking slang' (Dubrow, 1981).¹² Spontaneous, personal responses may be more readily proffered in public by students because they are perceived as being appropriate to this form of discourse. The special cultural phenomenon of the science fiction literary community discussed in Chapter 3 means that real dialogues are modelled between readers and authors of other readers in the 'fanzines'.¹³ The possibilities of exploiting this in class to break down a reader/text dichotomy and the alienation of the ordinary reader, are numerous.

6.2.2 The Learner and her Knowledge

The learner/'knowledge' dichotomy may be transcended in several ways. First, readers of science fiction texts can learn directly from the texts themselves. This has been explored in some detail in Chapter 4. Second, material such as fanzines can be made available in the classroom which can equip the reader with 'inside' information about the genre, its famous practitioners, its history and its present concerns. Students may control in some way, the information they will acquire. Teachers can assist in the students' independent growth of knowledge by assembling material in the room: books, periodicals, visual aids, pictures, journals and fanzines. Much of the 'fun' of science fiction can be transferred to the growth of knowledge about and through it, through publications such as *Ghastly Beyond Belief* (1985), a kind of *Guinness Book of Records* of science fiction.

Opportunities abound in the study of science fiction for students and teachers to initiate and direct projects for problem-solving, research and presentation and original writing in different modes. Students may be engaged in finding out things that perhaps no-one else in the classroom knows about, overcoming that artificial position students eternally find themselves placed in, of trying to guess or prove what the teacher already knows. Such activities and their concomitant responsibilities can go a long way in securing the essential commitment to their learning that is often so lacking in adolescents in school.

Encounters with science fiction texts have been shown to promote growth in knowledge and understanding in subject areas other than English. The complexity yet concreteness of science fiction in outlining and dramatizing matters of moral and intellectual importance, can arm a student both with material to contribute to discussion and debate, and with the verbal structures to do so.¹⁴ Patricia Warrick's

(1980) report of her use of science fiction texts in a computer studies class is a good example of how this can work. Reading certain science fiction stories, particularly of the extrapolative kind, students gain a real and dynamic grasp of such generalizations as the loss of privacy and freedom, dehumanization in mass culture, automation, unemployment,

leisure and the augmentation of bureaucratic power by computer technology. Through the alternatives presented in the stories (a quite comprehensive list is provided), Warrick claims that more complex and rigorous text books are possible, coming closer to the reality of the issues in the outside world, rather than trivializing them through over-simplification and generalization, as is often the case. She claims also that issues of values may be debated with student involvement that is independent of the teacher (who has the option of remaining neutral), and of the inert propositional body of information contained in the course.¹⁵ Through practical reports such as Warrick's account of her work with students in senior secondary classes, it is possible to see how a positive, confident and active stance towards bodies of information can be encouraged and developed through judicious use of science fiction in school. The teacher has a special and delicate role to play of developing and balancing the spontaneity, self-respect and confidence of the student-learner-reader with her respect for the truths of the subject she teaches.

Warrick's work raises a number of points that are significant in a wider context of school subjects other than her own. Perhaps the one that springs to mind most rapidly is science, in particular the physical sciences. Through appropriate science fiction texts, students may be brought to a quite explicit and detailed understanding of scientific method and of particular procedures and approaches to problems. Through the medium of the words of the text, students may gain a linguistic competence *specific to science*. It is often overlooked

in general educational discourse that literacy is a vital key to learning throughout the entire curriculum. In practice, little attempt appears to be made to develop subject-specific literacy, and English teachers are usually left with the responsibility for student literacy, whatever that term, used generally, might really mean. It seems clear that

the special language demands placed on students of science, for example the rules for the use of the third person passive in written reports - need to be *taught* and not assumed simply to be acquired. For science teachers, science fiction holds out an exciting way of enhancing both general and specific conceptual and linguistic development in students. While concepts such as time and the nature of physical reality (to name two of the concerns vital to contemporary physics) may be introduced and explored through science fiction texts, students may also learn quite explicit processes of scientific enquiry and the vocabulary to express them. It remains for an imaginative educationist literate in both science and science fiction to create and develop specific programs of work in this area.

6.2.3 The Student and the Teacher

The binary classification of student/teacher is, of course, closely linked to both of the above, but it stresses an extra, personal dimension. It can be seen that a careful transgression of the dividing line between the two might permit the beginning of a real and personal relationship between student and teacher. Teachers are often depersonalized by students, who see them as knowledge- and authority-bearers. A personal and mutually responsive relationship is an important contributor to effective and rewarding engagement of the student with her learning. If the teacher is the principal bearer of knowledge and of the access to knowledge, the student is powerless and vulnerable. In the above paragraphs, ways were indicated in which this position could be overcome. The teacher, with her particular expertise, has

at all times a crucial role to play. In a science fiction course, the depatterning of the student/teacher relational stereotype may not only be invited and facilitated; it can be seen as an essential aspect of truth and fidelity to the literature, its history and its generative principles.

Calkins and McGhan (1972) comment that science fiction is a reader-oriented rather than a teacher-oriented genre.¹⁶ The private purposes, responses and pleasures in reading it *must* be the material from which classroom lessons are made. It is reader-oriented because of its accessibility. Some students read a great deal of it and may come to a classroom possessing a great store of knowledge and experience. Care and sensitivity on the part of the teacher can exploit this situation. The genuine reversal of roles, the chance for a student to be an expert and for the teacher to be a learner, is rare enough for any opportunity to be grasped by a teacher with considerable enthusiasm, yet it is likely to be a distinct possibility in a science fiction classroom. A problem may exist in identifying these students, since many students appear to feel that such personal matters as a long-term enthusiasm for science fiction are not appropriate profferings for the formal, closed, one-way system of school. The factor of the social health within the school and the classroom is of utmost importance here, and deserves close attention. Some ways in which student and other expertise can be exploited will be examined in the next section. In a classroom where students can be teachers, advisers and consultants, and teachers can be researchers and learners, the dualism set up over a period of years, or perhaps generations, can be transformed into a genuine and productive mutuality of interest. A teacher's expertise may begin to be perceived as residing elsewhere than (or perhaps existing in addition to) the possession and control of particular bodies of information. She may begin to be seen as a

model of learning processes, a *monitor* and a *conductor*, as well as a medium and facilitator, roles which will be considered shortly.

It will be worthwhile now to turn from this brief examination of the relationship of the adolescent student with her learning to a more detailed exploration of ways in which science fiction might

open up new possibilities for teaching and learning within the secondary school. The teacher is, of course, a vital factor in ensuring success in such a venture, and the teacher's role will be examined with some care.

6.3 SOME OPERATING PRINCIPLES FOR A SCIENCE FICTION PROGRAM IN A SECONDARY SCHOOL

6.3.1 A Closer Look at Possible Roles for Teachers

The 'unitization' movement, soon to have profound effects on curriculum programing, offers the possibility of the study of science fiction becoming a truly interdisciplinary educational enterprise.¹⁷ Even within the traditional English classroom, though, such a study invites the replacement of established, purely 'literary' approaches with more open and integrated programs inspired by science fiction's characteristic mix of diverse generic registers. There are countless opportunities for stimulating and mutually rewarding inter-disciplinary coordination and teamwork. These are perhaps so obvious as to require no further exploration here. The removal of science fiction from the 'literary' pedestal can, however, also be modelled in a simple but extremely effective way. Articles on science fiction and education frequently stress the desirability of using in the study of science fiction texts teachers who are not English teachers but who are literate in the field under discussion, whether it be computer studies or biology. These people, exciting resources within the school, can be deployed in several ways. Just for these teachers to be invited to answer student questions, to take the simplest example, is to reverse a role that

is so deeply ingrained as to be automatic. Students will be able to play an active and critical part in this process. They will also be preparing the way for an exploration and evaluation of a text for that integration of science and fiction that is one of the genre's essential attributes. That a *science* teacher or a *computer studies* teacher may also be a keen reader of science fiction may itself be something of a startling, depatterning experience for some students, whose experience of the compartmentalization of people and information modelled in school has inhibited the development of their awareness of the interconnectedness, mutuality and wholeness of mature human activity. Teacher role-play can be extremely significant in influencing the hidden ways in which people learn.

While the teacher's role is still the central focus of the classroom, she can model learning processes in other ways. Elaborating on his theme of learning through exchange, Reid (1984) mentions in particular what he terms 'sideways talk' - exchange between teachers or among students. 'Sideways talk' may act to disperse some of the authority vested in the more traditional 'up-and-down talk'.¹⁸ Exchange between teacher and teacher could be extremely valuable in presenting teachers as learners, and in demonstrating that involved responses to reading are possible. In this way, inexperienced readers might begin to see how generalizations might be made from specific instances, how irony is read or how inferences are made and defended. The importance of intermediary discussion between first readings and final, articulated responses might be demonstrated as a paradigm on which later independent student work can be based. For a teacher, there is an element of personal commitment and perhaps of risk which itself may contribute to a humanizing drive within the classroom, as well as modelling an essential aspect of the learning process itself.

One important way to break down the student/teacher dichotomy

is to remove the teacher from the position of central classroom focus. In general this may be done in a number of ways. A teacher may act, for example, as a tutor to a student on an individual basis, often to great effect. A teacher may become a consultant. In this role the teacher can encourage students to seek help or advice after

identifying problems or needs in their own work. In a science fiction course, a move to 'de-teacher' the classroom may be seen to be extremely desirable as part of the means of entering the science fiction world. Ways in which this can be achieved have been well documented in recent times, from the influential first propositions of James Britton (1972 and 1975), to the more recent work of Donald Graves (1983) and Ian Reid (1984) in Australia. They include many forms of student-initiated language use: small group discussion or production; peer and group conferencing, and the use of tape recorders and word processors by individuals in groups for the purpose of *proceeding* through a particular task. Reid's Workshop can be evoked as the quintessential expression of a vividly imagined classroom in action. It will be useful now to take a brief look at how a science fiction workshop might operate.

6.3.2 Reading and Writing Science Fiction: Some Possibilities

A main aim in a science fiction course will be to promote and enhance learning *about* as well as *through* the literature being read. A key factor in learning, it has been established, is experience. The term 'experiential literary study' has been used to describe the process of learning through and about literature that involves movement from experience to reflection and analysis. What is suggested here are 'close encounters' with literary texts.¹⁹

Two very important practical outcomes of this principle at work involve the 'rewriting' of the original text in expressive and creative mode, and the generation of talk and writing in other genres such as expositions and analyses, as a result of reader engagement with the ideas present in the text.

There is an urgent need for teachers of literature to examine closely the relationship between the shape or form of a literary work which a reader might experience in co-construction, and the meanings suggested within it with which the reader might actively engage, separately from her reading, from her primary, aesthetic experience.

Lewis's terms 'Logos' and 'Poima', discussed in Chapter 2 above, have very important implications when student response to literature is considered. Didactive science fiction's characteristic preoccupation with *ideas* prompts special consideration of appropriate modes of response. Part 2 of this dissertation, and particularly Chapter 2, have demonstrated the provocations and invitations offered a reader in extrapolative and analogical texts to formulate questions and to entertain alternatives to dominant and unexamined myths of modern existence. It can be strongly argued that to be capable of engaging adequately in such matters, to adjudicate among the myths, is a form of empowerment for young readers.

The formulation and development of arguments and their effective expression in expository genres are capabilities possessed by dominant groups within society, according to Jim Martin (1985).²⁰ It is therefore necessary for an individual to have the language of argument in order to challenge that hegemony and to gain a measure of control over the construction of possible futures for herself. It has been shown in Part 2 of this dissertation that issues presented in science fiction texts can serve to initiate argument at appropriate levels of abstraction and generality, providing the necessary anecdotal, narrative and concretely complex data on which *all* argument is based. For young readers, such texts can provide the 'raw material' for discursive talk or writing, filling gaps in their limited personal experience. It is necessary here to add, without pursuing the question at any length, that much work needs to be done, in the fields of linguistics and

elsewhere, to understand the *processes* involved in moving from narrative to expository genres. Martin, for example, pays little attention to this question in his recent book (1985), preferring to keep generic categories hermetically sealed from each other.

In 'rewriting' activities of the expressive kind, the meanings embedded in the text may be considered and worked with in activities in some way equivalent to the original production. A logical development from such activities is to attempt authorship within a generic frame. Formal narrative elements which may have been worked on tacitly and unconsciously during transforming and rewriting activities may, with help, become the explicit object of a student-author's conscious, focal attention. It is necessary here to consider the suggestion that science fiction as a 'heuristic model' (see discussion on page 137 above), may provide an exciting yet manageable way of coming to understand some of the elements which generate and shape literary texts.

One of the most potent ways of learning through and about science fiction narratives, then, must be to attempt to write them. Stanley Schmidt (1976), for example, even advocates science fiction authorship in the science classroom. A vital part of understanding and appreciating scientific endeavour, he claims, can be achieved by 'going through the kind of thinking that lies behind a good science fiction story, taking an idea and pursuing it through to some sort of conclusion'.²¹ In this way, for example, students might come to an understanding of the importance of plausibility in scientific explanation, just as it is a central concept in the definition of science fiction. Student authors must, at the very least, satisfy what he calls the 'negative impossibility argument'.

Let us return for convenience and coherence, to the English classroom, about to be transformed into a writers' workshop. Before considering in any detail the literary possibilities that will open

up, it will be necessary to consolidate the establishment and development of a productive and healthy social climate.

Attempting authorship, of course, requires the taking of risks. Students may feel at risk for a great deal of the time in school as they attempt tasks they often only imperfectly understand.

They are frequently vulnerable to assessment and failure according to criteria they have not been apprised of or cannot comprehend. Several important steps might be taken to redress this imbalance of power within the classroom in a *genuine* way, and at the same time to develop a more rigorous and explicit method of evaluation of student learning.

A first possibility is for the teacher to join the students in exposing herself to the risks of authorship. A teacher's readiness to be involved in the same endeavour as her students, even if only in a limited way, and to be judged according to the same criteria (whatever they may be), might play a significant part in liberating the social structure of the classroom and opening it to new possibilities. The teacher may use her first-hand experiences in modelling problem-solving or narrative or expository writing techniques, while inviting open scrutiny and comment. At the same time, her own understanding of the risks and problems - the real implications of the learning tasks she has initiated, will be distinctly enhanced. Stenhouse's model of the teacher as researcher can be a uniquely productive and beneficial one (Stenhouse, 1975). Any way in which a teacher can increase her understanding of *what may be being learnt* and of the real, rather than theoretically envisaged processes that are going on in her classroom, cannot help but be beneficial in both the short and the long term, for both the teacher and her students. These are areas about which too little is known and much is assumed both by teachers on a day-to-day practical basis, and unfortunately all too often, by educational theorists and curriculum designers. What the teacher learns may be

closely linked to what her students may be learning, though of course this will be going on at a different stage of complexity and on more than one level, reflecting both her capabilities as a mature person and her responsibilities and tasks as a teacher. She must develop, for example, a mature and adequate knowledge of the science fiction genre in order to direct and develop student reading and generic formulations, as well as to place original writing (her own or that of her students) in a meaningful or truthful context.

Many of the theories and practical teaching strategies implied in a breaking down of damaging dichotomies, apply, of course, to the entire school curriculum at all levels. A science fiction program may be used as a *symbol* of the changes that are necessary and indeed possible when the education business is held up to scrutiny at a different angle from the familiar ones. It is an appropriate symbol because of the opportunities it offers for engagement at many levels, and because of the way it seems to *demand* a more open treatment. Changes in educational emphasis, of course, bring with them their own dangers and the need for great care in formulating and articulating goals and purposes, both the teachers' and the students'. In general, then, a teacher's learning and research must aim at a clear, though flexible articulation of the goals to be accomplished and the procedures to be followed in the activities going on in her classroom. She will need to be aware of the capabilities she wants to develop or refine in each of her students and she will need to understand the criteria that will be used when judging the outcomes of the work program, here, a program of reading and writing. The question of assessment of student work will be examined a little later. Finally, to bring a work program its essential focus and direction for its participants, the teacher must create, develop or acknowledge, and then be able to communicate, a genuine purpose for the students' work. In a science fiction workshop,

a teacher might, as has been suggested, wish to focus the course on production and publication of student writing. In this case, a vital requirement is to provide an audience and a readership to give meaning and direction to the classroom work. Science fiction again, throws up some interesting possibilities for connecting school with the real world.

Whether a teacher of science fiction is working alone with her students or in teamwork with other teachers, she has some interesting opportunities of dismantling further the model of teacher as sole knowledge bearer within a science fiction course. In her role of learner-researcher she may utilize other resources within and outside the school in developing the strategies she will adopt. Apart from consulting students and other teachers, she can turn to the community for assistance in a number of ways. Most communities except perhaps the very smallest will contain science fiction fans and experts who may be enlisted to talk with classes, groups and individuals and to help in developing reading, discussion or writing programs. Authors, amateur or even professional, may be found to share experiences of authorship or to act as consultants or advisers to young writers in the classroom. Such an undertaking can be strongly recommended for two very distinct advantages it might offer. The first may be the stimulus to a student of relating to an adult other than a teacher in an area of mutual interest and endeavour. The student frequently encounters the professional pedagogue as the only adult learning model outside the family, and as mentioned before, a condition of mutual immunity is built up after long exposure. The second tangible benefit from such an encounter concerns the visitor's particular expertise. A writer working with students' writing can be expected to judge it according to different, more unidirectional criteria. Evaluations, comments and advice could be expected to be more concrete and precise

than those of a teacher. Suggestions such as these should of course not be taken as recommendations for immediate, mandatory, across-the-board adoption. There may be at any particular time, only a small number of students needing or likely to benefit from such a measure, though the short-term and long-term gains could be immense. In a recent

study of interviews with students gifted in English, the desire was repeatedly expressed for the more detailed, rigorous and expert criticism and advice about their personal writing that could be gained from practising authors.²² Students in these interviews reinforced findings in other studies by identifying and valuing science fiction works as among their most stimulating and enjoyable reading experiences, and by acknowledging science fiction's heuristic power. Such students may gain immeasurably by refining their readings of science fiction through authorship and its open-ended possibilities. The judicious use of experts and outside enthusiasts can offer otherwise unattainable possibilities of difference and divergence in student learning and in the quality of educational outcome, while it promotes further a role for a teacher as a *facilitator* and as a *medium* through which learning may be channeled and directed.

While it is beyond the scope of this dissertation to propose a detailed plan for a science fiction program, perhaps some specific suggestions here might help to focus more sharply on possibilities for the directions such a program might take. It seems clear that a course would, in the general scheme of things, progress from reading, discussing and 'rewriting' to structured writing tasks, and ultimately to original narrative and discursive writing. (There is always, of course, the possibility or the need for students with the expertise, the desire and the confidence, to skip stages.) The need for purposeful talk in the process of making meaning from texts has already been stressed in the early parts of this chapter. In the study of a 'literature

of ideas', traditional forms of oral discourse such as the formal debate, can be used with great effect. The issues in *Ring-Rise, Ring-Set*, for example, have, with considerable success, been debated by fourteen-year-olds under the topic 'that the Techs were right'.²³ This was organized by grouping students into committees, each with responsibilities for one speaker and with a separate spokesperson to meet and coordinate with the other two groups comprising one side of the debate. Each committee member was required to re-read several chapters closely for useful items to be used in evidence. Another exciting possibility involving dramatic role play might be to construct and enact a court case or official enquiry, where, after the sudden and natural dispersal of the ring of particles, Master Bix (or his counsel) is called to defend the taking (or alternatively the *not* taking) of the step of spraying the mould to halt the ice. These kinds of 'rewriting' may lead to further original work in several directions.

It is important to note here the need for written models for the development of expository writing capabilities in students. The work of linguists such as Halliday (1985) and in Australia, Jim Martin (1986) points out the differences between spoken and written models. Again, though, the classroom focus of this chapter leads to a concern over the *processes* by which young students move from spoken to written language.

Among the many 'rewriting' activities available, perhaps the one which throws up the most exciting possibilities in the context of a science fiction workshop, is the familiar prediction exercise. By exploring the various choices open in predicting the outcomes of extrapolative texts (short stories might be most flexible to work with), students may come to understand some of the fundamental principles of their operation. A good example to work with might be Vonnegut's 'Harrison Bergeron'. It might be useful to attempt to predict possible

outcomes from the basic narrative premise as it is demonstrated from the first sentence: 'The year was 2081, and everybody was finally equal' (p.34), and thereafter at intervals throughout the story. Some students might attempt their own story based on that first line before or even instead of engaging in the prediction exercise. These activities provide interesting points of departure in a number of directions and would reward experimentation.

It may initially be necessary for teachers to work hard to overcome stereotyped patterns of the kind of 'space-opera' adventure story commonly encountered by young people on film and television, and often reproduced in school writing, particularly by boys. By moving outward in response to central questions or scenarios, worlds may be created and fleshed out. By being called on to defend the plausibility of particular responses to 'what if?' propositions or provocations, these patterns may be replaced as more sophisticated operating generic definitions develop. In the next section of this chapter, which explores ways of assessing student work, this model of learning as the refining of processes will be discussed further.

Some students may benefit from working with 'romantic' texts and may occupy themselves constructing worlds in minute detail or creating stories of the mythic clashing of good and evil forces. Philosophical and moral questions may engage more mature students. It seems clear that there is, in general, a progression in complexity and in the demands made on a reader from extrapolative to analogical/meliorative texts, and that learning to write extrapolatively might precede the ability or desire to write analogically, since the latter appears to require more sophisticated powers of perceiving and practising inference, metaphor, irony and metaxis, and of conceiving of alternative values systems.

6.3.3 An Appropriate Assessment Profile

Whether students have been occupied in reading, writing or any other of the many activities which are not strictly 'literary', but which can readily be justified in the study of this 'literature of ideas' - the question of assessment is a vital one. Indeed, in general, assessment of student work can be seen to reflect the fundamental principles upon which all teaching and learning are based. Two points must emerge here as being of crucial importance. The first is the need for students to be explicitly aware of the criteria being used for assessment. The second is that students be able to learn from and through the assessment procedures. Instead of separating these two principles, the following short paragraphs will consider them together, in an attempt to showcase a whole assessment profile.

Some of the same criteria that can be used to evaluate a science fiction text (whether published or of student origin), a reading or an argument, can also be used to assess student work as a whole. These can be seen to be evaluative criteria intrinsic to the genre itself, and can form part of what students learn as part of a science fiction course. (Other criteria will also be operating in student assessment, and these will be mentioned shortly.) Nicholls's essay, 'The Monsters and the Critics', mentioned in Chapter 5, could quite readily be adapted for use in class to help students develop an operating set of criteria for interpreting and judging writing and their own and other students' reading. In this way, students may be able to develop and articulate their own sense of value in literary work. In pairs, groups, or as a whole-class editorial panel, students may, for example, be involved in an assessment procedure of particular pieces of student writing. If this occurs during the drafting stage, authors may utilize comments and suggestions when rewriting pieces. These principles have, of course, been outlined in detail by Graves

and others. The particular contribution science fiction can make to the development of good reading and writing in school, however, is that its formal devices, such as estrangement and the necessity for cognitive plausibility, may be foregrounded, focussed and discussed.

If a student's work is assessed during the process of its creation in such a way as to assist in its development, a likely outcome is an increase in intrinsic motivation and task-centredness. The proviso here, of course, is that the task itself be perceived to be real and worthwhile. This point will also be discussed shortly. Formal teacher assessment of student work can exist side-by-side with more informal methods, and can use the same as well as other clearly communicated criteria. The teacher may also wish to assess such things as the amount of work completed, a student's organization or her readiness or ability to collaborate with other students. The teacher may also be evaluating critically other aspects of learning which may not be exposed to public scrutiny or measured assessment. Teachers may perceive through a student's chance comment, an unconscious message in written work, a listening attitude or the choice of a book, developments in the student's perceptions about the world, about knowledge or about herself. 'Poetic learning' mentioned in Chapter 4 may be a significant outcome of engaging in a course of study of such a richly diffuse and allusive literature as science fiction (see note 24 in Chapter 4).

6.3.4 Production, Publication and Celebration

As readers have purposes, so should writers. It was stressed earlier in this chapter that a reader's purpose must not be overlooked when working with students in the field of literature. A young reader is frequently motivated by an enjoyment of the emotional content of a book rather than by a desire to gain knowledge. A reader's purpose could be described as the desire to enjoy 'as full an aesthetic experience as possible',²⁴ whatever that might mean to an individual

in a particular context. Interference in the achievement of this purpose may mean the presentation of ideas inappropriate to a reader's stage of educational development. This may have lasting negative results. It is probable that a writer's purposes can be just as clearly articulated and can be just as vulnerable to misdirected and inhibiting (if well-

meaning) teacher behaviour. Writing undertaken without a sense of desire or purpose on the writer's part can be considered pointless, if not directly counterproductive in the learning process. Apart from work which is clearly personal, such as diaries or some poetry, writing which is undertaken willingly would seem to imply a desire for a reader. Writing can thus be seen as a *social* act. In schools, where teachers are frequently the only readers of students' writing, an authorial desire for readership may have atrophied since the earliest grades. First, this situation does not provide a strong or natural stimulus to write at all. Second, teacher responses themselves may contribute to students' fear of failure or exposure to a wider public. This is particularly the case if drafting and editing procedures are not used and submitted works are returned covered in corrections of expression, spelling or the use of the conventions. The genuinely pleasurable experiences of authorship are thus often completely absent.

One of a teacher's most urgent tasks, then, may be to supply real and natural outlets and audiences for student work, whether it be individual or group work. The class itself may be utilized without any need for structural change, for class discussion, 'conferencing' and public readings of writing and other production. Opportunities may go far beyond this, however. The fans, experts and authors inside and outside the school may become and help to develop, a reading public. School-based publication of a collection of science fiction stories is both well within the capacity of most institutions, and quite likely to provide a willing readership. Practical details of presentation

and publication are added to the creative processes in a total act of making. Other schools are always a potential readership for good student writing. It is not beyond the bounds of possibility to aim to submit outstanding individual pieces to existing science fiction magazines. Book reports, 'rewritings', synopses, author studies, text comparisons, thematic surveys, expositions (analyses and exhortations), comparisons of books with film or television versions and research reports are ways in which students can write for an audience - in addition to the rich possibilities for original narrative writing outlined briefly above. Letters to professional writers and publishers are possibilities to consider. As well as writing, of course, student productions may include public readings, recitations, debates (a boundless source of topics spring from the provocations present in science fiction texts), dramatic productions and illustration. The age and stage of educational development of the individual student can provide insight into the most productive styles and methods of teaching and learning.

A retired secondary school principal in South Australia attributes his success in overcoming wide-spread student resistance in his school to his use of what he calls 'celebrations'. Structuring the school program in such a way as to lead logically towards the *celebration* of the completion of pieces of work, he facilitated the development of directions and imaginative purposes for student learning activity.²⁵ The principle is a sound one and can be envisaged as a way of fostering engagement in many different fields, *and of developing expertise*. After performance, production or display, a simple matter like a celebratory lunch and an early dismissal can contribute to a feeling of achievement at the end of work. Audiences large and small can be built into such a structure. A reader, writer, performer or producer may devise or perceive a purpose and gain the

satisfaction of working alone or in collaboration with others, in seeing it achieved. The teacher's role is to ensure that these enterprises undertaken by students work towards a development in understanding of the 'inner workings' of the material, in this case science fiction. At this point it may be illuminating to reconsider Ted Krulik's evocation of the passive class, the inert and esoteric 'knowledge', the dangerously benign teacher. Through the procedures outlined briefly above, it can be seen to be possible to help students enter into the world of science fiction, as Krulik wanted. Through a consciousness of the need to transcend the dichotomies of reader and text, learner and 'knowledge', student and teacher, the teacher can foster engagement and an approach to reading and learning that might remain available to adolescents after they have left school.

NOTES TO CHAPTER 6

1. For a discussion of the implications of teaching scientific processes in school, see H.G. Munro, 'Curriculum Evaluation', in *The Structure of Science Education*, ed. P.L. Gardner (Melbourne: Longman, 1975), pp.220-235.

2. Reid, *The Making of Literature*, p.34.
3. Yaxley and McCann, 'Anticipating Discourse', p.3.
4. Dorothy Heathcote, 'The Theory of Teaching Drama' (transcript from videotaped lecture delivered at Mt Lawley Campus, Western Australian College of Advanced Education, 1974), p.7.
5. Reid, *The Making of Literature*, p.50.
6. This statement is a distillation of the argument for a transactional approach to literature presented by Rosenblatt in *The Reader, the Text, the Poem*.
7. Ted Krulik, 'Science Fiction in the Classroom: Can its Essence be Preserved?', in *Extrapolation*, 22 (Summer 1981), 155.
8. *Ibid.*, p.156.
9. Patrick G. Hogan, 'Science Fiction in the Classroom: Opportunities and Limitations', in *Extrapolation*, 13 (Summer 1972), 107-111.
10. Grant, 'Literary Response as a Story', p.3.
11. *Ibid.*, p.4. Grant is quoting D.W. Winnicott, *Playing and Reality* (London, Tavistock Publications, 1971), p.121.
12. Dubrow, *Genre*, p.13.
13. The term 'fanzine' refers to an amateur science fiction publication for enthusiasts or 'fans'. The earliest well-known fanzine was *Spaceways*, dating from 1936 in the USA. The widely circulated fanzines in current existence in Australia are *Australian Science Fiction Revue* and *The Metaphysical Review*.

14. Of considerable interest here is the work done in the last decade in the USA by the Institute for the Advancement of Philosophy for Children. See, for example, 'Philosophy for Children 1985-1986' (Montclair, New Jersey: Montclair State College, 1986). This booklet outlines narratives for use in philosophy courses in primary and secondary schools.
15. Patricia S. Warrick, 'Science Fiction in a Computers and Society Course', in Williamson, ed., *Teaching Science Fiction*, pp.121-135. Warrick has made a detailed study of this subject in her *The Cybernetic Imagination in Science Fiction* (Cambridge, Mass: MIT Press, 1980).
16. Calkins and McGhan, *Teaching Tomorrow* (Ohio: Pflaum/Standard, 1972), p.3.
17. While short unit courses are being offered at present in some schools, this is likely to become more widespread (in Tasmania and elsewhere) as a result of the recommendations of the two major inquiries into education in the past five years. See Kim E. Beazley (Chairman), *Education in Western Australia: Report of the Committee of Inquiry into Education in Western Australia* (Perth, Western Australia, 1984) pp.66-84, and B McGowan (Chairman), *Report from the Select Committee of the Legislative Assembly upon the School Certificate* (New South Wales, 1981), esp. pp.6-8. It seems clear that a great deal of thought and work needs to go into identifying the implications of these recommendations for English teaching.
18. Reid, *The Making of Literature*, p.48.
19. 'English and the Curriculum' (course readings, Murdoch University School of Education), p.79.
20. J.R. Martin, *Factual Writing: Exploring and Challenging Social Reality*. (Geelong, Victoria: Deakin University Press, 1985).

21. Stanley Schmidt, 'Science Fiction and the Science Teacher',
Extrapolation, 17 (Summer 1975), 148.
22. Marnie O'Neill and Jo-Anne Reid, *Educational and Psychological
Characteristics of Students Gifted in English* (Perth, Western
Australia: The Commonwealth Schools Commission and the
University of Western Australia, 1985), pp.140-142.
23. This debate formed part of a study program of this novel
undertaken by fourteen gifted or keen reader volunteers in Grade
9 at Claremont High School, Tasmania, in 1984.
24. Rosenblatt, *The Reader, the Text, the Poem*, p.132.
25. Brian Hannaford, report delivered to staff at Claremont High School,
Tasmania, December 1984, as part of a school curriculum review.
Theodore R Sizer uses the term 'exhibitions' to make a similar
point in his *Horace's Compromise: the Dilemma of the American
High School* (Boston: Houghton Mifflin, 1984).

IN CONCLUSION

Science fiction has been shown to be many things. If it were possible to generalize about the kinds of texts young readers are likely to encounter, it might be fair to claim that they will not number many of those 'masterpieces' of the genre by which Suvin has suggested

science fiction be judged. Leaving aside for a moment those works written specifically for adolescents, the science fiction texts young readers might most commonly encounter may appear at best to be simple and routine when judged on a purely literary level, containing fewer narrative elements than non-estranged or mainstream fiction. This is likely to be as true for the still frequently read texts of Clarke, Heinlein, Asimov and Herbert as for the recent ones of Brin, Benford, Niven and Cherryh. These are the works which, for whatever reason, appear most often in bookshops and collections and help perpetuate common conceptions of what science fiction is.

It has been shown, however, that despite the possible literary inadequacies of even these highly regarded and successful texts, they may perform certain important and valuable cognitive functions, invoking equally important activities on a reader's part. 'Good' science fiction texts may make considerable cognitive demands on a reader as she engages with their subject matter. On an intellectual level, these texts are often extremely complex, subtle and provocative.

It is important to develop working concepts of 'good' science fiction and its opposite, 'bad' science fiction, in order to evaluate specific texts and readings. This dissertation has claimed that texts which are naive, outdated, false or incoherent according to whatever knowledge body underpins their creation, cannot be judged as good. It has also been seen that texts which trivialize, misrepresent or deliberately distort agreed, generalized modern notions of 'what life is like' may be considered 'bad'. It is becoming increasingly difficult

to consider works which offend modern, Western liberal humanitarian moral sensibilities as anything more than limited (such as, for example, the gender stereotyping in John Campbell's stories mentioned in Chapter 5). 'Bad' science fiction, must in the ultimate analysis, however, be defined as that which *fails* to provoke some speculation or

reflection on the assumptions which govern human existence. The notion of 'good' science fiction, then, is closely linked to the heuristic potential of estrangement. Good science fiction can uncover and scrutinize principles, assumptions, beliefs and behavioural patterns which shape twentieth-century life. It can, through the concreteness and complexity of narrative, initiate argument in young readers at levels of generality and abstraction that they are unlikely to achieve on their own. In provoking investigations into the vital concerns of modern 'adult' life, it offers intellectual rewards for the 'ordinary' reader which are difficult to match. Good science fiction is, as Suvin announces at the end of the second of the two articles used in earlier chapters, 'an educational literature'.¹

What a reader brings to a text, what she gains from it, what capabilities she may acquire as a result of reading it or studying it, have been the subject of this dissertation. Such pedagogic considerations require that science fiction texts be judged carefully and sensitively according to a refined notion of 'good' reading. A good reading of a good science fiction text may have many implications, both overt and covert, for a wide definition of education as a whole. It has been demonstrated that, in order for these implications to be understood and realized in practice in schools, the two pivotal truths of adolescent engagement and resistance must be confronted.

A student may engage at different levels and in different ways in the process of her learning. An engaged student cares about what she is doing and may recognize that her work is contributing to her knowledge and development and fulfilling some purpose that she can

perceive. The absence of engagement indicates that work being undertaken is seen to be opaque, inaccessible or irrelevant. This may result in one or another form of resistance on the part of the student. That this is a *widespread* phenomenon in secondary schools is extremely worrying and demands urgent attention. The question of learner engagement is, however, a complex one, and schools and their teachers must work to create programs which respond to student and community definitions of what school work is and should be. To achieve this, they must be more open than at present to two-way communication with the community they serve. Alternative curriculum content, and more significantly, alternative teaching styles and ways of working, some of which have been outlined and argued for in the body of this dissertation, may contribute to a breaking down of adolescent barriers against meaningful engagement in the process of their education.

The *worthwhileness* of these ventures must be argued convincingly by a school to the community and the students in terms of what these groups *value*. The developmental opportunities offered by the study of a 'literature of ideas'; the invitation to students to engage in meaningful debate about the world they will occupy as adults - may need to be publicized and demonstrated by apologists in terms of the definitions and arguments presented here. Students and their parents must believe that material which is enjoyable and related to their operating definitions of reality, value and truth outside school, can also be regarded as *work*, as *educative*. Otherwise, such material may well remain in Kieran Egan's terms, on the level of entertainment, and will not operate as an alimnt to their educational development.² Teachers will be well aware that when students are consulted about their evaluations of the work they do in school, they typically apply extremely rigorous, though not necessarily mature or adequate criteria. Such concern and engagement at this level might well

be harnessed, taken as an essential first step in the development of curriculum materials and strategies that will foster enhanced student understanding and involvement in and eventual control over their learning processes.

To secure long-term student engagement, then, requires considerably more than general benevolence on the part of the teacher and a desire to give students what they might 'like'. One result of the general upheaval in English teaching since the nineteen-sixties has been an over-emphasis on eliciting students' 'personal', first responses to literary work to the exclusion of reflection and analysis. For students to gain the necessary control over what they learn, in literary study as elsewhere, they must be helped to realize the generative and evaluative criteria operating in the classroom, both in the texts being read and studied and in the assessment of the quality of their own production. Critical faculties must be developed and tested; operating constructs and categories must be subjected to scrutiny and refined or replaced in the light of new understandings. The full aesthetic experience of a good reading is a rich matrix of cognitive and affective elements. Good texts, including science fiction texts, invite the experience of both.

The principle of estrangement as Suvín has defined it, invites a reader's alert and attentive reading of a double set of organizing principles, the stated and the unstated. The reader's effort will be rewarded with a strong and active relationship with the text and its author.³ The power of estranged texts to defamiliarize and recontextualize offers graspable possibilities of meanings well suited to the schema-forming predispositions of students in Egan's philosophic stage of development. Didactive texts, whether extrapolative or analogical, frequently foreground the 'stereoscopic' nature of the reading activity required to construct and share implied higher meanings

not overtly stated in the text. Metaxic reading, the grasping of analogy, metaphor and symbol, of fable, critique, satire and irony - may be practised by relatively inexperienced readers as the simpler narrative structures highlight such organizing principles.⁴ The opportunity to 'escape from the literal' is one which, if understood, might be generalized and transferred to the reading of other literature, and is arguably a crucial step in the achievement of a more complex and sophisticated literacy. That the meanings shared in this way are of a higher order than the overt meanings within the text, means that the way is open to successful readers to a more mature understanding of 'what life is like'.

It has been argued in this dissertation that to be capable of engaging effectively in verbal or written arguments about the nature of the modern world and the possible shape of its future - is a means of gaining a measure of social power. The overdetermined metaxis implied in a reading of an extrapolative or meliorative science fiction text is an activity of measuring the constructed, fictional world against the reader's construct of the real world. Estrangement as a narrative strategy can be seen to emphasize, perhaps exaggerate a generalized readerly position of aesthetic distance, and thus to enable even a relatively inexperienced reader to engage successfully in activities of relating and recontextualizing. Young readers may be brought to a realization of the polemic potential of all language use, verbal or written, and to a position of being capable of engaging adequately in polemic themselves. It could be argued that the development of such capabilities is a moral obligation of educators.

The central power of science fiction to educate lies in its synthesis of elements that engage and personalize and elements that distance and focus. On one level it was shown that, as a fiction *about* science, some texts could attract and engage readers mistrustful

or contemptuous of aesthetic involvement. In a complex inter-relationship of textual elements, both aesthetic and efferent reading stances are invited, which may contribute to keeping the reading option open to adolescents who may otherwise not read at all. Scientific endeavour is dramatized and personalized in many science fiction texts; values and assumptions embedded in modern white Western society are decontextualized and exposed. Fundamental aspects of an adolescent's own development are frequently mirrored, inviting a strong commitment from many young readers. Preoccupations, fears and desires are met on a subliminal emotional level, echoing many of the satisfactions of myth, fairy tale and romantic adventure stories. At the same time, science fiction's development as a literature of the scientifico-technological age means that potent symbols of adult power in the modern world are the attractive tools of the author's trade. Science is thus linked in the reader's mind, whether on a conscious level or not, with emotion and desire. In this way it can come to bear a personal meaningfulness, which may help overcome an individual's feeling of powerlessness both within the secondary school and in the world at large.

In this way too, it may be seen that science fiction provides a curious but strong link between narrative elements providing emotional gratification to young readers and the moral concerns of the nurturing adult. Chief among these are the optimism and prevailing sense of the worthwhileness of human endeavour which can be regarded as extremely important to a youth demonstrably alienated from or bewildered by adult life and society. Authors characteristically provide characters with actant roles, with opportunities to tackle and overcome problems and avert catastrophes often seen as having their roots in modern social, political, economic and ethical problems; or in perceptions of Earth's isolation and vulnerability in the universe.

The determinism and denial of accountability apparent in much mainstream twentieth-century literature is conspicuously absent in science fiction taken as a whole, especially in that written for adolescents. Like their lives, this literature looks to the future by showing ways that it might be shaped, for better or for worse.

The development in the past few decades of what is imprecisely referred to as 'soft' science fiction has meant a broadening of the speculative paradigm to include the addressing of issues concerning many disciplines. Eric Rabkin's description of science fiction, with which this study began, stresses that the 'difference' from the real world in a science fiction text must be apparent against the background of an organized body of knowledge. Nicholls (1979) has included theme entries in his *Encyclopedia* for such widely varied fields as anthropology, ecology, economics, evolution, futurology, intelligence, linguistics, medicine, perception, psychology and sociology.⁵ Other, possibly related phenomena have contributed to this broadening of science fiction's literary base. Writers from outside the USA, chiefly Britain and the USSR, have made significant additions and changes to the canon. The increasing number of women writing science fiction, and the grasping of its polemic potential by other marginal or disadvantaged groups, are factors contributing to science fiction's generic development. This dissertation might best finish where it began, with an invitation to read and reflect. The many strands of science fiction combine in offering templates, coherent ways of making sense of existence, to young readers in a post-conventional world. The opportunity to practise these in reading and reflection is science fiction's contribution to the education of the young.

NOTES TO CONCLUSION

1. Suvin, 'The Genological Jungle', p.271.
2. Egan, *Educational Development*, p.99.
3. This point is a necessary oversimplification of the complex and fascinating question of the relationships which are possible in science fiction (or indeed any) narratives between the reader and an implied author or narrator.
4. It is possible that irony may be 'read' by even very young children if presented appropriately. John Burningham's picture book, *Come Away from the Water, Shirley* (1977; rpt. London: Picture Lions, 1983) is an interesting example. The tedious and familiar comments of the mother in the here-and-now of the story represented on the left page interweave with Shirley's adventures with pirates and buried treasure vividly told in pictures on the right page. Through a counterpoint of signification in the two stories, the reader can share the unstated, higher meaning of the book with Shirley and the implied author. Science fiction texts, as has been suggested in this dissertation, may provide just such opportunities for practising metaxis and irony.
5. Nicholls, ed., *The Encyclopedia of Science Fiction*, p.556.

BIBLIOGRAPHYPrimary Sources

Aldiss, Brian W. *Hothouse*. 1962; rpt. London: Sphere Books Ltd, 1969.

Asimov, Isaac. *Pebble in the Sky*. 1950; rpt. London: Sidgwick and Jackson Limited, 1971.

Fantastic Voyage. London: Dobson, 1966.

Foundation. 1951; rpt. London: Panther, 1972.

Foundation and Empire. 1952; rpt. New York: Avon, 1970.

Second Foundation. 1964; rpt. London: Panther, 1972.

Bester, Alfred. *The Demolished Man*. 1952; rpt. London: Panther, 1962.

Bradbury, Ray. *R is for Rocket*. 1962; rpt. London: Pan Books, 1972.

Brin, David. *Startide Rising*. Toronto; New York: Bantam Books, 1983.

Brunner, John. *Stand on Zanzibar*. 1968; rpt. London: Ballantine, 1974.

Burningham, John. *Come Away From the Water, Shirley*. 1977; rpt.

London: Picture Lions, 1983.

Burroughs, Edgar Rice. 'John Carter of Mars'. Series written between 1912 and 1948. Includes *The Gods of Mars*. 1920; rpt.

London: Four Square Books; 1964.

Charnas, Suzy McKee. *Walk to the End of the World*. New York: Berkley, 1974.

Christopher, John. 'Tripods' trilogy:

The White Mountains. 1967; rpt. London: Beaver, 1976.

The City of Gold and Lead. 1967; rpt. London: Beaver, 1976.

The Pool of Fire. 1968; rpt. London: Beaver, 1976.

Clarke, Arthur C.

Childhood's End. 1954; rpt. London: Pan, 1956.

2001: A Space Odyssey. London: Arrow, 1968.

Rendezvous with Rama. 1973; rpt. New York:

Harcourt, Brace and Jovanovich Inc., 1973.

2010: Odyssey Two. London: Granada, 1982.

- Compton, D G. *The Electric Crocodile*. 1970; rpt. London:
Arrow Books, 1973.
- Crichton, Michael. *The Andromeda Strain*. 1969; rpt. London:
Jonathan Cape, 1974.
- Delany, Samuel. *The Einstein Intersection*. New York: Ace, 1967.
- Dick, Philip K. *Do Androids Dream of Electric Sheep?* 1968; rpt.
London: Granada, 1972.
The Man in the High Castle. 1962; rpt.
Harmondsworth: Penguin, 1965.
- Dickinson, Peter. *The Changes* (listed according to internal chronology):
The Devil's Children. 1971;
Heartsease. 1970;
The Weathermonger. 1968;
collected and rpt. London: Victor Gollancz, 1975.
- Dicks, Terrance. 'Dr Who' series based on BBC television serial.
Includes *Dr Who and the State of Decay*. London: Target
Books, 1982.
- Disch, Thomas. 334. 1972; rpt. London: Sphere, 1974.
- Engdahl, Sylvia Louise. *Enchantress From the Stars*. 1970; rpt.
London: Victor Gollancz, 1975.
The Far Side of Evil. 1971; rpt. London:
Victor Gollancz, 1975.
Heritage of the Star. London: Victor
Gollancz, 1973.
Beyond the Tomorrow Mountains. London:
Victor Gollancz, 1973.
- Fisk, Nicholas. *Grinny*. London: Heinemann, 1973.
- Gearhart, Sally Miller. *The Wanderground*. London: The Women's Press,
1984.

- Gibson, William. *Neuromancer*. New York: Ace Science Fiction Books, 1984.
- Godwin, Tom. 'The Cold Equations'. 1954; rpt. in *Astounding-Analog Reader*, vol.2. Ed. Harry Harrison and Brian W Aldiss. New York: Doubleday, 1973.
- Golding, William. *Lord of the Flies*. 1954; rpt. London: Faber and Faber, 1971.
- Harris, Rosemary. *Quest for Orion*. London: Faber and Faber, 1978.
Tower of the Stars. London: Faber and Faber, 1980.
- Harrison, Harry. *The Stainless Steel Rat*. London: Sphere, 1979.
- Heinlein, Robert. *The Puppet Masters*. 1953; rpt. London: Panther, 1960.
Have Spacesuit - Will Travel. 1958; rpt. London: New English Library, 1978.
Starship Troopers. 1959; rpt. London: New English Library, 1975.
The Moon is a Harsh Mistress. 1965; rpt. New York: Berkley, 1968.
- Herbert, Frank. *Dune*. 1966; rpt. London: New English Library, 1973.
- Hill, Douglas. 'Young Legionary' series. Includes *Deathwing over Veynaa*. London: Victor Gollancz, 1980.
- Hoover, H M. *Children of Morrow*. New York: Four Winds, 1973.
Treasures of Morrow. New York: Four Winds, 1976.
The Rains of Eridan. New York: Viking, 1977.
The Delikon. New York: Viking, 1977.
The Lost Star. New York: Viking, 1979.
Return to Earth. New York: Viking, 1980.
This Time of Darkness. New York: Viking, 1980.
Another Heaven, Another Earth. New York: Viking, 1981.
- Hughes, Monica. *Crisis on Conshelf Ten*. 1975; rpt. London: Magnet, 1984.
Earthdark. 1977; rpt. London: Magnet, 1981.

- Hughes, Monica. *Tomorrow City*. 1978; rpt. London: Magnet, 1982.
- Keeper of the Isis Light*. London: H. Hamilton, 1980.
- Guardian of Isis*. 1981; rpt. London: Magnet, 1982.
- Ring-Rise, Ring-Set*. 1981; rpt. London: Magnet, 1983.
- Isis Pedlar*. London: H. Hamilton, 1982.
- Huxley, Aldous. *Brave New World*. 1932; rpt. Harmondsworth: Penguin, 1968.
- Jones, Neil R. *Space War*. New York: Ace Books, 1967.
- Le Guin, Ursula. *The Wizard of Earthsea*. 1968; rpt. Harmondsworth: Puffin, 1974.
- The Left Hand of Darkness*. 1969; rpt. London: Panther, 1975.
- The Dispossessed*. 1974; rpt. London: Panther, 1975.
- Lem, Stanislaw. *Solaris*. Translated by Joanna Kilmartin and Steve Cox. 1961; rpt. London: Faber and Faber, 1971.
- McCaffrey, Anne. *Dragonsong*. 1976; rpt. New York: Atheneum, 1977.
- Crystal Singer*. New York: Ballantine, 1982.
- McIntyre, Vonda. *Dreamsnake*. Boston: Houghton Mifflin Company, 1978.
- Mark, Jan. *The Ennead*. London: Kestrel Books, 1978.
- Niven, Larry. *Ringworld*. 1970; rpt. New York: Ballantine, 1981.
- Norman, John. 'Gor' series. Written between 1966 and 1984. Includes *Tarnsman of Gor*. New York: Ballantine, 1966.
- Norton, André. *Star man's Son, 2250 A.D.* New York: Harcourt Brace, 1952.
- Breed to Come*. New York: Viking Press, 1972.
- Iron Cage*. New York: Viking Press, 1974.
- O'Brien, Robert C. *Z for Zachariah*. 1974; rpt. London: Victor Gollancz, 1975.
- Orwell, George. *Nineteen Eighty-Four*. 1949; rpt. Harmondsworth: Penguin, 1975.
- Page, Ian, and Joe Dever. *Greystar the Wizard*. London: Beaver Books, 1985.

- Pohl, Frederik. *Gateway*. London: Victor Gollancz, 1977.
- Pohl, Frederik and Cyril M Kornbluth. *The Space Merchants*. New York: Ballantine, 1953.
- Radcliffe, Ann. *The Mysteries of Udolpho*. 1792; rpt. Oxford: Oxford University Press, 1966.
- Saberhagen, Fred. 'Berserker' series. Written 1967 onwards. Includes *Berserker's Planet*. London: Futura Publications Ltd, 1975.
- Schlee, Ann. *The Vandal*. 1979; rpt. London: Magnet, 1983.
- Silverberg, Robert. 'To see the Invisible Man'. 1962; rpt. in *The Best of Robert Silverberg*. New York: Pocket Books, 1976.
- Simak, Clifford D. *City*. 1952; rpt. London: Four Square Books, 1965.
- Smith, E.E. (Doc). 'Lensman' series. Written between 1934 and 1960. Includes *Second Stage Lensmen*. 1942; rpt. Frogmore, St. Albans, Herts: Panther Books Ltd., 1973.
- Swindells, Robert. *Brother in the Land*. Oxford: Oxford University Press, 1984.
- Tiptree, James Jr. (Alice B. Sheldon). 'Houston, Houston, Do You Read?' 1976; rpt. in *The World's Best Sf.4*. Ed. Donald A. Wollheim London: Dobson Books, 1979.
- Vinge, Joan D. 'Tin Soldier'. In *Eyes of Amber and Other Stories*. New York: New American Library, 1979.
- Psion*. London: Orbit (Futura, Macdonald and Co), 1983.
- Vonnegut, Kurt. 'Harrison Bergeron'. 1961; rpt. in *Decade: The 1960's*. Ed. Brian W. Aldiss and Harry Harrison. London: MacMillan, 1977.
- Wells, Herbert George. *The Time Machine*. 1895; rpt. London: Heinemann, 1949.
- The Island of Doctor Moreau*. 1896; rpt. Harmondsworth: Penguin, 1976.

Westall, Robert. *Futuretrack 5*. 1982; rpt. Harmondsworth: Puffin, 1985.

Wilson, Angus. *The Old Men at the Zoo*. 1961; rpt. Harmondsworth: Penguin, 1964.

Wilson, Colin. *The Mind Parasites*. Sauk City, Wisconsin: Arkham House, 1967.

Wollstonecraft, Mary. *Frankenstein, or the Modern Prometheus*. 1816; rpt. London: Arrow, 1974.

Wynne-Jones, Diana. *The Homeward Bounders*. 1981; rpt. London: Magnet, 1983.

Zamyatin, Yévgeny. *We*. 1920; rpt. Harmondsworth: Penguin, 1972.

Secondary Sources

- Aldiss, Brian W. *Billion Year Spree: the True History of Science Fiction*. New York: Doubleday, 1973.
- Allen, David. *English Teaching since 1965: How Much Growth?* London: Heinemann, 1980.
- Asimov, Isaac, ed. *Where Do We Go From Here?* London: Michael Joseph, 1973.
- Asimov on Science Fiction*. New York: Avon Books, 1982.
- Bannister, D. and F. Fransella. *Inquiring Man*. Harmondsworth: Penguin, 1971.
- Bantock, Geoffrey. *Education and Values: Essays in the Theory of Education*. London: Faber and Faber, 1965.
- Barthell, Robert J. 'Science Fiction: A Literature of Ideas'. *Extrapolation*, 13 (Spring 1972), 56-63.
- Beazley, Kim E. (Chairman), *Education in Western Australia: Report of the Committee of Inquiry into Education in Western Australia*. Perth: 1984.
- Boal, Augusto. *Theatre of the Oppressed*. London: Pluto Press, 1979.
- Bolton, Gavin. *Drama as Education*. London: Longman, 1984.
- Booth, Wayne. *A Rhetoric of Irony*. Chicago: University of Chicago Press, 1974.
- Boyer, Robert H. and Kenneth J. Zahorski, eds. *Fantasists on Fantasy: A Collection of Critical Reflections*. New York: Avon Books, 1984.
- Bretnor, Reginald, ed. *Science Fiction Today and Tomorrow*. New York: Harper and Row, 1974.
- Britton, James et al. *The Development of Writing Abilities (11-18)*. London: MacMillan Education, 1975.

- Brooke-Rose, Christine. *A Rhetoric of the Unreal: Studies in Narrative and Structure, Especially of the Fantastic*. Cambridge: Cambridge University Press, 1983.
- Bunbury, Rhonda et al. *Children's Literature: The Power of Story*. Geelong: Deakin University School of Education, 1980.
- Canary, Robert H. 'Science Fiction as Fictive History'. *Extrapolation*, 16 (Spring 1974), 81-94.
- Calkins, Elizabeth and Barry McGhan. *Teaching Tomorrow*. Ohio: Pflaum Standard, 1972.
- 'Science Fiction in the High School'. In *Teaching S.F.: Education For Tomorrow*. Ed. Jack Williamson. Philadelphia: Owlswick Press, 1980, pp.82-96.
- Cate, Dick. 'Forms of Storying: the Inner and Outer Worlds'. In *The Cool Web*. Ed. Margaret Meek, Aidan Warlow and Griselda Barton. London: The Bodley Head, 1977, pp.24-31.
- Chambers, Aidan. 'The Reader in the Book'. In *The Signal Approach to Children's Books: A Collection*. Ed. Nancy Chambers. Harmondsworth: Kestrel, 1980, pp.250-275.
- Dickinson, Peter. 'A Defence of Rubbish'. *Children's Literature in Education*, 3 (November 1980), 73-76.
- Dorfman, Ariel. *The Empire's Old Clothes: What the Lone Ranger, Babar and Other Innocent Heroes Do to Our Minds*. London: Pluto, 1983.
- Dubrow, Heather. *Genre*. London: Methuen, The Critical Idiom, 1982.
- Eco, Umberto. *The Role of the Reader*. Bloomington: Indiana University Press, 1979.
- Egan, Kieran. *Educational Development*. New York: Oxford University Press, 1979.
- Egoff, Sheila, G.T. Stubbs and L.F. Ashley, eds. *Only Connect: Readings on Children's Literature*. Toronto: Oxford University Press, 1969.

- Fredericks, Casey. *The Future of Eternity: Mythologies of Science Fiction and Fantasy*. Bloomington: Indiana University Press, 1982.
- Frye, Northrop. *Anatomy of Criticism: Four Essays*. Princeton New Jersey: Princeton University Press, 1957.
- The Secular Scripture: A Study of the Structure of Romance*. Cambridge, Mass.: Harvard University Press, 1976.
- Gaiman, Neil and Kim Newman, eds. *Ghastly Beyond Belief*. London: Arrow Books, 1985.
- Grant, Audrey. 'Reading Styles, Reading Uses and Teaching Responses'. In *Teaching Reading and Writing to Every Child*. Ed. Jonathan Anderson and Kate Lovett. Adelaide: Australian Reading Association, 1983, pp.95-105.
- 'Literary Response as Story: Understanding Response in the Context of Identity'. *English in Australia*, 68 (June 1984), 3-14.
- Graves, Donald H. *Writing: Teachers and Children at Work*. Exeter, New Hampshire: Heinemann Educational, 1983.
- Gribble, James. *Literary Education: A Revaluation*. Cambridge: Cambridge University Press, 1983.
- Grinder, Robert. *Adolescence*. New York: Wiley, 1973.
- Habermas, Jürgen. *Legitimation Crisis*. Trans. Thomas McCarthy. London: Heineman, 1976.
- Herrnstein Smith, Barbara. *On the Margins of Discourse: The Relation of Literature to Language*. Chicago, University of Chicago Press, 1978.
- Hewson, Mariana G A'B and Daryl Hamlyn. 'Cultural Metaphors: Some Implications for Science Education'. *Anthropology and Education Quarterly*, 16 (Spring 1985), 31-46.
- Hogan, Patrick G. 'Science Fiction in the Classroom: Opportunities and limitations'. *Extrapolation*, 13 (Summer 1972), 106-111.

- Holland, Norman. *Poems in Persons: An Introduction to the Psychoanalysis of Literature*. New York: Norton, 1973.
- Howard, Jacqueline. 'Returning Rhetoric: Literature as Social Discourse'. *Opinion*, 13 (November 1984), 27-39.
- 'The New Literary Theory and the Future of English Studies'. *Category B* (November 1984), 3-13.
- Inglis, Fred. *The Promise of Happiness*. Cambridge: Cambridge University Press, 1981.
- Irwin, W.R. *The Game of the Impossible. A Rhetoric of Fantasy*. Urbana: University of Illinois Press, 1976.
- Jameson, Fredric. *The Political Unconscious: Narrative as a Socially Symbolic Act*. London: Methuen, 1981.
- Kermode, Frank. 'The Use of the Codes'. In his *Essays on Fiction*. London: Routledge and Kegan Paul, 1983.
- Kertzer, Adrienne E. 'Inventing the Child Reader: How We Read Children's Books'. *Children's Literature in Education*, 15 (Spring 1984), 12-21.
- Kohlberg, Lawrence and Carol Gilligan. 'The Adolescent as Philosopher: The Discovery of the Self in a Post-Conventional World'. In *12-16: Early Adolescence*. Ed. Jerome Kagan and Robert Coles. New York: W W Norton & Company, 1972, pp.144-179.
- Krulik, Ted. 'Science Fiction in the Classroom: Can Its Essence be Preserved?'. *Extrapolation*, 22 (Summer 1981), 155-163.
- Kuhn, Thomas S. *The Essential Tension: Selected Studies in Scientific Tradition and Change*. Chicago: University of Chicago Press, 1977.
- Langer, Susanne. *Philosophy in a New Key*. Harvard: Harvard University Press, 1944.
- Lewis, C.S. *An Experiment in Criticism*. Cambridge: Cambridge University Press, 1961.
- Of This and Other Worlds*. Ed. Walter Hooper. London: Collins Fount Paperbacks, 1982.

- McGowan, B. (Chairman), *Report From the Select Committee of the Legislative Assembly Upon the School Certificate*. New South Wales: 1981.
- McIntyre, Alasdair. 'The Virtues, the Unity of a Human Life and the Concept of a Tradition'. In his *After Virtue: A Study in Moral Theory*. London: Duckworth, 1981, pp.190-209.
- Martin, J.R. *Factual Writing: Exploring and Challenging Social Reality*. Geelong, Victoria: Deakin University Press, 1985.
- 'Prewriting: Oral Models for Written Text'. Unpublished paper, Department of Linguistics, University of Sydney, 1986.
- Meek, Margaret. *Learning to Read*. London: The Bodley Head, 1982.
- 'Play and Paradoxes: Some Considerations of Imagination and Language'. In *Language and Learning: An Interactional Perspective*. Ed. Gordon Wells and John Nicholls. London: The Falmer Press, 1985, pp.41-57.
- Milner, Joseph O. 'Oathkeepers and Vagrants: Meliorist and Reactive World Views in Science Fiction'. *Children's Literature Quarterly*, 10 (Summer 1985), 71-73.
- Moffett, James. *Teaching the Universe of Discourse*. Boston: Houghton Mifflin Company, 1968.
- Nagl, Manfred. *Science Fiction: Ein Segment Populärer Kultur im Medien- und Produktverband*. Tübingen: Gunter Narr Verlag, 1981.
- Nicholls, Peter, ed. *Science Fiction at Large*. London: Gollancz, 1976.
- The Encyclopedia of Science Fiction*. London: Granada, 1979.
- The Science in SF: Does SF Foretell the Future?* London: Michael Joseph, 1982.
- O'Neill, Marnie. 'Functions of Response to Literature'. *English in Australia*, 68 (June 1984), 25-34.

- O'Neill, Marnie and Jo-Anne Reid. *Educational and Psychological Characteristics of Students Gifted in English*. Perth, Western Australia: The Commonwealth Schools Commission and the University of Western Australia, 1985.
- Panshin, Alexei and Cory. 'SF and the Dimension of Myth'. *Extrapolation*, 22 (Summer 1981), 127-139.
- Parrinder, Patrick. *Science Fiction: Its Criticism and Teaching*. London: Methuen, 1980.
- Plank, Robert. *The Emotional Significance of Imaginary Beings*. Illinois: Charles C Thomas, 1968.
- Pohl, Frederik. *The Way the Future Was: A Memoir*. New York: Ballantine Books, 1978.
- Polanyi, Michael. *Knowing and Being*. Chicago: University of Chicago Press, 1969.
- Read, Ian. *The Making of Literature: Texts, Contexts and Classroom Practices*. Adelaide: Australian Association for the Teaching of English, 1984.
- 'Beyond the Cinderella Syndrome: Other Sides of the Story'. *Opinion*, 3 (November 1984), 13-26.
- Rose, Mark, ed. *Science Fiction: A Collection of Critical Essays*. New Jersey: Prentice-Hall, 1976.
- Rosen, Harold. 'The Nurture of Narrative'. In his *Stories and Meanings*. London: N.A.T.E., 1985.
- Rosenblatt, Louise. *The Reader, the Text, the Poem: the Transactional Theory of the Literary Work*. Illinois: Southern Illinois University Press, 1978.
- Russ, Joanna. *How to Suppress Women's Writing*. 1973; rpt. London: The Women's Press, 1984.

Schlobin, Roger, C. 'André Norton: Humanity Amid the Hardware'.

In *The Feminine Eye: Science Fiction and the Women Who Write It*. Ed. Tom Staicar. New York: Frederick Ungar Publishing Co, 1982, pp.25-32.

Schmidt, Stanley. 'Science Fiction and the Science Teacher'.

Extrapolation, 17 (Summer 1975), 141-150.

Scholes, Robert, and Robert Kellogg. *The Nature of Narrative*.

New York: Oxford University Press, 1966.

Sizer, Theodore R. *Horace's Compromise: the Dilemma of the*

American High School. Boston: Houghton Mifflin,

1984.

Smith, Maureen B. 'Science Fiction: Literature of the Socio-

Scientific Age'. Ph.D. thesis, Murdoch University, 1978.

Stableford, Brian. 'Science Fiction: A Sociological Perspective'.

Fantastic, 23 (March 1974), 101-110.

'SF: The Nature of the Medium'. *Amazing Science Fiction*, 48 (Spring 1974), 40-45/63.

'The Social Role of Sf'. *Algol*, 12 (Summer 1975), 23-26.

Stenhouse, Lawrence. *An Introduction to Curriculum Research and*

Development. London: Heinemann, 1975.

Suvin, Darko. 'Science Fiction and the Genological Jungle'.

Genre, 6 (Autumn 1973), 251-275.

'On the Poetics of the Science Fiction Genre'.

Science Fiction: A Collection of Critical Essays.

Ed. Mark Rose. New Jersey: Prentice-Hall, pp.57-71.

Swinfen, Ann. *In Defense of Fantasy: Study of the Genre in English*

and American Literature Since 1945. London: Routledge

and Kegan Paul, 1981.

- Tabbert, Reinbert. 'The Impact of Children's Books: Cases and Concepts'. *Children's Literature in Education*, 10 (Summer 1979), 92-102.
- Tucker, Nicholas. *The Child and the Book: A Psychological and Literary Exploration*. Cambridge: Cambridge University Press, 1981.
- Warrick, Patricia S. *The Cybernetic Imagination in Science Fiction*. Cambridge, Mass.: MIT Press, 1980.
- 'Science Fiction in a Computers and Society Course'. In *Teaching Science Fiction for Tomorrow*. Ed. Jack Williamson. Philadelphia: Owlswick Press, 1980, pp.121-135.
- Wellek, René and Austin Warren. *Theory of Literature*. London: Jonathan Cape, 1966.
- Whitehead, Frank et al. *Children and Their Books*. London: Schools Council Research Studies, Macmillan, 1977. Reproduced in part in *Children's Literature: The Power of Story*. Geelong: Deakin University School of Education, 1980.
- Wiener, Philip P., ed. in chief. *Dictionary of the History of Ideas: Studies of Selected Pivotal Ideas*, vol.2. New York: Charles Scribner's Sons, 1973.
- Williamson, Jack, ed. *Teaching Science Fiction: Education for Tomorrow*. Philadelphia: Owlswick Press, 1980.
- Wymer, Thomas L. et al. *Intersections: The Elements of Fiction in Science Fiction*. Ohio: Popular Press, 1978.
- Yaxley, Bevis and Hugo McCann. 'Anticipating Discourse: Capacity, Competence, Ability and Capability'. Centre for Education, University of Tasmania, 1986.