This chapter continues and extends my work in bringing the modelling of SFL into the inter-disciplinary theorising of narrative. Previously I had suggested that the ‘worlds’ associated with the principal prototypical process choices of the Transitivity system (the physical world of doing, the world of consciousness of sensing, the world of abstract relations of being) could be related to different narrative worlds/diegeses, and hence to choices of narrative diegesis and coherence dominant in different social and historical contexts (Huisman, 2002). ‘Diegesis’ is variously understood as ‘that which is told’ – for the novel, the fictional ‘reality’ that is perceived in the telling (Huisman, 2005: 18-19). Subsequently, however, I have brought this work into the context of contemporary theories of the plurality of time, a context in which one can talk not only of different ‘narrative worlds’ but also of different ‘narrative temporalities’.

J.T. Fraser, originally a physicist, and founder in 1966 of The International Society for the Study of Time, has developed a model of time in which time is not ‘a single unitary feature of the universe,’ not ‘an apparently homogenous universal aspect of nature.’ Rather, time is ‘a dynamic, developing, and open-ended hierarchy of temporalities,’ that is, ‘an evolutionary sequence of temporal levels associated with different natural worlds.’ (Fraser, 1982: 22 & 181) So, when we talk about time we need to be clear it is a term for a synthesis of temporalities, not reducible to one simple understanding.
Fraser gives ‘six integrative levels of nature’, as described by science and the social sciences. (The following account, including all brief quotations, is taken from Fraser, 1999: 21-43.)

1. the world of electromagnetic radiation – the world of particles with zero rest-mass, always on the move at the speed of light (theory of special relativity);
2. the world of particle-waves, with non-zero mass, travelling at speeds less than that of light (quantum theory);
3. the world of matter (general theory of relativity, or space-time theory);
4. the world of life, the organic world of living organisms, including humans;
5. the world of the human mind – being human as a species and as an individual member of the species;
6. the social world.

Each of these worlds is associated with a particular type of causation and a qualitatively different temporality.

For level 1, the form of causality is chaos and the form of temporality is atemporal. Fraser describes this as a world of ‘pure Heraclitean becoming’. In the atemporal world of an object travelling at the speed of light, everything happens at once.

For level 2, the form of causality is statistical, that is, the laws of causation are probabilistic. This form of temporality Fraser labels prototemporal; proto-signifies ‘first in a series’ and Fraser refers to this as ‘the most primitive form of time’. In a prototemporal world, instants happen only statistically – it is not possible to point to the instant when something happened. (For example, the half-life of radio-active cobalt 60 is 5.3 years; after that time close to half an initial amount will have decayed, but it is impossible to tell when the next decay particle will appear, or which particle it will be.)

For level 3, the form of causality is deterministic and the form of temporality Fraser labels eotemporal (from Eos, the Greek goddess of the dawn). Eotemporality is the oldest form of continuous time and eotemporal events can be counted and ordered – this is the time signified by ‘t’ in a physicist’s formula – but such observation will depend on the location of the observer. One implication is that the concept of present comes into being only at the next, organic, level 4.

For level 4, the form of causality is ‘short-term intentionality in the service of organic needs’ and the form of temporality is biotemporal. Biotemporality is the temporal world ‘of living organisms, including humans, as far as their biological functions go’. With life comes the possibility of needs, and hence the organic present, in which those needs are experienced.

For level 5, the form of causality is long term intentionality in the service of distant, often symbolic goals, and the form of temporality Fraser labels nootemporal (from Greek noös – mind or thought). He describes the temporal world which is unique to the human mind as ‘a time informed of a sharp division between future and past, or long-term expectation and memory, and of a mental present with continuously changing boundaries.’ For Fraser, the noetic world ‘is created by our capacity to produce symbolic transformations of experience and then manipulate them as part and parcel of reality.’
For level 6, the form of causality is ‘social intentionality’ or ‘historical causation’ and the form of temporality is sociotemporal. Sociotemporality is ‘the way a culture represents time; it is ‘a social consensus necessary for the survival of a society, a definition of that society’s way of being.’

Turning now to my use of Fraser’s model for the study of narrative, I suggest we can describe the six integrative levels of nature, with their associated causality and temporality, as six types of world (diegesis), in each of which a different type of story can be told:

<table>
<thead>
<tr>
<th>Level</th>
<th>Causality</th>
<th>Temporality</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chaotic, atemporal</td>
<td></td>
<td>a world/ a story of becoming</td>
</tr>
<tr>
<td>2</td>
<td>Statistical, prototemporal</td>
<td></td>
<td>a world/ a story of possibility</td>
</tr>
<tr>
<td>3</td>
<td>Deterministic, eotemporal</td>
<td></td>
<td>a world/a story of located being in space/time</td>
</tr>
<tr>
<td>4</td>
<td>Short-term intention, biotemporal</td>
<td></td>
<td>a world/ a story of organic being/ life</td>
</tr>
<tr>
<td>5</td>
<td>Long-term intention, nootemporal</td>
<td></td>
<td>a world/ a story of human individual life</td>
</tr>
<tr>
<td>6</td>
<td>Social intention, sociotemporal</td>
<td></td>
<td>a world /a story of human social life</td>
</tr>
</tbody>
</table>

From the point of view of physics, as Fraser puts it, this is a ‘hierarchically nested and evolutionarily open system along a scale of increasing complexity’ – that is, the world of electromagnetic radiation preceded and is implicit in the world of heavy matter, such as stars and solar systems. However, from the point of view of human existence, all these worlds co-exist. ‘As a living, thinking and social being made of matter, each person shares some of the potentialities and all of the restraints of these organizational levels.’ (Fraser, 1999:28)

Yet while, as human beings, we are aware of our experience of the last three worlds - our experience of physical/physiological, mental and social life - our human awareness of the evolutionary earlier worlds is very recent, achieved through the use of mathematics and technology. Relevant here is the concept of a species’ ‘umwelt’ developed by the biologist Jakob von Uexküll, now also used in other disciplines: ‘the circumscribed portion of the environment which is meaningful and effective for a given species.’ (Fraser, 1999: 23) Associated with this concept is the ‘extended umwelt principle’, which is relevant to the way humans extend the meaningfulness of their environment through the use of mathematics and technology1. So Fraser’s worlds 4, 5 and 6 and their associated temporalities constitute the umwelt of natural human experience, while worlds 1, 2 and 3 and their associated temporalities constitute the extended human umwelt. This distinction proves to be significant for the theorising of ideational meaning in SFL and, in particular, for the experiential meaning choices of the Transitivity system. The remainder of this chapter now explores this significance.

In *Construing Experience through Meaning* (1999), Halliday and Matthiessen describe how the language function of ‘construing experience’ constructs the
‘ideation base’. ‘By virtue of its unique properties as a stratified semiotic system, language is able to transform experience into meaning.’ (p xi) or again (with the authors’ italics), ‘experience is the reality that we construe for ourselves by means of language.’ (p 3) Their account implies a direction of modelling: ‘in modelling the meaning base we are building it ‘upwards’ from the grammar.’ (p 2) This direction contrasts with that of the more usual assumption, in cognitive science, of a knowledge base, in which prior knowing of concepts and categories is used to interpret experience.

Beginning then with the grammar of the clause, in the choices of Transitivity, SFL builds upwards to the construal of ideational meaning and thence to experience, the construed reality. This is represented graphically in colour on the cover of the second edition of Halliday’s *Introduction to Functional Grammar* (1994), and in black and white in both this edition (p 108) and the third edition (Halliday & Mathiesssen, 2004: 172). Permission to reproduce the latter, below, by the editors is acknowledged with thanks.
In both editions, this Transitivity diagram is labelled: ‘The grammar of experience: types of process in English.’ The third edition adds that a sphere, rather than the two dimensional circle of the printed page, would be a more accurate graphic metaphor, representing the process type as a ‘semiotic space’: the significant aspect is the ‘loop’ rather than linear relation of the process types, together with the fuzzy indeterminacy between them. Nevertheless, ‘the regions have core areas and these represent prototypical members of the process types.’ (2004: 172) The two-dimensional colour diagram on the cover of the second edition is able to represent both core areas and intermediate fuzziness with a circular spectrum: the prototypical material, relational and mental processes are represented by the primary colours red, yellow and blue respectively, and the intermediate processes by the secondary or blended colours of orange (existential), green (verbal) and purple (behavioural). Construing upwards from the grammar, ‘clauses of different process types … make distinctive contributions to the construal of experience in text,’ so that ‘part of the “flavour” of a particular text, and also of the register that it belongs to, lies in its mixture of process types.’ (2004: 174) From the Transitivity diagram, it is clear that, from the choices of Transitivity, the experience construed may be of the physical world of doing, or of the world of consciousness of sensing, or of the world of abstract relations of being. Each of these worlds is construed from a prototypical process (as the physical world from material processes, the world of abstract relations from relational processes, the world of consciousness from mental processes) and its construal is augmented by aspects of the adjacent ‘fuzzy’ process (as, for example, the physical world by behavioural processes, or the world of abstract relations by verbal processes). The world of abstract relations can be understood as the social world, that which is construed through the semiotic understanding of attributes, identities and symbolic relations. Thus, from the perspective of the upwards direction model described by Halliday and Mathiessen, physical experience, conscious experience and social experience are the reality that we construe for ourselves by means of language.

If we now compare the prototypical divisions (into physical, conscious and social experience) of Halliday and Matthiessen’s model with the last three temporalities of Fraser’s model, it turns out (unsurprisingly) that the Transitivity system in English has evolved to enable us to construe the umwelt of our everyday experience. In summary we have:

- Fraser’s level 4 comparable to Halliday’s physical world of doing: a world / a story of life, the world of physical/physiological experience, the organic world of living organisms, including humans;
- Fraser’s level 5 comparable to Halliday’s world of consciousness of sensing: a world / a story of the human mind, the world of psychological experience or consciousness, being human as a species and as an individual member of the species;
- Fraser’s level 6 comparable to Halliday’s world of abstract relations of being: a world / a story of human social life, the world of social relations, being human as a member of a particular society.
However, the Transitivity system has not evolved in natural language to enable us to construe the extended umwelt, the worlds of Einsteinian physics, for which mathematics is the necessary language. As earlier remarked, from the point of view of human existence all six integrative levels of nature co-exist, but only the last three are construed as co-existing reality from the point of view of human semiosis in natural language.

The relevance of all this to narrative study is the following: that though ‘narrative’ has been variously understood as a textual or discursive category, the concept of ‘time’ has been universally assumed to be central to its study. (For a brief account of approaches to narrative theory in different disciplines, see Martin Cortazzi, 1993.) For example, the socio-linguistic study of narrative as genre or text-type has elaborated on William’s Labov’s seminal work and temporal meaning was central to Labov’s linguistic definition of narrative: ‘a minimal narrative is defined as one containing a single temporal juncture,’ that is, ‘a change in the order of two clauses will result in a change in the temporal sequence of the original semantic interpretation.’ (Labov, 1972: 360-1) SFL (Sydney School) work on narrative developed out of this tradition. Thus, in his discussion of genre, J. R. Martin cites the work of R. E. Longacre, the anthropological linguist: Longacre uses a dichotomy of plus or minus chronological framework to contrast narrative and drama with the expository genre (Martin, 1992, 560-1, principally from Longacre, 1976). And I could continue citing amply from other disciplinary studies, in which, though narrative is understood as discourse rather than genre, time is again central to any definition of narrative. For example, for Paul Ricoeur, ‘Time becomes human time to the extent that it is organized after the manner of narrative; narrative in turn is meaningful to the extent that it portrays the features of temporal existence.’ (Ricoeur, 1984: 3) Again, more recently, H. Porter Abbott, answering the question what narrative does for us, writes ‘narrative is the principal way in which our species organizes its understanding of time.’ (Porter Abbott, 2002: 3) Compare Halliday & Mathiessen’s comment, previously quoted: ‘experience is the reality that we construe for ourselves by means of language.’ (1999: 3) Translating Porter Abbott’s words, we could roughly paraphrase: the human experience of time is the reality that we construe for ourselves by means of narrative discourse, telling stories.

These various theorisings of the time/narrative relation beg the question of what is understood by ‘time’. Given that language construes experience, it is tempting to presume that a singular noun represents a singular entity and this has been the usual presumption. A dual concept of time has sometimes been entertained: for example, the early twentieth century French philosopher Henri Bergson distinguished the sequential or quantitative concept of time from our lived or qualitative experience of time, which he called duration. (Bergson, 1913) However, given the dimensions of experience usually studied in the humanities and social sciences (typically those of Fraser’s levels 4, 5 and 6), it is unsurprising that the complex temporalities of modern physics have not been written into the theories of those disciplines. In particular, the structuralist study of narrative known as narratology (still very influential in some circles) has assumed a singular understanding of time, and differentiated between ‘surface’ and ‘deep’
structure by that criterion. It theorised a (usually) dual relation between the ‘surface’ telling or discourse of the narrative and an ‘underlying’ story, an inferred structure with the events in chronological order. (I give a summary account of different literary theories of narrative in Huisman, 2005: 28-44.) Like the chronological ordering of Longacre, cited by Martin, the ‘story’ of narratology exhibits the sequence associated with only one of the temporal worlds of physics - Fraser’s world 4 and Halliday’s semiotic world of physical experience. This is the world of biotemporality, of chronological sequence, in which I cannot drink water from the glass until I have raised the glass to my lips. But, as we have seen, there are other worlds, and other temporalities.

What are the theoretical consequences of importing the several temporalities and the ‘upwards’ construal of experience into the understanding of narrative?

First, different temporalities are associated with differently perceived coherence in a narrative sequence. As narrative is dependent on the symbolic organization of some semiotic modality, such as language or image or dance, or their multimodal intersemiosis, it could not originate until the physical/physiological, mental and social levels of humans had evolved. From the earliest oral narratives, all the six temporal levels had evolved, although construed human experience in natural language is an experience only of the last three worlds. In general, then, a narrative told through language will be told with all types of process, that is, will allow the overlapping construal of a physical world, a world of consciousness, a world of abstract relations. One of these worlds may well dominate the narrative; in fact, it can now be seen that those studies of narrative which assume a monovalent time, equivalent to the biotemporality of level 4, have assumed the dominance of the representation of organic physical experience (the world of level 4), or even, albeit unintentionally, that narrative is the representation of that world. (The latter is a downwards analysis, in contrast to the direction of Halliday & Matthiesssen’s analysis of construal.) Chronological sequence is ‘natural’ to that organic world - you must walk up to a door before it is possible for you to walk through it - but other temporal worlds may be characterised by different concepts of what constitutes narrative sequence. For example, the perceived coherent sequence for the world of consciousness, level 5, is that of individual association, as in individual memory or expectation and imagination. Again, the perceived coherent sequence for the world of abstract relations, level 6, the world of being and sociotemporality, is that of equation, of equative relations between what is construed as socially like or unlike.

In summary, the following table gives the six different types of story, inferred from Fraser’s model, each projecting a particular type of world, with its own characteristic sequence, or mode of coherence, associated with its different type of temporality.
<table>
<thead>
<tr>
<th>TYPE OF WORLD</th>
<th>STORY OF ...</th>
<th>MODE OF COHERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. chaotic</td>
<td>becoming</td>
<td>incoherent sequence</td>
</tr>
<tr>
<td>2. uncertain</td>
<td>possibility</td>
<td>indeterminate sequence</td>
</tr>
<tr>
<td>3. material</td>
<td>being</td>
<td>reversible sequence</td>
</tr>
<tr>
<td>4. organic</td>
<td>life</td>
<td>chronological sequence</td>
</tr>
<tr>
<td>5. mental</td>
<td>human individual life</td>
<td>associative sequence</td>
</tr>
<tr>
<td>6. social</td>
<td>human social life</td>
<td>equative sequence</td>
</tr>
</tbody>
</table>

**Second, the dominance of different temporalities can be characterised as an historical phenomenon.** As already intimated, the extended human umwelt, that is, the awareness, the progressive inclusion, of the evolutionary earlier, first three levels in the human understanding of reality (whether in academic disciplines or popular journalism), has come about comparatively recently, through the developments of mathematics and technology. Such understanding, variously dispersed through a century of two world wars and the global communication of instability, feeds into that ‘poetics of indeterminacy,’ to use the phrase of American critic Marjorie Perloff, which is also sometimes referred to as ‘postmodernism’. (Perloff, 1981) This history has resulted in, I am suggesting, an inverse relation between natural evolution (as described by Fraser’s levels) and the development of Western literary narrative. Nature has evolved in a direction of apparent soli-dity and community. Western literary narrative has developed towards telling stories of evanescent becoming, of a chaotic world with incoherent sequence.

A fuller exploration of this large topic must be presented elsewhere, but the following remarks attempt a brief general introduction.

It was an initial research concern with Old English narrative which led me to a dissatisfaction with available narrative theory and which suggested to me the possible relevance of the SFL model. In the Old English poem, *Beowulf*, for example, social space is important, rather than specific physical space with its temporal location. The narrative typically emphasises not what goes after what – the chronology of narratology – but what is similar to or different from what: social relations of attribution (‘that was a good king/bad king’) and identity (in terms of social role or genealogy). Here I saw the dominance of SFL’s world of abstract relations, the world which I now understand as comparable to Fraser’s social world of level 6. This world contrasts with both the physical/external world of chronological sequence, experienced by the individual organism (level 4), and the mental/internal world of associative sequence, experienced by the individual human (level 5), in that it is construed socially, rather than individually. Its sociotemporality is the historical understanding of its people (including its explanatory myths), where events possibly widely separated in physical time but perceived as socially related can be juxtaposed in equative sequence. I suggest that early pre-printing narratives primarily tell such social stories. The simplest examples, as in traditional folk and fairy tales, lend themselves to the kind of reductive functional analysis made of Russian tales by Vladimir Propp in 1928: a finite list of events, and a finite number of social roles, seven in Propp’s *dramatis personae*. (Propp, 1968) (Mikhail Bakhtin’s studies of the ‘chronotope’ in...
classical and early medieval texts illustrate the late emergence of the ‘individual’, as opposed to the social type). But stories dominated by sociotemporality can be extremely complex, as I discuss elsewhere for the Old English poem, *Beowulf* (Huisman, 2008a).

The growth of the novel in the eighteenth and nineteenth centuries has been well documented, together with the social and economic changes of that period. (Moretti, 2006: 429-520) The increased emphasis on the individual and the possibilities and causes of personal success or failure in society means that the organic/external and mental/internal worlds of the individual human being (worlds 4 and 5) are given more attention in relation to the social story. Thus the early post-printing novels are often focused on the personal history of a particular individual and titled by the name of that individual – think of Defoe’s *Moll Flanders* (1722), Fielding’s *Tom Jones* (1729).

As a further development, compare the more complex overlapping texture of the classic realist novels of the nineteenth century, whether third person narration with an omniscient narrator (as with George Eliot’s *Middlemarch*, 1871-2) or first person narration by a character (as with Charles Dickens’ *David Copperfield*, 1850). Their dense texture derives from a tight integration of the temporalities of the last three worlds. The integration of the organic and mental temporalities gives the illusion of a psychologically ‘real’ character: with organic temporality the narrative tells a story which moves chronologically with its principal character; with mental temporality the narrative tells a psychological story of the character’s thoughts and feelings about the organic present, with associated memories of the past and expectations of the future linked to the narrative present. Simultaneously the sequential narrative path of this character is situated in a particular and explicitly detailed social context, in the historical temporality of a particular social positioning, with the equative coherence of explicit social values (as, for example, in the indexical roles of clothes and manners).

Newtonian physics, operating as it does in the constant gravitational environment of the earth, seemed to confirm rather than trouble the integrated temporal coherence of the nineteenth century classic realist novel. However the revised scientific notions of space/time gaining currency at the beginning of the twentieth century began to extend the cultural umwelt. Thus the Newtonian objective universe turns out to be an Einsteinian one of subjectively positioned measurement. In so-called modernist narrative, this extended human umwelt undermines the narrative confluence of subjective personal experience and objective social reality. The modernist novel of the early twentieth century appears to be more dominated by the associative coherence of world 5, that of consciousness - think of the narrative sequence of individual association in the writing of Proust, of James Joyce, of Virginia Woolf. In practice, it was the growing awareness of the physicist’s world 3, the contingent relation of location in time and space, associated with the determined but not fixed eotemporality, which influenced these more subjective narratives. The inter-relation of science, art and literature in the early twentieth century is much written on, as in, for example, Vargish & Mook (1999), Schleifer, (2000), Whitworth (2001).
The modernist novel still maintains an integration of the organic and mental worlds, the worlds of a human as living organism and thinking individual, that is, the integrity of the individual character in the novel is not under threat. However, those narratives which have been labelled ‘postmodern’ can bring disruption into every aspect identified as ‘being’ in the classic realist or modernist narrative, attempting to invoke the temporalities and causalities of the first two worlds of the extended umwelt. Postmodern novels typically exhibit some proto-or even a-temporality, the temporalities of worlds 2 and 1, the uncertain and chaotic worlds told of in stories of possibility and becoming: they tell stories with instability in the identity of any of the traditional narrative conventions of plot, character, event and setting. The work of Thomas Pynchon is often cited here. (In the Names Index of the edited collection, Postmodernism and the Contemporary Novel, Nicol, 2002, Thomas Pynchon appears more frequently than any other author.)

In Huisman (2008b), I presented detailed comparative analyses of excerpts from Eliot’s Middlemarch, Woolf’s To the Lighthouse and Pynchon’s The Crying of Lot 49. I chose extracts from the three novels which appeared to have something in common: each told how an event was associated with a particular emotion. The classic realist Middlemarch and the modernist To the Lighthouse did not make identical use of association but both did however establish some association (in Middlemarch, how a particular emotion becomes permanently associated with a particular event, in To the Lighthouse, how a particular event or object becomes permanently associated with a particular emotion). But it was not so for Pynchon’s postmodern novel. In my analysis of The Crying of Lot 49, I showed how the work describes a failure of association, even when it is desired. Thus, in the following excerpt, the character Oedipa tries to hold on to a specific emotion, so that in future she can interpret all experience through it (see the endnote for the full paragraph from which this excerpt is taken):

For a moment she’d wondered if the seal around her sockets were tight enough to allow the tears simply to go on and fill up the entire lens space and never dry. She could carry the sadness of the moment with her that way forever, see the world refracted through those tears, those specific tears, as if indices as yet unfound varied in important ways from cry to cry. (Pynchon, 1990: 21)

Yet we see (as I previously wrote) that Oedipa’s desire is self contradictory, in terms of the three worlds of everyday human experience (Fraser’s 4, 5 and 6): to carry the sadness ‘of the moment’ with her ‘for ever’, to allow the tears to ‘never dry’, and a desire to escape the incomprehensible world of unpredictable ‘indices as yet unfound’ (Fraser’s worlds 1 and 2?) into what? Like Oedipa, the reader will not, by the end of the novel, ‘find out’. (Huisman, 2008b: 77-8)

Huisman (2008b) also includes detailed grammatical analysis of the ideational choices (experiential and logical) in this text, with the aim of demonstrating the use of natural language, language which evolved to construe human physical, mental and social experience, to (attempt to) tell stories outside the experience of that evolution. I repeat here just my analysis of the last sentence (again from Pynchon’s paragraph in endnote v):
In the final sentence of this paragraph, also the final sentence of the chapter, the impossibility of successful interpretation is made clear. Oedipa the character - and the reader, who is following a similar trajectory to Oedipa - cannot reach a conclusive understanding of the experienced worlds.

In summary, this chapter has argued for the complementary relation of the SFL modelling of ideational meaning and experienced worlds with Fraser’s account of temporalities, derived from the modelling of evolutionary worlds in physics. The experience construed by natural language, via the possible choices of the Transitivity system, is that of the natural human umwelt, a reality of overlapping physical/physiological, mental and social worlds. Yet physics, in its language of mathematics, construes an extended human umwelt, a reality of the worlds of chaos, probability, relativity. How can natural language construe the experience of those worlds? I have suggested that, given that narrative discourse, telling stories, has been the human way to construe temporal relations, narrative has been further deployed in an effort to tell stories of these newly understood worlds, to construe the experience of their un-earthly temporalities. To what extent this can successfully be achieved is a matter for critical debate, and the literary tolerance of individual readers.

Finally, for SFL, this account argues for its potentially greater relevance to the modelling of narrative, claiming that SFL can make a larger contribution to the theorising of narrative and temporality than has previously been recognised. (In a more limited use in SFL, from the socio-linguistic tradition, the term ‘narrative’ has been used merely to name a genre; a text of the genre ‘narrative’ differs in structure from texts of other genres such as recount and procedure). At least, this account describes how SFL modelling of Transitivity contributes to the critique of

C1 /If the tower is everywhere, / C1 enhancement, condition: positive, RELATIONAL

C2 /and (if) the knight of deliverance (is) no proof against its magic,
C2 paratactic extension RELATIONAL

C3 /what else ...? / C3 independent /

(Pynchon, 1990: 22)
the mono-temporal approach of several disciplines in the humanities and social sciences, including narratology and socio-linguistics. At most, it suggests how SFL can contribute to the very modelling of narrative, in its upward construal of different worlds and their temporalities.
Umwelt as 'the circumscribed portion of the environment which is meaningful and effective for a given species' is quoted by Fraser (1999: 23) from English & Champney English (1964), s.v. 'Umwelt'. The term has a wide currency in Peircean semiotics, as in Deely (1990: 59-62). Fraser continues: «The extension of von Uexküll's umwelt principle to worlds we know only through instruments or formulas is the extended umwelt principle. …Philosophers have long sought normative criteria for a categorical definition of reality. For our purpose all that is necessary and sufficient is to have established a working concept of reality - the extended umwelt principle - and to note that as our knowledge of the world expands, so does our reality. This amounts to equating epistemology with ontology: the world is the way we find it to be through the many forms of human knowledge, even if some of its features appear to be counterintuitive» (1999: 25).

Contemporary literary studies attempt to express similar notions: for example, McHale (1987) links modernism to the disruption of epistemology, but postmodernism to the disruption of ontology. 2 Bergson is currently enjoying a revival of interest in the humanities. The French philosopher Gilles Deleuze's use of Bergson's work has in turn been taken up by, for example, the Australian philosopher Elizabeth Grosz in two recent books, The Nick of Time (2004) and Time Travels (2005). See also endnote iv, below.

3 From the 1930s, using his concept of the chronotope, Bakhtin studied Greek, Roman and medieval narratives to identify precursors of the printed novel. (Clark and Holquist, 1984: 275-94) It would be interesting to correlate Bakhtin's account with Fraser's last three levels, those of the biotemporal, nootemporal and sociotemporal worlds. Bakhtin identifies three major types of narrative, the last having what he calls 'biographical time'; of the seven sub-types of the latter, only three appear to intimate or include stories of nootemporality, the mental world. As Clark and Holquist remark, 'These works give the first inklings of the authentically solitary individual who first makes an appearance in the Middle Ages.' (pp 286-7) Bakhtin's concept of the chronotope emerged in the same intellectual context as the modernist novels; it was 'a unit for studying texts according to the ratio and nature of the temporal and spatial categories represented' (p 278), and arose through the scientific theorising of space/time relativity.

4 'Becoming' is a concept with legs, especially in twentieth century European philosophy. In her introduction to the book, Becomings (a collection by different authors), the editor Elizabeth Grosz writes: '…[this collection] explicitly focuses on and develops out of the work of a privileged few who have insisted on the fundamental openness of time to futurity - who have resisted all attempts to reduce time to the workings of causality, and who have seen in it the force of becoming - Nietzsche, Bergson, and Deleuze … Others could be considered philosophers of becoming, among them Heidegger, Merleau-Ponty, Derrida, Foucault, Klossowski, and Irigaray.' (1999: 3) My critical comment on Grosz's discussion is that there is a danger of again reducing time to one temporality, that of becoming. The advantage of Fraser's model is its open and evolutionary understanding of time, including but not limited to the atemporality of becoming.

5 The extract is the closing paragraph of Chapter 1. (Pynchon, 1990: 20-22). ('She' is the young woman Oedipa, who at the beginning of the novel receives a letter telling her she has been named executor of the estate

Notes
of her ex-lover, Pierce Inverarity. She has by this time married Mucho, a disk jockey.) Mental processes are in **bold/underlined**.

«As things developed, she was to have all manner of revelations. Hardly about Pierce Inverarity, or herself; but about what remained yet had somehow, before this, stayed away. There had hung the sense of buffering, insulation, she had noticed the absence of an intensity, as if watching a movie, just perceptibly out of focus, that the projectionist refused to fix. And had also gently conned herself into the curious, Rapunzel-like role of a pensive girl somehow, magically, prisoner among the pines and salt fogs of Kinnaret, looking for somebody to say hey, let down your hair. When it turned out to be Pierce she’d happily pulled out the pins and curlers and down it tumbled in its whispering, dainty avalanche, only when Pierce had got maybe halfway up, her lovely hair turned, through some sinister sorcery, into a great unanchored wig, and down he fell, on his ass. But dauntless, perhaps using one of his many credit cards for a shim, he’d slipped the lock on her tower door and come up the conchlike stairs, which, had true guile come more naturally to him, he’d have done to begin with. But all that had then gone on between them had really never escaped the confinement of that tower. In Mexico City they somehow wandered into an exhibition of paintings by the beautiful Spanish exile Remedios Varo: in the central painting of a triptych, titled ‘Bordando el Manto Terrestre,’ were a number of frail girls with heart-shaped faces, huge eyes, spun-gold hair, prisoners in the top room of a circular tower, embroidering a kind of tapestry which spilled out the slit windows and into a void, seeking hopelessly to fill the void: for all the other buildings and creatures, all the waves, ships and forests of the earth were contained in their tapestry, and the tapestry was the world. Oedipa, perverse, had stood in front of the painting and cried. No one had noticed; she wore dark green bubble shades. For a moment she’d wondered if the seal around her sockets were tight enough to allow the tears simply to go on and fill up the entire lens space and never dry. She could carry the sadness of the moment with her that way forever, see the world refracted through those tears, those specific tears, as if indices as yet unfound varied in important ways from cry to cry. She had looked down at her feet and known, then, because of a painting, that what she stood on had only been woven together a couple thousand miles away in her own tower, was only by accident known as Mexico, and so Pierce had taken her away from nothing, there’d been no escape. What did she so desire escape from? Such a captive maiden, having plenty of time to think, soon realizes that her tower, its height and architecture, are like her ego only incidental: that what really keeps her where she is is magic, anonymous and malignant, visited on her from outside and for no reason at all. Having no apparatus except gut fear and female cunning to examine this formless magic, to understand how it works, how to measure its field strength, count its lines of force, she may fall back on superstition, or take up a useful hobby like embroidery, or go mad, or marry a disk jockey. If the tower is everywhere, and the knight of deliverance no proof against its magic, what else?».

6 See, for example, Butt, Fahey, Feez, Spinks & Yallop (2000: 9-14) This use of the term ‘narrative’ as ‘genre’ limits the relevance of SFL to other disciplinary studies. In contrast, using the semiotic/semantic understanding of the term ‘narrative’, as in this paper, extends the possible relevance of SFL model-
REFERENCES


332


