Deirdre Pratt

Methodos Series 8

Modelling Written Communication

A New Systems Approach to Modelling in the Social Sciences

Springer

Modelling Written Communication

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VOLUME 8

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Preface

Deirdre Pratt's book provides us with outstanding new tools for improving both research and teaching. How is one to determine the best way to analyse composition, given the various approaches which have flourished since a half century? And how to take advantage of the wealth of observations and of ideas piled up about language, discourse, composition, academic writing, and social context? How to go beyond the multiform and idiosyncratic character of writing and to manage to identify what is constant in it? And how to find the way in which knowledge and writing are intertwined? How to define the social nature of composition? And how to take a stand on the competing epistemological tendencies, from positivism to post-modernism? These are long-standing and vexed questions to which the author brings luminous and elaborated solutions. She does so by implementing a new systems approach, and by initiating a new way of modelling academic writing. Moreover, these theoretical and methodological breakthroughs open the way to conceiving and finalizing a new electronic writing tutor program. The "New Electronic Writing Tutor" (*NEWT*) is now operational, having been tested out in several training centres, and can accommodate different teaching approaches, disciplines and learner levels, as it can be adjusted to suit the specific context in which it is used.

The author recounts the main points of an investigative journey which lasted for 20 years or more. The wording is elegant and simple. We are invited to share an intellectual adventure, meeting the obstacles and surmounting them together with her. At each new stage the problems at stake are re-examined from every angle, and we are informed about the diverse proposals which have been advanced in the literature in order to resolve them; these advances are discussed with care. We are thus kept up to date with the results reached until now about academic writing, and we may profit from the extensive bibliographic resources to which the author refers. We are also well-equipped to judge the relevance of the outcomes she discovered. What is more, her impressive self-critique helps us to form our own opinion, since each step forwards is immediately submitted to a ruthless examination in order to measure its limits.

"I am in a sense the 'pit bull' of investigation", she says, in describing her tenacity in seizing on a concept and worrying away at it until having a more satisfactory answer (*Introduction*). Francis Bacon, for his part, claimed that true scientific

investigation needs the nose of a hunting dog. In order to explain writing – just as in order to explain heat or light – we need to accumulate clues like the hunting dog casting about everywhere for the scent of the prey. It was in comparing the countless observations which she collected that the author arrived at the *principles* or *axioms* of composition, and particularly, at a basic interactive principle. This way of doing research is *classical* induction,[1] which Bacon proposed as a new *organon* in doing science, and which has nurtured the blossoming of modern sciences from Kepler until now. Bacon's induction has nothing in common with generalization from particular facts, and yet is persistently confused with it. Of course a collection of observations would remain sterile without being subjected to intensive reasoning in order to refine and progressively restructure their interpretation, as Bacon vigorously claimed 400 years ago. Observation and reasoning, in classical induction, must be closely associated.

Practising induction leads easily to *realism*. When one wonders about the possibility of really knowing the world as it is, as philosophers tend to do, many objections to realism come quickly to mind. For instance our senses are deceiving; moreover, the knowledge we have of the world is, obviously, nurtured by culture and channelled by social life. Yet when practising induction we discover that sustaining our reasoning by extended observations gives us signal advantages when trying to explain some phenomenon. The author found support in *critical* realism, an illuminating approach issuing from Bhaskar's works. This kind of realism distances us from the empirical tradition established by Locke and Hume and which resulted in neo-positivism. Critical realism pursues another famous movement in the history of philosophy, that of classical realism supported by Bacon, Galileo, Newton, Huyghens and their allies. The author of this book is undoubtedly in good company. And to those ones who think that the philosophy of science is best inspired when looking to how researchers are doing their work, this will offer valuable guidance: it shows how critical realism takes shape in actual instances of research, and how classical induction can be carried out in the human sciences.

A most interesting and unusual feature of this book is its detailed account, at each new stage of the inquiry, of the research method which has been implemented. It allows the reader to judge the relevance of the scientific processing and its fruitfulness. Needless to say, this is a main supplementary motive for the *Methodos* series, devoted to improve research methods in the social sciences, to publish this book; in Daniel Courgeau's and in my own opinion it might serve as a pattern of scientific

[1] Usually, philosophers confound *classical* induction which what is currently meant by the term induction, i.e. the generalization of some particular observation. Usually, they don't pay attention to the recommendation of *classical* induction to accumulate numerous and diverse observations, and to compare them; and usually, they don't pay attention to the difference between, on one side, a general statement about some observation, and on the other side a *principle* (or *axiom*) by which the numerous collected observations can be explained, which is the genuine target of *classical* induction.

research for the social sciences whatever the object of study, be it in economy, in demography, in sociology or elsewhere.

The core of the method followed by the author consists of taking advantage of two different ways of modelling, empirical and theoretical. Empirical modelling is well illustrated by causal modelling in econometrics, but it is also currently used anywhere, when we want to represent a network of observed variables which combine in some phenomenon. Theoretical modelling is much more difficult to arrive at: it tries to identify the abstract structure which underpins and determines an empirical network of variables; classical dynamic laws – for example the law of gravity – illustrate eminently the theoretical model. These two different sorts of models are confused in the social sciences more often than not, with the result that empirical models are often taken for theories.

In the first volume published in 2002 by the *Methodos* series, the difference between empirical and theoretical modelling has clearly been established and defined, and the relations between empirical and theoretical structures – structures which the two sorts of modelling respectively make apparent – have been scrutinized. The result is that, once differentiated, the two ways of modelling can improve each other, and after being duly combined they reinforce the quality of explanation of the concerned phenomenon. This methodological advance was reached after a thorough inquiry made by a multidisciplinary team of thirteen researchers into nine disciplines.[2] Pratt had recourse to this methodological advance and it helped her to probe into the very nature of writing and to conceive the interactive principle on which her composition software was based. Her work backs up the efficiency of the methodology provided by Volume One of the *Methodos* series.

Robert Franck

[2]These disciplines were archaeology, demography, economy, engineering, geography, comparative politics, experimental psychology, sociology and philosophy of science. Modelling practices examined were statistical modelling, mathematical modelling, conceptual modelling, diagrams, maps, machines, artificial neural networks and computer modelling (Franck 2002).

Introduction

Written composition is a mode of communication which is essential for learners in formal education to master for academic progress, as it is the vehicle for much of what is learned as well as the chief means of assessment. It is closely associated with intellectual development; in fact, it is the "currency of intellect" as it now stands in human society (but may, of course, not always be so). Yet it is a field divided by schisms and fraught with academic infighting, with composition instruction dominated at first (i.e. when I was a novice teacher) by form-based approaches, with scarcely a brief interlude in the liberal humanism of process approaches, before diversifying into critical, constructivist and yet other discourse-based approaches, which still dominate the field at the time of writing. No account of writing is innocent, and even scholarly debates tend to become acrimonious (see the 1993 interchange between Canagarajah and Raimes, which is not as acrimonious as some, however). This is because views of writing – and how it should be learned – inevitably reflect views as to what constitutes reality as well as knowledge, and cut to – or rather, cut into – one's most cherished beliefs and values. I need, then, to be upfront about my own position, and include in this opening narrative both where I am coming from and what I intend by this volume.

Firstly, I am a realist, and, as such, strive to fathom the causes of things. Next, my interest in writing is not merely academic, in the sense of being an area for investigation. As a teacher (for 22 years), lecturer (for 18 years) and supervisor (for the last 8 years) I needed – and still need – to know how students learn to write and write to learn. As a child I loved reading and writing stories; as a school teacher and, later, lecturer I struggled to teach composition to packed English classes; as a doctoral candidate I grappled with new genres as well as the protean research topic of written composition. Supervisors who found my work not only incomprehensible but abhorrent (i.e. wrong paradigm) pointed out that perhaps they did not understand it because I did not write too well (the ultimate indignity for a researcher of writing!) I began to think that my view of not only writing, but also reality, must be somewhat weird, but I later learned that a whole group of people (i.e. critical realists) saw reality from very much the same perspective, which was a huge relief. It was even more of a relief when I read Robert Franck's (2002) book on modelling, and found that I had faithfully been following, or authenticating, rather, his "model of

modelling" for many years without knowing it. I did, however, shed some tears on trying to understand certain formal concepts, as my knowledge of the Philosophy of Science was – and still is – limited.

This account, then, will look at the nature of reality as well as the nature of writing, and the way in which knowledge and writing are intertwined. I must confess that am in a sense the "pit-bull" of investigation. When I catch the scent of how something works, I will seize on the concept and worry away at it until I have a more satisfactory answer, that is an answer based on authoritative sources (including observation) and logic as well as intuition. It may not be the "right" answer, but it will be the best answer I can arrive at under the current circumstances, the "truth" as far as I can establish (see Bhaskar 1978:249). I undertake, then to give a faithful account of what I believe to be true, with the proviso that truth in critical realist terms is tentative, transitory, and shaped by both context and local needs. The aims of this work, which will be expanded briefly below, are as follows:

- to provide a description of writing which fits with the social phenomenon as experienced and observed in a lifetime of writing, teaching and research;
- to give an account of the modelling process whereby the description of writing was arrived at;
- to give an account of the models formulated, showing how they established writing as a social process;
- to describe the practical application of the modelling in the creation of a computerised writing program;
- to suggest further applications and developments based on the models, including how they offer insights into the connection between writing and learning.

A Description of Writing

In keeping with the author's critical realist stance, the modelling was intended to arrive at a description of the "essence" (Bhaskar 1979:16) of written communication. It resulted in a description of writing as a social process, in fact, as a social mechanism (Pratt 2005a). The refined applied model of composing is thought to constitute a type of "social algorithm" (Blunt Bugental 2000) whereby young people learn social practices, usually implicitly, by following the example of elders, but such patterns can be made overt in formal education. The resultant description went some way towards explaining both the variation in and nature of current approaches to composition instruction, including the process approach (both expressive and cognitive schools), genre-based approaches, social constructivism (and constructio*n*ism), critical approaches, and the New Literacies approach. I must emphasise here that supporters of such approaches would not necessarily agree with my explanation, nor particularly welcome it: they would probably, however, agree on the surface manifestations of composing for which I attempt to give a deep structure explanation.

The Modelling Process

A type of classical induction, or reverse engineering, was used in the modelling of written communication, following Franck's (2002) description of the modelling process. At first this process was followed intuitively, but later, with conscious intent, working backwards to unravel all of the stages. Franck summarises the modelling process as follows:

> (1) Beginning with the systematic observation of certain properties of a given social system, (2) we infer the formal (conceptual) structure which is implied by those properties. (3) This formal structure, in turn, guides our study of the social mechanism which generates the observed properties. (4) The mechanism, once identified, either confirms the advanced formal structure, or indicates that we need to revise it (2002:295).

The mechanism has two aspects, formal and applied. The formal aspect would be, for example, the system of functions necessary to calculate and display the time: the applied, the various forms clocks and watches might take to carry out the functions required to calculate and display the time (e.g. sundial, candle clock, pendulum clock, gear watch, digital watch, and so on). Franck emphasises that modelling does not occur in a neat, linear progression, but that some steps of the modelling process may be pre-empted or occur simultaneously, and that there may be recursion, even several cycles, as in my own experience. Early on in my investigation I had formulated an applied model of composing (*Stages of the writing process*) which I had tested out against over 40 reconstructions of student composing using an original video protocol method. After some time spent worrying away at the problem of *why* these specific stages featured in my first applied model, I realised that they carried out certain aspects of communication. Franck's description of modelling revealed that these aspects in fact comprised a system of functions which were prerequisites for communication. In effect, I had discovered what Franck terms a theoretical model of composing, a system of communicative functions, which underpinned – and explained – the applied (or empirical) model of composing, *Stages of the writing process*.

The Models Formulated

Three models were formulated in all, the earlier applied model, or pedagogical model of composing, *Stages of the writing process*, the later applied model, which had been refined to clarify the social operation of writing, and included an input option, and the theoretical model, or system of communicative functions. A combination of the latter two could be seen to constitute a description of the mechanism whereby written communication is effected (i.e. the formal and applied aspects described by Franck). The most difficult part of the modelling was to refine the applied model so that the social aspect *of* composing, as well as social influences *on* composing, could be made clear. This required a further round of video protocols (13 in all, as I had not the heart to turn away the three student volunteers over and

above the 10 deemed necessary). Analysing the protocols helped to validate modifications to the first applied model, in particular the provision of an input option. The second applied model shows that composing requires a social *function* to be performed (i.e. so that the written interaction conforms to social mores) as well as being affected by factors in the social *context* in which it takes place. These latter social factors might set in place the social conventions to be followed as part of the social function, but they might also affect the performance of other functions, for example, what one is allowed (i.e. in a given context) to include as content in writing.

The achievement of the modelling process was that it made it possible to identify what is constant and what varies in composing, of which a satisfactory account had not hitherto been achieved; this is why writing was thought to be too complex to describe satisfactorily even by process-oriented researchers (Lynn 1987, Raimes 1985, Spack 1984). The modelling process also provided a "deep structure" explanation of composing, the model of communicative functions. This not only constituted a systemic model of communication, but also a principle which could later be used to explain other interactive social phenomena, as will be outlined below. In a sense the generalizable principle was one of the key discoveries of the modelling process, in terms of its potential for being applied in other areas or fields. Franck emphasises that discovering such principles by means of systemic modelling addresses one of the main weaknesses of the social sciences, namely the omission to combine the results of investigation to provide a coherent and encompassing description of social processes with anything approaching the force of the "laws" of the natural sciences. According to Franck, "The explanatory power of a theoretical model constructed in this way can equal the explanatory power of natural laws" (2002:298).

The Writing Tutor Program

As Bhaskar emphasises, it is praxis – or practical application – of new insights which leads to empowerment, and not knowledge per se (1986:170–172). The practical application of the modelling process was composition software. This took the form of a writing tutor program, as a means of modelling the systemic operation of composing for the learner writer. The making of *NEWT* (acronym for the New Electronic Writing Tutor) in fact provided the main stimulus for completing the modelling process, as designing the computer program required identification of the commonalities and variables in composing, that is the intra- and extra-systemic operation of written communication. Designing the program so that the learner had an input option to capture local variables meant that the writing tutor program could be customised not only to fit various levels of instruction, but also to suit individual learner needs and preferences. *NEWT* has been piloted with learners at school and undergraduate level, as well as with higher degree students, and several modifications and enhancements have been programmed into the prototype. It is currently

part of an institutional and community project, to be run via an interactive website with online materials and discussion forums. To sum up the benefits of the writing tutor program: (1) it leads students through the composing algorithm at their own pace and in any preferred order, thus relieving the teacher of the drudgery of having to explain the systemic features of composing over and over again; (2) it allows the user to customise composition instruction to fit specific learning needs; and (3), according to students who have used it, it is fun, and thus provides intrinsic motivation for learning.

Further Applications and Developments

Reconstruction of student composing using video protocol analysis suggested that learning and writing were intertwined in composing, in the sense that knowledge was being constructed as students planned, wrote and revised. It was in fact difficult to distinguish between the two processes (i.e. semiosis and poiesis). It later became apparent that learning requires the same system of functions to be effected as composing, which meant that the theoretical model of composing could in fact be used as a course design principle. Apart from providing a "parallel system" working in tandem with – and thus reinforcing – the learning process, writing also provides the learner with a recorded template of emerging concepts (i.e. the written text) and thus makes for more intrapersonal interactivity as well as extended opportunities for reflection. Factors such as these may explain why writing is seen as being closely linked with intellectual development rather than as merely providing a record of cognitive activity. These and other synergies will be explored later.

The model of communicative functions provided a generalizable interactive principle for use in other areas or fields of social science, and so far it has been used with some success in the following applications:

- Course design (in both classroom-based and online courses)
- Formulating a model of blended learning
- Research capacity building
- Film analysis
- Developing a theory of hypermedia communication

While the system of communicative functions has obvious application for any kind of communication (e.g. graphic, nonverbal, or learning interaction, including research), the most interesting new development is the notion that it might provide the basis for a model of interactive determination. This would require a conceptualisation of the functions which would fit interactions other than communicative, and might best be represented mathematically.

It must be remembered that the investigation documented took place (formally and informally) over a period of 20 years, and that it went up many blind allies before struggling back on to the main path. I personally went through four paradigm shifts, where I genuinely though myself to be operating in turn, from within a

hermeneutic, critical, constructivist or critical realist orientation. At a crucial stage of my doctorate I was afflicted with a life-threatening disease (advanced hyperthyroidism), which made me seriously consider if anything was worth dying for, in particular, the generation of new knowledge. My dogged pursuit (to continue the pit-bull metaphor) of what I believed to be the truth about writing caused rejection by peers, delayed certification, missed opportunities for promotion, and a fair amount of physical and financial hardship. The rewards have more than compensated for any hardships suffered, in particular the acquisition of more than 20 students for doctoral supervision (and having to turn away others), mostly colleagues, teachers and teacher trainers, but also younger folk, some of the "brightest and best" in KwaZulu-Natal, of mixed demographics and mother-tongues, but all interacting at an advanced intellectual level and playing out the variations of the interactive principle in both investigation and writing. There is, then, a "happy ending" to my endeavours to seek the truth. In attempting to convey the essence of the modelling process and outcomes (i.e. without reconstituting the 20-year journey and associated travails) this volume will be structured as follows:

Chapter 1: Review of Composition Software

As *NEWT*, the writing tutor program, was both the stimulus for and practical application of the modelling process, this chapter will give a review of composition software available at the time of the modelling and show the need for such a program. The following types of applications for computerised composition instruction were available at the time the *NEWT* prototype was designed:

(1) conferencing-type tutors
(2) tutors based on text-analysis
(3) tutors based on heuristics or invention strategies
(4) text or revision tools
(5) organisers
(6) process-based tutors

This categorisation has not changed materially since them, except for slicker packaging – and a harder sell – of the various options. All of the above applications deal with some aspects of composing, but none distinguishes successfully between the commonalities and variables, or allows the writers the infinite flexibility observed in composing procedures which has prompted researchers to suggest that writing behaviour is too idiosyncratic to be categorised. This section is included, then, to show how effective composition software needs to be informed by a model of writing which shows composing as a social mechanism with intra- and extra-systemic variation. From the critical realist perspective adopted here, the aim of the modelling process is to empower learners by offering a practical application of theory: the writing tutor program is one such application.

Chapter 2: Critical Realism

As I have suggested earlier, this work is written from a critical realist perspective which fits my own naïve sense of reality. As Cupchik points out, it is not that difficult to establish what is real in everyday life:

> Not surprisingly, it appears easier to address the nature of "reality" in everyday life than in philosophy. If you were to ask people on the street for examples of *what is real*, they could readily respond. Giving birth is real. Catching AIDS is real. Being left by someone you love is real. Getting tenure (or not) is real. So the standing of *what is real* does not appear to necessarily challenge people. It is *real* enough when a context is clear. In daily life, we frequently ask ourselves: "Is it *real* or simply a figment of my imagination?" We can wonder whether or not a comment was said in jest or if an offer of assistance was sincere. Does so and so "really love me" or is it simply "wishful thinking"? Similarly, people are aware of intense *states of subjectivity*. "I liked the movie very much even though you hated it!" "I like that painting and I want it, and I'm paying for it!" "But, this is our house, so where are you planning to hang it? I hate it!" (Cupchik 2001, para 8).

How one constructs knowledge, particular in the formal research sense, or the philosophy of science, is another matter. What is particularly problematic is finding an orientation for formal investigation within which one can be congruent. Written composition – in fact qualitative research – is dominated by approaches which view writing as being constructed in or by discourse, which is often equated with text. From the latter perspective, anything presented from a realist orientation appears not only incomprehensible but dangerously deviant, deranged even. This view is not limited to South Africa. On explaining my research paradigm to a fellow-delegate at an overseas conference in Calgary, Canada, I was told that I could not have insulted her more if I had tried: this, just by explaining critical realism! The only major critical realist work on composition at the time of writing is by Donald Judd (2003). Judd's perspective is very different from mine, in that he focuses on possible mismatches between theory and practice in three main composition schools. In spite of this very different focus, I found Judd's work invaluable for his excellent exposition on critical realism, which, it must be noted, takes up almost half of his volume: this should indicate just how new to composition studies critical realism is.

The approach taken in this volume is also very different from that presented in mainstream work on written composition, and understanding the realist perspective is crucial to understanding why the modelling took place (i.e. to understand the nature of writing) and why it took this particular form (i.e. as describing an observable process, an "event" in Bhaskar's ontology). This is why it is very important that this chapter explains what the critical realist philosophy is, as well as what it is not, for what is axiomatic in one paradigm is often a fallacy in another. As the problem of agency is considered problematic in critical realism, and composing is a social process carried out by human agency, I hope that I have made some modest contribution to the field in suggesting a distinction between what I have termed "intentional" and "contingent" determination, and in pioneering the use of the "conceptual mechanism" as educational tool. This will, however, be discussed in the next chapter, Chapter 3, which explores the key critical realist concept "mechanism" in more detail.

Chapter 3: The Modelling Process

As this volume is on the application of a modelling process which is suggested as an exemplar of systems modelling in the social sciences, this chapter is a crucial one in understanding the process. Although the critical realist orientation fitted my everyday thinking, it did not suggest a suitable research procedure to fit my purpose. Bhaskar has been criticised for being somewhat vague about the precise details of a critical realist investigative methodology: he saw it as the work of the specialist in the field to find a modus operandi suited to that particular discipline. I found that Robert Franck's work on modelling (2002) dovetailed marvellously with Bhaskar's philosophy, and offered a much more precise definition of the key realist term "mechanism" (I blush to think of some of my earlier interpretations, before I was able to differentiate clearly between mechanisms, causal agents and causal factors). While helpful respondents on the *Bhaskar Mailing List* had assured me that modelling was a preoccupation typical of critical realism, Franck's work gave a precise description of the modelling process; even more remarkable was that it described the process I had actually followed for over 18 years in investigating composing processes. I could then retrospectively "wrap up" the modelling process in formal investigative terms. I found it necessary to break Franck's description down into a series of stages. It is thought that these might help the reader both to follow the course of the modelling described here, and to apply Franck's method in other areas of social science. To summarise briefly, Franck's method is an elegant example of classical induction, balancing a formal model of functions against the practical description of a process, verifying the former against the latter, and the latter against real world functioning.

Chapter 4: The User's Model of Composing

At the very outset of my investigation into writing I had developed a schema of composing in order to model composing processes for learner writers (*Stages of the writing process*, Pratt 1987). While I had been involved in formal study at the time (masters in Applied Linguistics) the process had been largely intuitive in response to a pressing educational need, but had also been informed by 5 weeks' intensive reading, mainly on the process approach to writing. At the time I had not known what kind of creature I had discovered lurking in the thickets of my mind, hence the term "schema"; I just knew that I had promised my undergraduate tutorial class a description of composing which would help them to write their term paper, and I could not find a satisfactory one in the literature. At a formal level, I could relate it to what Widdowson termed a "user's model", that is a description of language use from the point of view of the naïve user rather than one based on linguistic theory (Widdowson 1984:9). Unravelling the modelling process from Franck's perspective, almost at the other end of the investigation, revealed the user's model to be an applied (or empirical) model of composing. It was, however, an applied model

containing, implicitly, a system of communicative functions, which, in Franck's terms, constitutes a theoretical model of composing. I did not formulate this system of functions clearly until much later, as the communicative functions are adapted almost beyond recognition in the applied model. The user's model is a key aspect of the modelling process documented here, the fulcrum, as it were, on which the rest of the process balances. The communicative functions could not have been identified clearly had it not been for the way in which they were separated in writing, much in the way that litmus paper reveals separate bands of elements in chemical compounds. The irony was that, while their separation in writing made it possible to identify the key functions which need to be performed for communication to take place, their highly idiosyncratic expression in writing masked their true nature.

Chapter 5: Testing Out the User's Model

One of the stages of Franck's modelling process is testing out the applied model against real-life situations or against data. This validates – or signals further modifications to – the applied model, which can then, in turn, be used to validate the theoretical model. This chapter shows how the testing process, carried out in over 40 video protocols of student composing, validated the user's model as far as the systemic operation of composing was concerned, but showed up flaws in categorising the social aspects of composing, more specifically, how to portray the impact of local academic criteria on – and in – the composing system. The model in fact displayed the same weaknesses as the approach on which it was initially based, the process approach. This chapter, then, offers a brief description and critique of the process approach, and shows why other more socially conscious approaches were not seriously considered as options for modifying the user's model. The chapter also describes the video protocol method used to reconstruct composing, as well as the depiction of the systemic operation of composing in colour-coded graphs. The video protocol method using split-screen recordings revealed complex cognitive processes, which are an integral part of composing processes, but would not have been accessible in such detail otherwise. The composing profile graphs compiled from the protocol data (i.e. on videotapes, audiotapes and texts) show the systemic operation of the composing mechanism at a glance, and make it easy to compare phases of the same composing session against each other, as well as comparing different writing profiles, something which narrative accounts alone make difficult.

Chapter 6: The Theoretical Model of Composing

If the user's model is the fulcrum, the theoretical model of composing is the apogee of the trajectory of events in the main cycle of modelling, in the sense of being the high point of the discovery. This is because, once the theoretical model of composing had been expressed in formal terms, as being the system of functions "without

which" communication could not take place, it led to insights about not only written communication, but other communication modes. In fact it suggested that communication systems operated in the complex kind of layering which is a feature of the critical realist ontology, with (at least) primary and secondary systems being involved. The theoretical model of writing generated insights into the nature of writing beyond what had been sought for, as well as suggesting some related hypotheses on the formation of modes and genres. Most importantly, the formulation of the theoretical model led to further refinement of the applied model so as to make sense of all composing, and not just "good" writing (as in *Stages of the writing process*). The applied model could then be tested out against further instances of actual composing to see whether the refinements accurately represented actual instances of intra- and extra-systemic variation in composing, and whether the model now clarified the social aspects of composing.

Chapter 7: The Explanatory Force of the Models

Models in social science are validated, to some extent, by their explanatory force. This chapter looks at the insights the refined applied model offered in making sense of actual instances of composing in 13 more video protocols, as well as retrospectively, in terms of what the first applied model had already validated: in 35 instances the evidence of clear stages in composing had already been confirmed. The applied model could then be tested out against further instances of actual composing to see whether the refinements accurately represented actual instances of intra- and extra-systemic variation in composing, and whether the model now clarified the social aspects of composing. An analysis of the data obtained in the 13 video protocols suggested that the refined applied model of composing explained actual instances of intra- and extra-systemic variation in composing, and, more importantly, showed that much of the intra-systemic variation was triggered off by contingent factors. Finally, the refined model clarified how social factors worked both outside and inside of the composing system, which is in fact the most significant contribution of the whole modelling exercise, as composing can now be represented as a social process. The testing out of both applied models validated the theoretical model, which, being a generalizable principle, could then be used as the basis for applied models in other areas.

Chapter 8: The Writing Tutor Program

This chapter gives an account of the practical application of the modelling, *NEWT*, the writing tutor program. Both applied models provided "blueprints" for the writing tutor program, the first, in terms of its pedagogical value, with helpful specific advice and guidance, the second, in terms of its algorithmic expression and the input option, which allowed local social criteria to be captured. Computer programming

is not a forgiving mode, and represents social processes only to the extent to which they have been represented accurately – and comprehensively – in the original design. Once a social process has been expressed in algorithmic terms, however, the concomitant algorithms involved in programming can be brought into play to represent the process faithfully to the intended user. The second applied model represented composing as a social algorithm, and the software could then replicate this algorithm in machine language. While this particular form of practical application may seem to occupy a small area of the options available in the general scheme of things, it is in fact the most powerful application as a force for social transformation, as a computer program can easily be disseminated worldwide.

Conclusion

A general Conclusion will be provided to sum up the themes explored in this volume, to document subsequent findings and applications, and to suggest further avenues of exploration associated with this type of social science modelling.

Contents

Chapter 1
Review of Composition Software

1.1 Introduction

This chapter explores the concept of using computer programs to assist with composition instruction, first examining some principles for using computers in writing instruction, and next, reviewing a selection of currently available composition software. While the latter covers diverse aspects of writing, and process-based programs come the closest to replicating some of the functions of human tutors, none in fact covers both procedural and social aspects of composing. The chapter concludes with identifying the need to base the proposed writing tutor program on two models: an applied model which deals with both procedural and social aspects of composing, and a theoretical model showing the "deep structure" of communication in written mode. Two models are thought to be necessary, so that the applied model is based on more than "rule-of-thumb" or ad hoc application, and is not only validated against composing in real-life situations but can be seen to reflect something of the nature or "essence" of writing.

1.2 General Principles for Using Computers in Writing Instruction

Hughes suggests the following general principles for using computers in writing instruction:

1. Teachers should beware of both the positive and the negative hyperbole about computers in education.
2. Teachers should decide on educational goals and methods first, then consider how computers can be useful (not the other way around).
3. Teachers should consider computers primarily as tools for writers, not as omniscient teachers.
4. Teachers should consider using computers as part of their instruction, not as the instruction.
5. Teachers should know that just because programs can do something does not mean it should be done.
6. Teachers should know that there is no Platonic ideal of a program for writing instruction.
7. Teachers should be realistic about the time and the costs associated with using computers in writing instruction (1989:1–2).

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With regard to point 1, the literature supports the view that computer-aided composing has distinct advantages. The benefits of students using word processors for composing are well documented (see Daiute 1983, Eyman 1995, Monteith 1993, Snyder 1993, to name but a few): according to Leu, Kinzer, Coiro and Cammack, "nearly 20% more students are able to pass the Massachusetts State writing assessment when permitted to use word processors" (2004:1606–1607). Word processors can assist composing by minimising the drudgery of re-drafting by hand, allowing the writer to spend more time on achieving the desired effect and less time on actual transcription, by making large-scale structuring revisions possible even at the last minute: they can facilitate polishing by providing both genre templates and the option of electronic checkers or checking mechanisms (e.g. find-and-replace options). Moreover, the word processor screen represents the finished product to the writer for immediate assessment of the desired effect, no matter how many corrections, changes or adjustments are made. Bennet emphasises the benefits of using computers for individual tutoring, for example, in focusing the student only on what needs to be learned, avoidance of unnecessary repetition and making use of helpful repetition, relatively low costs for individual attention, and positive reinforcement without teacher disapproval of slow learner response (1999:73–75). According to Cotton (1991), research shows that computer aided instruction (CAI) improves student achievement, enhances the learning rate, results in better retention of learning, and leads to more positive student attitudes. There are also indications that CAI makes students feel more in control, improves attendance, motivates them to spend more time on school tasks, and results in more cooperative social behaviour (1991:6–7). Computerised tutors are a viable option for solving the problem of reduced academic staff numbers (Finnie 1991:10), particularly in the case of reduced English Language staff, as experienced nationwide in South African tertiary institutions.

However, there is a tendency to overplay the benefits of using computers to solve educational problems, and to underplay some of the real problems, such as student after-hours access to computers and the need for prior learning in this area, both serious issues for educationally disadvantaged ESL learners who are most in need of individual tuition (see also Kenning & Kenning 1983:4, on the limitations of using computers for instruction). At the outset of this project there was no guarantee that learner writers would find using the software proposed in this study helpful, or would even choose to use it.

1.3 The Need to Consult Educational Goals and Methods

Hughes' point 2 is most germane to this study, in that the model on which the proposed WTP is based has not only been used extensively in teaching and coaching written composition since 1986, but, as will be shown, is also theoretically underpinned by a model of communicative functions "without which" communication in written mode cannot be accomplished. The educational goal and methods used also have bearing on the modelling section, in that the intention is not to arrive

at a "Platonic ideal" (point 6 above) embodying all aspects of literacy, but a model which will explain the real-life operation of composing as observed by teachers and researchers in the field, a theory both based on and authenticating practice, rather than the imposition of theory on practice. This is not to say that the theoretical model formulated does not share resonances with other composition theories and accepted best practice within a number of different approaches, merely that it is not derived from previous theories, but from a process of reverse engineering, working back from observations, confirmed by the writers themselves, of what writers do as they compose in academic and other contexts. This will be dealt with in more detail in the modelling section. However, a key aspect of the writing tutor which will be dealt with here is the features of human tutoring which the writing tutor program will attempt to provide (or approximate), and how (i.e. educational goal and methods):

- to model composing processes for users, both by communicating these directly to students and by guiding them through these processes;
- to model reader-responses, so that beginner writers can internalise the kinds of inner dialogues which experienced writers have been observed to use to pre-empt and fulfil the needs of the intended reader(s) during revision;
- to allow input from the user which will reflect the social context, including specific academic requirements;
- to give generalized advice and guidance throughout composing;
- to give specific feedback on user-identified issues and problems;
- to be such as requiring to be consulted only when/where necessary;
- to be open-ended in allowing users to focus on their specific learning/remediation needs;
- to have interactive elements, such as input from the user in various sections, or feedback on performance;
- to remain unobtrusively on the screen to assist with composing as/when needed;
- to present to the user as a friend and helper;
- to prompt what have been observed by teachers and researchers to be effective composing practices; and
- to initiate a reflective dialogue on work-in-progress which can eventually be internalised by the user.

The disadvantages associated with using a computer program as opposed to interacting with a human tutor are as follows. The interaction with a computer program is at best (like that with print text) an interaction by proxy, lacking the immediacy and warmth of face-to-face interaction with a human tutor. As a result, the user has to supply most (if not all) of the initiative, and a human tutor is really needed to address motivational problems, deep anxiety or other problems which require counselling rather than merely procedural advice. Finally, access might be a problem for disadvantaged ESL students (in South Africa and/or elsewhere) who are most in need of tutoring: the tutor program can be used only by learners who are computer literate

and have regular (i.e. daily) access to computers, particularly after-hours access, when students will most likely be engaged in composing academic assignments.

However, while there are disadvantages associated with using a computer program as opposed to interacting with a human tutor, there are also enhancements offered by computer mediated learning:

- A tutor program is more convenient, and more time- and cost-effective than human tutoring: once bought, it can be used as many times as needed, and whenever needed (i.e. not just when a human tutor is available).
- A tutor program can also be distributed more cheaply and easily to students by the institution than a workbook, by making it available as an Internet download for home use as well as installing it in computer laboratories.
- Given that there is access to computers and basic computer skills, there is no limit to the number of learners a tutor program can accommodate, whether sequentially or at the same time.
- Unlike a human tutor, a tutor program does not become tired or irritable no matter how many times the same question is asked or the same procedures are rehearsed.
- Conversely, the user can drop a topic or break off without appearing to reject a human tutor's advice with the result of offending him/her.
- Students appear to enjoy using computers, and to prefer them to formal "live" instruction.
- A computer program is not generally perceived as judgemental by learners in the same way that human teachers or tutors are, and is controlled by the learner, not the teacher.

Moving to Hughes' point 3, the prototype WTP developed here was intended to be a tool at the service of the user, and, while (one hopes) a mine of useful information, it points out what works for good writers, offers helpful advice and various prompts, and then leaves the writer to it. It can also be accessed as the user requires, as the help menu format allow users to choose from a number of options, rather than oblige them to follow a specified course of tuition. The WTP was designed to contain both procedural knowledge – "knowledge how to" – and declarative knowledge – "knowledge about" (Boyle 2001, Feifer 1992). In effect, the WTP provides a form of guided discovery (Alessi & Trollip 1991:8) and follows Knowles' andragogical model of learning (in Pellone 1995:1, see also Healey 1999, and Corso & Williamson 1999:35). There is no reason, however, why it cannot also be used in teacher-centred (pedagogical) composition teaching programmes with younger learners. As regards Hughes' point 4, the WTP was never intended to be the sole source of instruction, merely an adjunct or help program, although it could well be used to provide the basis for composition instruction, and responses by student teachers suggest that there is a need for such a form of guidance. I am in agreement with point 5, and resisted the temptation to put in routines or applications which would be flashy or clever, but would not add materially to the desired outcome (Wyatt 1984:10, Sanders & Kenner 1984:35). The fact that the programming budget was very small helped to avoid any superfluous padding, and actually cut out

some features – for example, idea-generating strategies – which I would have liked to include because they would have added a sense of fun (initial student feedback has suggested that these should in fact be included). The static lesson texts (as those contained in the "About composing" menu item) in particular could have benefited from some animation (see Pellone 1995:9 on the positive effects of animation on learning). As far as Hughes' point 6 goes, the fact that I have laboured to produce a "better description" of composing as the basis for the program design does not mean that I see it as some kind of platonic ideal. While the models produced reflect the closest position I could come to the "reality" of writing, both represent incomplete and tentative truths, driven by local needs and shaped by my own perceptions and experiences as writer, teacher and researcher. Finally, as regards point 7, working at an institution where the technical infrastructure lags somewhat behind its claims to be a "University of Technology", I have no illusions about students' access to computers or the costs (and politics) involved in setting up and maintaining computer laboratories for general student use. To facilitate student access to the WTP, it is planned that the proposed commercial version will be sold as cheaply as possible, and in a form easily loaded on to a home computer or networked computer laboratory.

Hughes also suggests that the following questions should be asked about computer programs in writing instruction:

1. Does the program teach something worth teaching?
2. Is the program based on sound principles of how people write and how people learn?
3. Is the program flexible – for the student and for the teacher?
4. Is the program easy to use?
5. Does the program offer collaborative possibilities (1989:4–5)?

The writing tutor prototype was designed to fulfil all of these conditions except that expressed in 5, where the collaboration with other writers has in a sense been done in advance. This means that the user might benefit from the experiences of other writers, as (1) the whole program is a summing up of what good writers do and (2) the user might also benefit from the problems experienced by other writers by accessing the "Help with writer's block" sections.

1.4 Categories of Writing Tutor Programs Currently Available

When this project was initiated late in 1999, the only programs which came close to what was envisaged, and to which I had access (through the former Edgewood Teachers' Training College) were some children's programs, such as *Story Book Weaver* (http://www.allstarreview.com/storybookweaverdel.html), but these involved little more than pasting pictures and writing captions. I had read Costanzo's account of *Story Tutor* (1987), and was aware of *Easy Writer* (http://www.softwareforstudents.com), but Costanzo's program was tailored to

leading the writer through a conferencing-type series of questions dealing specifically with the short story genre, and *Easy Writer* taught composing through text analysis and editing only. McDaniel's (1987) comprehensive "Bibliography of text-analysis and writing instruction software" provided a wide range of exemplars of programs to assist the learning of composition, which involve, besides various text-analysis programs, shell programs, writing lessons, various kinds of organisers, heuristic strategies, other prewriting exercises, text revision (but via text analysis), grammar analysers, various kinds of writing prompts (often in the form of questions), grammar parsing and instruction, and teacher graders. It also contains various programs involving planning, structuring and revising guidance for creative writing, including poetry writing. A recent search at the time of writing has revealed that there are now several options documented or advertised online, including *Maestro Process Writing Tutor* (Steuck 2004). An interesting recent example is the HyperCard Project, *Writing Safari*, which uses a " 'top-down' genre-based approach" (Farrow, Power, & Freebody 1994:2) to assist hearing-challenged learners to develop composing expertise:

> Concentrating on assisting learners to develop strategies to edit their own work at a level beyond the surface-level of error detection is an aim of *Writing Safari*. If learner awareness is raised of audience, purpose, genre organization and conventions as primary concerns and syntactic choices related to meaning as secondary, then it is hypothesized that learners might progress beyond a word by word or sentence level view of writing to consider writing as a means of communication. It is hoped that they will be able to view writing as something over which they can exercise individual control (http://www.cltr.uq.edu.au/oncall/farrow91.html).

However, there is no evidence to support the view that mastering editing processes on its own leads to a generalized composing expertise, or that dealing with excerpts larger than the sentence will lead to a view of writing as communication, let alone assist students with the process of actual communication in writing.

While cognitive theories of writing appear to have been used to inform most (if not all) of the process-based tutor programs currently available, the data from research projects carried out from 1993 to 1999, as well as that carried out recently to finalise the modelling process, suggest that cognitive theories alone will not assist learners with the social aspects of composing, which both the case studies and the literature suggest are key factors in successful academic writing. The types of writing tutor (or tutor-type) applications currently available include (1) conferencing-type tutors, (2) tutors based on text-analysis, (3) tutors based on heuristics or invention strategies, (4) text or revision tools, (5) organisers and (6) process-based tutors. Special "training" type word processors (usually designed for younger writers) have not been included, but *Write Away!* (http://www.blackcatsoftware.com/catalog/products/writeaway.htm) is an example of one such, and, besides typical organiser features such as writing planners, ideas notebooks and user-compiled word banks, can be configured by the teacher to suit local requirements.

1.4.1 Conferencing-Type Tutors

These are applications which are programmed to ask students a series of preset questions to "conference" with them throughout composing. Costanzo's (1987) *Story Tutor* is one such example, and is geared towards leading learners through writing a typical short story. Questions include those about topic, characters, setting and plot, and students are prompted with further questions asking them to explain their choices. The drawback to the increased interactivity thereby achieved is that such applications are limited to one genre only, unless the program designer were to work out an algorithm with alternative questions for various genres: designing and creating such a program would be an immense task, however.

1.4.2 Tutors Based on Text-Analysis

Programs such as *Easy Writer* (as well as the majority of the older programs listed by McDaniel 1987) are based on the principle that analysing texts helps students to develop writing expertise. *Writing Safari* is also based on text-analysis, but attempts to do so from a broader social perspective than that involving surface errors. While it is not disputed that text analysis can be helpful in identifying features of the genres learner writers are required to use, this does not provide a satisfactory theoretical basis for developing composing expertise, for which genre-based practitioners themselves recommend a focus on writing process (see Coe 1986:310).

1.4.3 Tutors Based on Heuristics or Invention Strategies

According to Hughes (1989) *HBJ Writer* and *Writer's Helper* (also mentioned by McDaniel 1987) fit into this category, and are sometimes combined with text or revision tools as in the case of *Writer's Helper*.

1.4.4 Text or Revision Tools

Most older type programs fall into this category: possibly remnants of the old form-based approach which predates the process approach, although genre-based approaches and social constructionism have revived the focus on forms, but from a more socially-conscious position which focuses on text as discourse rather than syntactical forms. Programs which suggest how learners themselves can polish and revise texts with the use of guidelines and checklists can be very useful in the later stages of composing, and many of these feature in McDaniel's (1987) bibliography list. A later version is *WhiteSmoke*, which offers the user Expanded vocabulary, Templates, Punctuation corrections, Improved clarity, Grammar check, Thesaurus, Spell check, and English-Dictionary (http://www.whitesmoke.com/english-writing-software.html). The programs *Comment*, *Create*, *HBJ Writer*, *Homer*, and *The Paragraphing Program* include revision tools, often combined with other features.

Grammar and spelling checkers, while standard features of most modern word processors, are also examples of revision programs. While spelling checkers are very useful if used sensibly, in my experience grammar checkers (e.g. the various versions of *Grammatik* and the latest Microsoft Word grammar checkers) are on the whole insensitive to variations in style if not downright misleading. I would not recommend these for learner use, not because they might make learners lazy, but because they are very likely to confuse them. A style checker which could easily be customised to suit local requirements, including preferences for academic conventions (e.g. handling citations), would be very useful, and would allow students at higher levels to spend more time focusing on meaning and logical argument development rather than focusing on surface details: style sheets are helpful in this respect, but tend to focus on appearance rather than academic conventions.

1.4.5 Organisers

These are based more on the principles of tidiness and organisation than composing processes per se (although stages such as "Prewriting" and "Polishing" sometimes form part of the organising process). While many such organisers are included in McDaniel's (1987) account (e.g. *Organize*), a more recent example is *Writing Tutor* (http://support.selectsoft.com/manuals/writing_tutor.htm) which offers a package of applications to assist writers to organise the writing experience. According to the website:

> By incorporating the popular *Writer's Solution* program, *Writing Tutor* creates a complete writing environment that makes it easy for all ages to turn out clear and engaging stories, papers, speeches, articles and much more. With *Writing Tutor*, you'll be able to use Media Inspirations to encourage your imagination, Graphic Organizers to arrange your thoughts, Revision Checkers to identify common mistakes, and many other helpful aids. From brainstorming to revising, you can count on *Writing Tutor* to guide you through the entire writing process (http://support.selectsoft.com/manuals/writing_tutor.htm).

Writing Tutor includes heuristics in much the same way as *Writing Safari*: most currently available writing tutor programs constitute a combination of the various types identified here. An interesting organiser-type package called *The Literary Machine*, according to the website, was "designed to be a creativity tool with the necessary information-management tools" and offers a "freeform database" which, the website claims, organises information in more creative and easily accessible ways than conventional databases (http://www.sommestad.com/LM_1_1.htm).

1.4.6 Process-Based Tutors

Most process-based tutor programs are based on cognitive models of composing which superficially resemble the model used in this account (the "user's model" of composing). However, none that I have found so far incorporate a consideration of the social aspects of composing, which, as a result, need to be handled in the context of an actual composition programme. This limits the versatility of such programs,

and, furthermore, confuses the extent to which the tutor program alone can be shown to be effective in bringing about improved grades, as opposed to its being used in combination with a composition teaching programme. *Writing Tutor* could also be classified as a process-based tutor, as it includes a ten-step process in which 7–10 can be closely equated with the user's model, and 1–6 could be collapsed into Prewriting:

1. Inspirations for writing
2. Choosing a topic
3. Narrowing a topic
4. Considering audience and purpose
5. Gathering details
6. Organizing details
7. Drafting
8. Revising and editing
9. Proofreading
10. Assessment

Writing Tutor is interactive in prompting students through the above steps, and includes heuristic and revision devices, such as "venn diagrams, cluster diagrams, chain of events, word and topic bins, story map, self interview, notecards, peer-evaluation, language checkers". It also includes "on-screen handbooks such as the grammar handbook, the problem solver handbook, and the writing handbook which explains literary terms and style issues" (http://support.selectsoft.com/manuals/writing_tutor.htm). However steps 1–3 suggest that the steps are geared towards a type of high school English composition writing process, although "engaging stories, papers, speeches, articles, and much more" are mentioned on the website (http://support.selectsoft.com/manuals/writing_tutor.htm). *Writing Process Workshop* (http://www.gamco.com/wri-37.htm) is another process-based program which guides students through the steps of "writing readiness, brainstorming, prewriting, drafting, revising, editing and proofreading". Some of the stages found in the process-based tutor programs also feature in the user's model: it must be remembered that the stages of the user's model are more or less common knowledge by now. They were, after all, identified in the process approach literature of the 1980s (also summed up in White & Arndt's 1991 diagram of process writing, in Furneaux 1998). Their connection with the communicative functions, particularly the social function, has not been previously established, however, which means that they do not go beyond the cognitive models of writing which were criticised by genre-based practitioners, social constructionists and critical theorists for being socially naïve and potentially oppressive in misleading learners about the social realities of power.

A process-based writing tutor program which comes closest to the prototype developed in this study, based on a cognitive model and classroom research into using computers to guide students through writing processes, is *Maestro Process Writing Tutor* (copyright 2000 TutorTek.com). This was developed as a web-based application but is currently available commercially as a stand-alone program which

can be installed on individual PCs or in networked laboratories, and will be discussed at some length as it provides a useful comparison and contrast with the WTP developed in this study. As I understand it, *Maestro* is the writing tutor program which Rowley and Meyer (2003) refer to as the "Computer Tutor for Writers" or "CTW" in the article where they document the development of the program. *Maestro* is something in the nature of a "Goliath" to the "David" of the WTP prototype developed here. The CTW is accompanied by a manual of over 50 pages (http://www.tutortek.com/support/mMaestro/Maestro.htm) and is clearly intended to provide a comprehensive composition teaching programme. The cognitive model of composing underpinning *Maestro* gives the stages of composing as prewrite, draft and edit, and the three stages are presented to the user in that order. The program includes a "Tailored Instructional Mode" which offers students "upfront instruction in writing terms and methods".

Maestro in fact in itself comprises a detailed composition teaching programme, with some aspects, granted, which can be accessed at will when composing, but which tends to be prescriptive in focusing writers on specific activities which should be completed at various stages, and, inevitably, is geared towards school composition writing, as it is possible to be more prescriptive with this kind of writing. It contains some creative idea-generating routines, one such being "Clustering" which appears to be a hybrid between logical theme development and mind-mapping from a central point (both methods are stock heuristics, and are suggested in the prototype WTP). The instructions in the manual tend to be detailed and somewhat ponderous. Students who are independent learners or do not respond well to a controlled approach might find this a bit heavy handed, although *Maestro* is amongst other things a superb idea-organiser, with excellent screen display and save features. Yet idea organisers tend to focus on what computers can do, rather than what learners need. Learner writers do need to organise their ideas, but they often need to do this quickly before the ideas evaporate, or their writing becomes not only stilted but stalled. A 2B pencil with a scrap of rough paper often achieves the same processes more swiftly, economically and creatively than a computer. The WTP prototype produced in this study (see Chapter 8) advises learner writers to revel in their messy rough drafts, as these are the raw materials pumping out of the wellspring of their creativity: it also advises learners to file these neatly afterwards.

The CTW also duplicates – unnecessarily, in my opinion – many file and text processes which can already be found on word processors, and must require some intensive training for students to master, as the routines given are not necessarily self-explanatory. According to the manual, the CTW is based on the same objective as the WTP prototype, that is to demystify writing processes and offer students strategies which may not make them "Pulitzer Prize winning" authors but will lead them though the same methods which expert writers use. The manual also states that the CTW will enable students to take control of their writing, and is very thorough in guiding teachers through the kinds of composition teaching programmes they might prepare for use with the CTW. My general impression, however, is that the WTP prototype is better informed theoretically, and much less prescriptive and directive than the CTW. But then, much depends on the type of educational system involved:

for schools which teach the "five paragraph theme" style of writing, a program such as Maestro might prove to be ideal. As Elbow (1991) reminds us, however, English Departments are notoriously diverse in their staff make-up, and most English staff have their own – highly idiosyncratic – preferred ways of teaching written composition. For this reason, a tutor which is based around the commonalities of composing, is highly flexible in its use, and can be customised at each stage of composing not only to suit the preferred teaching method but also to accommodate each student's needs is more likely to gain general acceptance than a prescriptive model. The WTP prototype gives a (simplified) theory and structure of composing (as developed in this study) and lets the users make the decision as to if and how they are going to use these.

The development of *Maestro Process Writing Tuto*r is underpinned by a 4-year study (Rowley, Carlson, & Miller 1998) informing design improvements to a writing tutor named Reading and Writing in a Supportive Environment (R-WISE) based on a cognitive model of composing which was tested out in the classroom situation. According to Rowley and Meyer, "These four studies demonstrated that the elements of the writing process could be taught though simulation of an expert approach to prewriting, composing and revision strategies" (2003:2). The fifth year "provided evidence that the elements of the writing process facilitated in the technologies of the first four studies could be combined into a comprehensive training environment, providing an improvement over traditional instruction"; it also demonstrated that the computerised writing tutor "could effectively teach students in the context of regular writing assignments" (2003:2–3). Like the WTP prototype, the writing tutor developed by Rowley *et al*. focuses on procedural facilitation, but was based on the Flower and Hayes (1981) cognitive model of writing to provide a "concrete definition of the expert writing process" (Rowley & Meyer 2003:3). The emphasis, then, was on computer design systems and practical teaching rather than on theory development.

The problem with cognitive models of composing, along with other process-based models, is that they appear to be more successful when applied to developing composing expertise in the kinds of creative or transactional composing (e.g. of compositions, letters and theme reports) carried out at school than with writing in the disciplines, particularly at higher levels. This is why it is important to consider the prospective students and intended purpose of computerised writing tutor development. According to Rowley and Meyer (2003), it was concerns about high school achievement which prompted the research such as the one in which the CTW was developed. The CTW is, understandably, very much geared to the kind of high school writing which is found in American school culture (see, for example, the scoring rubric given on 2003:184–185, which is specific to a type of school writing). The prototype version WTP developed here, while it also provides checklists, and was designed primarily for school-type writing, is not limited to this, as it is based on a macro communicative system, and thus is not geared to any particular instructional design rubrics for computer mediated learning (CML), as the communicative functions themselves underpin both the structure of the application and the structure of the composing process within the application. This is not to say that

the specifics of clear program presentation were not considered carefully as far as the budgetary constraints on programming would allow (see Pellone 1995:6–8 on "Designing Instructional Displays", Alessi & Trollip 1991:33–64 on "Presentation of Information", and Boling & Soo 1999 on software design generally).

The writing tutor program described Rowley and Meyer was designed around a cognitive model of composing organised in a programmed learning sequence:

> The *cognitive tutoring engine* was the heart of the CTW [*Computer Tutor for Writers*] using a "student progress" decision-making algorithm to adapt the representation to the student's needs at any given time, assuring that the student completed activities before proceeding to the next activity (2003:176).

In similar fashion, the five stages of a practical model of composing are the heart of the prototype WTP developed in this study, but the actual decisions are left up the learner, and the algorithm used is not the "traditional intelligent tutoring system of what to teach next, how to teach, and what has been learned" (2003:177), but the algorithm provided by the "user's model of composing" (Pratt 2005a), which, it will be shown in subsequent chapters, owes its effectiveness in teaching, learning and self- or tutor-diagnosis of composing problems because it is underpinned by a system of functions necessary for effective communication to take place. It is in fact based on a social algorithm (Blunt Bugental 2000), and not a cognitive heuristic. The technical design features of the CTW (Rowley & Meyer 2003:176) suggest that the program resembles the kinds of learning programme contained in educational shell programs (e.g. WebCT). This kind of application was considered for the prototype WTP, but was rejected on the basis that the WTP is not in fact a composition teaching programme (although it contains instructional elements) but a computerised learning simulation-cum-user's guide – a writer's helper, much in the same way that a human tutor is. To conclude this review, Rowley and Meyer's CTW and the WTP prototype, while both process-based tutors and superficially similar, are very different because they are designed for different purposes: one cannot assess the one on the basis of the other, or in fact compare them critically point-by-point. *Maestro,* as the CTW's product brand name implies, orchestrates the whole composition teaching programme. *NEWT* (the name by which the WTP is presented to the user) clings to the screen and darts about when necessary, much in the nature of its namesake.

1.5 Features of a Versatile Writing Tutor Program

While the above programs can be seen to cover diverse aspects of writing, none of the process-based programs distinguish successfully between the basic procedural and the context-specific social aspects of composing, that is the commonalities and the variables, or allow the writers the infinite flexibility observed in composing procedures which has prompted researchers to suggest that writing behaviour is too idiosyncratic to be categorised (see Lynn 1987, Raimes 1985 and Spack 1984). To be effective, a writing tutor program, that is a program which will to some extent

take the place of a human tutor, needs to be based on a model of composing which distinguishes between the commonalities and variables, and allows the learner writer infinite flexibility in composing.

1.6 Conclusion

To sum up, the principles provided by Hughes, the review of the process-based writing tutors currently available and my own teaching and coaching experience suggest that a writing tutor program which is going to be of general use in a variety of different academic contexts needs to have the following features or qualities. It should be:

- based on a practical model of composing which reflects what writers actually do as they write;
- based around the commonalities of composing so that it is useful for a diversity of academic genres (i.e. it needs to be underpinned by a theory which goes some way towards explaining the "deep structure" of composing);
- customisable to suit different academic contexts and purposes, acknowledging the fact that composing, like other literacy practices, is context-specific and socially-shaped;
- flexible in terms of meeting diverse learner needs as required rather than prescribing a set course of instruction;
- customisable to suit different learner needs, acknowledging the idiosyncratic nature of both learning and composing;
- flexible in terms of being able to be used in different instructional delivery modes, whether learner-centred or teacher-centred;
- easily made available to learner writers as a tool which they (and not just the teacher) can use;
- easy to use to the extent of being self-explanatory.

It can be seen from the above that two kinds of models appear to be required for the design of an effective writing tutor program: a flexible practical model which guides learners through composing processes, and a theoretical model which underpins the commonalities in writing and goes some way towards explaining the "deep structure" of composing. Composition theories have tended away from generalized models of composing (as in the process approach) and have moved towards discourse-based theories showing writing as the "discourse of the academic discourse community". While more is involved in academic writing than discourse, that is different repertoires of socially-differentiated (academic, in this case) language, the various academic genres may well require different kinds of surface composing approaches, and generalized models (e.g. cognitive models) have not up till now proved successful in assisting students to fulfil the requirements of academic writing in specialised academic disciplines. A practical model of composing which is

not underpinned by a model showing the deep structure of writing will be unlikely to accommodate composing in very different genres or be able to explain surface variations satisfactorily.

In subsequent chapters it will be explained how two types of model were developed, a practical model showing generalized surface (i.e. observable) composing procedures, and a theoretical model hypothesising (by a process of classical induction) deep-structure communicative functions which need to be carried out for communication in written mode to be effected, but which are effectively masked by the properties of communication in written mode. Two versions of the practical model were produced: an earlier "pedagogical" version which had already proved effective in teaching and coaching, and a later "analytical" version which comprised a more precise research tool for analysing composing. The significance of the model of communicative functions was that it showed how the social aspect of communication, though more evident at certain stages of composing, permeates the whole process, and suggested a way of customising a process-type writing tutor program so that it could fit various social contexts (academic or otherwise) and purposes.

Chapter 2
Critical Realism

2.1 Introduction

Critical realism is an appropriate orientation for presenting this project for the following reasons. Firstly, it is congruent with both my current personal view of reality and long-term attempts to probe beyond the surface into the deeper levels operating in written composition: critical realism looks into the deep causes of things. Next, the inquiry has followed the investigative processes typical of critical realism, involving a process of stratification, where insights occur in a series of staggered layers, each providing a grounding for the level above; transcendental argument, which has attempted to go beyond the limitations of experience and suggest the reality underpinning it; and dialogical critique, where the repeated interplay between experience, theory and what can be extrapolated from the former about events mirrors the realist ontology itself. The conclusions are congruent with Bhaskar's belief that the "real essences" (1979:16) of things can be grasped: in the case of this inquiry, the "essence" of composing was ultimately traced to certain underlying patterns of communication which, while they are realised in specific discourse practices, are not considered to be defined or set in place by discourse. However, the theory developed in this study (i.e. in the form of a systemic model of communicative functions) is not viewed as an end in itself, but for practical application in various forms of composition instruction (in the doctoral thesis, a writing tutor program). This practical application is congruent with critical realism, where social science research "always consists in a *practical intervention* in social life" (Bhaskar 1986:169).

2.2 Overview of Critical Realism

Baëhr (1990) comments that researchers in the social sciences who do not have a background in philosophy experience difficulty in coming to grips with the literature on critical realism (particularly Bhaskar's earlier works) yet – paradoxically – critical realism has been described as an orientation which could be grasped by an intelligent 15-year-old. This is because, while the theme of critical realism is relatively straightforward, the fabric of its construction in philosophical terms is subtle and complex. This overview is an attempt to summarise critical realism so that the

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thrust and scope of the perspective is clear, not only to academics unfamiliar with the orientation, but also to readers who are not necessarily academics, and who would like to understand the orientation. Inevitably I will be in danger of overstating or over-simplifying the case at times, and may in fact misinterpret (or misrepresent) certain features of critical realism in the attempt, but I ask more informed readers, particularly those with a background in philosophy, to bear with me.

The emerging school of philosophy which came to be termed "critical realism", and which has been gradually gaining ground in the social sciences, was developed mainly by Roy Bhaskar, whose most significant contribution to philosophy has been in the area of ontology. Bhaskar emphasises the primacy of ontology as a fundamental issue in all theories about being, whether it remains tacit or is made explicit:

> You can't get away without ontology. It's not a question of being a realist, or not a realist. It is a question of what kind of realist you are going to be – explicit or tacit. Insofar as you are not a realist, you secrete an ontology and a realism ? You can't get far in the world unless you are implicitly realist in practice (Bhaskar in Norris 1999:9).

This is in marked contrast to currently dominant research orientations in Education, which tend to adopt perspectives which show reality as being interpersonally negotiated (hermeneutics) or socially constructed (constructivism).

According to the account given in "Roy Bhaskar Interviewed" (Norris 1999), the critical realist orientation developed out of an intended Ph.D. in Economics which involved an investigation into the problem of world poverty. Bhaskar found little of relevance in economic theories which might solve the problems facing underdeveloped countries, and perceived the philosophy of social science to be divided between positivism and hermeneutics, while the whole field appeared to be dominated by an empiricist orientation. While current theoretical debates (in which Kuhn, Feyerbrand and Lakatos are mentioned in particular as participants – see Bhaskar 1979) challenged the empiricist philosophy of science, such debates hinged around epistemology. According to Bhaskar, there was little foundation for the new ideas posited by the above theorists as the issue of ontology had not been addressed, leaving the dominant empiricist ontology unchallenged. Searching for an alternative ontology, Bhaskar questioned the need for the theories of Hume, Hemp and Popper, which dominated both pro- and anti-empiricist positions, by "re-thematising ontology and giving it a certain new content or shape" in *A realist theory of science* (Norris 1999:1). All of his subsequent work developed out of this project, and his focus changed from economics to philosophy, which he describes as "the true love of my life" (1999:1).

Critical realism is not an Enlightenment-type rationality, or a return to a one-dimensional positivism based on an accumulation of observable data, but a highly flexible meta-view which can accommodate inquiry in both the natural and social sciences. Critical realism ventures beyond the comfort zone of the socially manufactured "reality is what we make it" maxim of poststructuralist views into the cold zone of hard reality beyond human control. This hard reality includes not only the physical natural world of earthquakes, floods, famines and other natural disasters,

and the physical human world of disease, disability and aging, but the harsh social realities of poverty, oppression and war. From a critical realist viewpoint, broad social conditions are as much "givens" of the human condition as the landscape, and, once set in place, are not amenable to attempts at human control. While the term "under-labourer" (Locke 1690:3) for the natural and human sciences frequently recurs in accounts of critical realism, it should possibly more properly be treated as an overview or meta-perspective, or perhaps even something of an interface stretching beyond socially constructed views of reality towards reality itself, which is not necessarily a realm of solid objects (Norris 1999:6) but a state of being we all tacitly acknowledge to exist by virtue of our everyday functioning.

While Bhaskar has been accused of being vague about working out certain features of critical realism to their logical conclusion (Baëhr 1990:771), it must be understood that critical realism is a perspective which is constantly changing and developing, an enterprise of vast scope and depth (even the name of the orientation has changed: from "transcendental realism", to "critical naturalism" and, finally, to "critical realism"). Bhaskar himself, in his interview with Norris (1999), sees critical realism as work in progress, an ongoing project, and acknowledges that his own position may change with time. While Bhaskar has been the main proponent in mapping out its territory, other contributors have been involved, notably Rom Harré (1979, 1986) and Margaret Archer (1998, 2002), leading to variations in the interpretation of critical realism.

In order to clarify the nature of critical realism as an investigative orientation, I shall attempt to summarise its basic tenets. Guba suggests that the orientations which inform inquiry can be characterised by asking questions about their ontological, epistemological and methodological assumptions, as follows (1990:18):

1. *Ontological*: What is the nature of the knowable? Or, what is the nature of reality?
2. *Epistemological*: What is the nature of the relationship between the knower (the inquirer) and the known (or knowable)?
3. *Methodological*: How should the inquirer go about finding out knowledge?

Finding answers to the above questions will not only help to clarify the critical realist position as a research orientation, but also to illustrate how it compares and contrasts with other inquiry paradigms. It must be noted, however, that the actual interpretations of critical realism provided by Guba (1990) and by Denzin and Lincoln (2005) have been contested by critical realists on the basis that they are inaccurate and dismissive (see in particular MacLennan 2005 and Fleetwood 2005b).

2.3 Critical Realism as Investigative Orientation

As mentioned above, Bhaskar's most significant contribution to philosophy, as well as providing an orientation for inquiry spanning the natural and human sciences,

has been his focus on ontology. It is not his brief to define exhaustively the nature of reality, a task he relegates to individual researchers in the natural and human sciences, but to characterise the elements which might constitute a satisfactory theory of being, that is a theory which might reflect the general nature and scope of reality without categorising its precise nature in specific instances. In carrying out this brief, Bhaskar has not only restored the balance between ontology and epistemology, hitherto tipped on the philosophical scales towards the latter, but has also provided the kind of broad meta-perspective which is particularly useful for examining educational perspectives or approaches, as in Donald Judd's (2003) analysis of three composition theories. Bhaskar's philosophy is in fact remarkable in that it can accommodate seemingly incompatible disciplines such as divinity, healthcare, economics and science. The fact that it is frequently referred to as an "*under*-labourer" to the sciences in the literature (a term derived from Locke's *Epistle to the Reader*, 1690:3), suggests that it operates at a more fundamental and profound level than previously existing theories of natural and social science.

Bhaskar's ontology is realist, but a realism of complex layers rather than the accumulative sense-data realism of positivism. Layering, which is termed stratification, is a recurring motif in critical realism (Irwin 1997) and applies in (at least) three key areas: (1) the structure of its ontological framework, (2) the layers of complex causality which lead to the emergence of natural and social phenomena, and (3) emergent human knowledge, which can be seen to unfold over time in progressive layers of depth perception, and is always in a state of development. Irwin (1997) explains Bhaskar's preoccupation with stratification as follows: "Stratification is associated with a vertical analogy Bhaskar deploys throughout his works and is related to causal structure". As Bhaskar believes that it is the nature of reality which affects not only the way in which phenomena unfold, but also the way we think about reality, it is not accidental that the principles of stratification should permeate his ontological framework, as well as both emergent physical (and social) events and human knowledge. Reality is not viewed as a fixed and closed system, but as open-ended, always in a state of becoming, and, while subject to the interaction of powerful and complex mechanisms (underlying causes of events), is capable of generating novel phenomena and even of developing further mechanisms over time.

Bhaskar's ontology comprises three domains: the real, the actual and the empirical (see Table 2.1). The domain of real consists of mechanisms, events and experiences. Mechanisms refer to a complex layering of natural and social forces which are not subject to human control, and which shape events (i.e. they provide causality); the real domain also includes events and experiences, although humans experience events and not the mechanisms shaping them, nor are we necessarily ever

Table 2.1 Bhaskar's three domains (Table 1.1 from Bhaskar 1978:56)

	Domain of real	Domain of actual	Domain of empirical
Mechanisms	√		
Events	√	√	
Experiences	√	√	√

aware (or if so, fully aware) of these. Events and experience are incontrovertibly real, although explanations as to causality (a function of the empirical domain) may differ widely. While events are seen as being shaped by mechanisms which have the operating force of fundamental laws, reality is viewed as complex and changing, unlike the uni-dimensional positivist perspective which views knowledge merely as accumulated sense-data (not necessarily a feature of all positivist approaches). The real domain is viewed as being complete in itself, and not the result of human thought – although it includes complex social forces, it is not a socially-mediated state (the term intransitive is used of the material realm posited in the real domain, as it has an existence independent of human thought). However, it is important not to confuse "real" with "consisting solely of material objects".

As Fleetwood (2005a) has pointed out, the domain of real can contain other categories of real, such as: "ideally real" (i.e. conceptual entities with causal force), "artefactually real" (i.e. syntheses) and "socially real" (i.e. social structures). The domain of actual consists of events and human experience, although humans tend to have inchoate and fleeting perceptions of events. The domain of empirical comprises human experience only, and constitutes knowledge or theories about various natural and social phenomena (this domain is considered to be transitive, as knowledge is a human construct, even if the objects of knowledge are not necessarily so). Bhaskar's empirical domain does not specify *how* knowledge is constructed in various cases, however (this would be the task of individual researchers in the social sciences), merely that it is a human construct shaped by social forces and immediate local needs, and always tentative. The theory of critical realism is itself such a construct, with, of course, its own version of how knowledge *should* be constructed, i.e. from a depth investigation of natural and social phenomena which attempts to identify the mechanisms operating in a given case.

Unlike most current orientations in the social sciences, where not only knowledge but reality itself is viewed as socially constructed, critical realism uses transcendental argument, that is it argues for an external reality, the existence of which can only be postulated or conjectured, however. Bhaskar argues that human inquiry is shaped by reality, and not vice versa. Human investigation, whether of natural or social phenomena, tends to uncover complex layers of explanation, not necessarily homogenous or even intrinsically related at different levels of operation. The layers of causality are, as mentioned above, an example of stratification, and the layering apparent in successive waves of human inquiry is also referred to as a process of stratification, reflecting the complex layering of the real world. Human emancipation, in critical realist terms, can be achieved by uncovering the truth about reality, and, providing one has the will to change, by taking action which will improve the quality of life (see Bhaskar 1989:178). In this respect critical realism has an affinity with critical theory, which views critique in order to arrive at the "true" state of affairs as a prerequisite for emancipation (critical theory also posits an external reality, see Guba 1990:24, and Bhaskar has emphasised the affinity of critical realism with Marxism). Truth in critical realist terms is a human construct, affected, admittedly, by socio-cultural forces and immediate local needs, but based on a thorough examination into the deep causes or successive layers of

mechanisms underlying oppressive circumstances. Bhaskar's ontology has ecological implications, both from the point of view of humans living in precarious balance with nature (see Baëhr 1990:769) in a setting governed by a complex combination of vast, complex but slowly changing forces, and the impact of human depredations of natural resources on this balance.

To answer the three questions posed by Guba (1990:18) above, the ontology, epistemology and methodology of critical realism could be categorised as follows:

Ontology: *critical realist* – comprising three different domains (real, actual and empirical), the "real" being independent of human thought, which, mirroring the structure of the "real", can approximate but never fully apprehend it, the "actual" being the realm of human experience, and the "empirical" being the realm of thought, that is the speculations of humans on the nature of the real.

Epistemology: *transcendental, dualist* – where the inquirer is both part of the reality and partakes of its qualities but attempts at the same time to transcend the limitations of human knowledge and approximate the truth.

Methodology: *dialogic critique* – a depth-investigation into causality, that is the complex layers of mechanisms triggering events.

2.4 Criticisms of Critical Realism

In his overview of critical realism Baëhr also sums up some of the criticisms. Firstly, it could be said that critical realism takes up an "absolutist position" (1990:769) outside of human knowledge, which is surely socially constructed. According to Baëhr, Bhaskar's response to this criticism is that the very workings of science presuppose a distinction between human agency and the mechanisms which trigger events, and that it would be equally presumptuous to suppose that the nature of reality is dependent on our theories about it. Critical realism is in fact a conscious attempt to "de-anthropomorphise" reality, and has "ecological resonance", revealing the precarious nature of our place in the world (1990:769). Next, the concept of an intransitive social realm is questionable, that is the existence of social mechanisms on a par with natural forces. Bhaskar's position is that social structures are as "real" as natural structures, with the following ontological limitations, however (1979:48–49):

(1) Social structures, unlike natural structures, do not exist independently of the activities they govern;
(2) Social structures, unlike natural structures, do not exist independently of the agents' conceptions of what they are doing in their activity;
(3) Social structures, unlike natural structures, may be only relatively enduring (so that the tendencies they govern may not be universal in the sense of space–time invariant).

Social phenomena are therefore *concept-dependent* and *activity-dependent* (1979:63). Bhaskar suggests that society and human actions (both conscious and unconscious) have a dual nature:

> Society is both the ever present condition (material cause) and the continually produced *outcome* of human agency. And praxis is both work, that is conscious *production*, and (normally unconscious) *reproduction* of the conditions of production, that is society (Bhaskar 1979:43–44).

Baëhr finds Bhaskar's partisanship of Marxism a more serious problem, and claims that it leads him at times to fall into the trap of "a priori" arguments favouring Marxism. Not all of Bhaskar's commentators find Marxism a problem, however, and Nellhaus goes so far as to suggest that Marxism should actually be subsumed within critical realism (1996:8). Baëhr also criticises Bhaskar's "holistic" view of society (i.e. that it is a "complex and casually efficacious whole – a totality, which is being continually transformed in practice", Bhaskar 1979:69) which he regards as "dated", and suggests that terms such as structure, mechanism and law are ambiguous when applied to society (1990:773). More seriously, Baëhr points out that the process of looking into the deep causes of things (i.e. scientific enquiry) is not emancipatory per se: "strictly speaking, science cannot emancipate at all" (1990:773). This is of course correct: without the will to change, and the actual initiation of action to bring about change to improve the quality of life, emancipation will not automatically occur once the truth is known (these provisos are in fact acknowledged by Bhaskar). As Baëhr points out, oppression is so pervasive that it can become ingrained in our very musculature, sapping our will to change. Moreover, complex social tensions mean that positive change is by no mean a clear-cut process, as "the good life" may mean very different things to different people. Other problems which Baëhr identifies are the "ethical irrationality of the world" – the fact that there are impulses other than rational ("demonic" impulses) which prompt behaviour, and that critical realism is silent on the topic of our "biological vulnerability", that is our unavoidable suffering at the hands of illness and old age, violent natural forces, and, most poignant of all, other human beings (1990:774–775).

In spite of the above criticisms, Baëhr characterises critical realism as "an immensely intelligent and challenging development in the philosophy of social science" and as having "sufficient flexibility" to accommodate the objections aimed at it (1990:770). Judd sums up Bhaskar's contribution to philosophy by pointing out that, in developing the critical realist approach, Bhaskar has made two important shifts away from traditional philosophy: a shift within ontology from events and affairs to the mechanisms which cause them, and a shift from epistemology to ontology, redefining the role of philosophy in the process:

> In making these shifts, Bhaskar has displaced philosophy as the highest form of human knowledge which all other disciplines must emulate; rather Bhaskar sees philosophy as the hand maiden of science. Philosophy's job is not to provide us with irrefutable foundations for knowledge but to tell us in a general way what the world must be like in order to make sense of science as a practical and rational activity, but it cannot tell us the specifics of the world; that is the job of science (Judd 2003:43–44).

It is not my intention to champion critical realism against all criticism, or to gloss over problematic areas, or to engage in an exhaustive analysis of its strengths and weaknesses – my brief was rather to outline its main tenets so that its relevance to this research project is clear, and to identify any problem areas with specific respect to this project. The main problem areas are (1) the broadness of the critical realist approach itself, which requires a more specific methodology to delineate and delimit an inquiry more rigorously, (2) Bhaskar's focus on causal mechanisms, when, as Baëhr has noted, social processes are infinitely more complex than natural processes, and (3) the fact that the discovery of a principle which explains writing is not per se emancipatory: a practical course of action is required to assist learner writers both to uncover potentially disempowering aspects to academic writing and to gain mastery of the complex series of processes whereby academic writing is successfully practised. The first two problems will be addressed with reference to Franck's (2002) account of the modelling process when the research methodology is described, and the third, with reference to the teaching intervention, the writing tutor program, underpinned by the systemic relationships perceived in composing (which Franck terms a "theoretical model"), and which will be dealt with in the latter section of this account.

2.5 Fallacies in Critical Realism

It must not be assumed that critical realists share a view of social phenomena in common with, for example, sociolinguists or social constructivists, so that, while there may be agreement on surface manifestations of a social system such as literacy, neither the ontological assumptions underpinning these views nor the premises on which conclusions are based will necessarily be the same. Therefore, before touching on the social phenomenon of literacy, some key fallacies which apply in critical realism (and some of their consequences for this investigation) will be identified, so that this study is understood in terms of the philosophy within which it is presented, and is not critiqued from an ontological (or epistemological) position which reflects these fallacies as being valid.

2.5.1 The Epistemic/Linguistic Fallacy

This is the notion that reality is a social construct (i.e. as in social constructivism), because we can know about the world only in terms which have been represented to us (or in terms we can represent to others). Bhaskar states: "This mistake is the *epistemic fallacy*, the definition of being in terms of knowledge . . . or, in displacement of this, in terms of language or discourse, the *linguistic* fallacy. . ." (1994:48). In the *Discourse theory vs. critical realism* debate, Bhaskar argues thus:

> I would make certain claims that the world is structured, but it's governed by transfactual laws, that is by tendencies, that there are a multiplicity of mechanisms and structures at work, that the world is constituted by open systems, some of which are internally related to others, that discourse is a case of an efficacious mechanism which operates on the world

> and is embedded in the world, and the world impacts on discourse. . .(Laclau & Bhaskar 1998:12).

In a limited set of circumstances saying does indeed make things so, as in performative speech acts. Saying also makes propositional premises so (i.e. as premises, but not necessarily as validated premises), as Bhaskar comments below, but it does not create any reality except the discursive:

> I accept of course that all extra-discursive realities are constituted within discursive practices, from the point of view of their intelligibility. But that's not to say they're constituted in discursive practice from the point of view of their causal impact (1998:13).

According to Sayer, "Not all social behaviour is acquired and mediated linguistically, even in the form of talk internalized in our heads" (1992:15), and Bhaskar points out that "even our interactions with each other have many dimensions which are non-linguistic" (Norris 1999:8). And while human communication clearly contributes to social structures, it is clearly an exaggeration to claim that it creates them:

> To suggest that discourse, language or some other conceptual or cognitive activity creates (or whatever verb is implied) socially real entities such as organizational structures is to engage in what I call *ontological exaggeration* (Fleetwood 2005a:206).

The epistemic and linguistic fallacies identified by critical realists mean that, while it is agreed that the social element is a key issue in discursive practices, the ontological (usually implicit) and epistemological grounds for "discourse approaches" to written composition are very different from those of critical realism, and cannot be used as either the basis for this study or a refutation of its conclusions. A more detailed account can be found in Fleetwood's critique of the "Ontological Commitments of Postmodernism" (2005a:205–207), and Judd's critique of the theory/practice inconsistencies of social constructivist rhetoric in composition theory (2003:101–121). Following the example of Bhaskar and Judd, the term "discourse" will be defined in terms of its language referent. This is not to downplay the significance of discourse in human communication. In this sense it is a key mechanism in human communication, as indicated by Bhaskar's contention that "discourse is a case of an efficacious *mechanism* which operates on the world and is embedded in the world" (Laclau & Bhaskar 1998:12, my emphasis).

2.5.2 The Theory-Determinant Fallacy

This is a fallacy noted (and refuted) by Sayer, that "observation which is theory-*laden* must be theory-*determined*" (1992:73). As critical realism posits a reality independent of human thought (i.e. intransitive) and usually only partially experienced, hypothesising about the nature of the "real" is offered as a way to transcend the limitations of human experience. In realist social science inquiry, initial hypotheses are in fact necessary in order to make sense of the myriad surface manifestations of social phenomena (Bhaskar 1979:62) and it is therefore important to avoid applying the "theory-determinant" fallacy to realist research. This is not to say that theory

does not ever affect observation, but if it were *necessarily* the case, it would not be possible to test out a theory and refine it by observation. The latter are prerequisites for the kind of modelling carried out in critical realism, and a feature of both the retroductive methodology associated with critical realism and the classical induction on which Franck's (2002) modelling process is based.

2.6 Critical Realism and Literacy

It is not the purpose of this study to define what literacy is, or to work within a specific approach to literacy: there is in fact no critical realist position on literacy, as the philosophy allows a wide range of interpretations of social phenomena, both amongst and within different fields and disciplines. The issue is whether an approach to literacy within a critical realist perspective is consistent with realist principles, and avoids the fallacies identified above. It also needs to be borne in mind that, from a realist perspective, descriptions of social structures such as literacy do not necessary agree with sociolinguistic descriptions, or descriptions offered by social constructivists (or construct*ionists*), in spite of the fact that there may be agreement about the general nature of the social process (e.g. that literacy is a socially-based phenomenon and not a set of discrete skills). The term "literacy" is often used as if it were an agreed-on constant with a common meaning, or standard set of reading and writing skills. The UNESCO report makes the point that our notions of what it means to be literate (and illiterate) are shaped by "academic research, institutional agendas, national context, cultural values and personal experiences" (2006:147). Leu *et al*. (2004) point out that "social forces define the nature of literacy", and identify some of the socio-historical contexts in which literacy has developed, as follows:

- the burgeoning agricultural economy in Sumeria, where literacy is thought to have first emerged, and which fulfilled the need for accurate commercial record-keeping;
- the context of shared experiences amongst the oppressed, as in eleventh century Japan (The *Tale of the Genji*, transcribed in a secret "women's code"), and the *samizdat* press of the revolutionaries in Czarist Russia;
- the beaurocratisation of Christianity in Medieval Europe, with the subsequent outpouring of resistance literature in post-reformation Europe;
- the context of resistance to colonial oppression in the British colonies in the 1600s, with the subsequent restrictions on private printing presses;
- the development of democracy in the United States and elsewhere, requiring "debate within a free press";
- the sustaining of such democratic political systems, requiring public educational systems to produce literate citizens, well informed about public affairs.

Literacy can also be viewed in the social context of emerging technologies, which, while they may further, expand and change the development of literacy (Leu *et al*.

2004), are often developed to benefit vested corporate interests rather than to improve the quality of life. Literacy could also be viewed in the context of "resistance" technologies offering freeware alternatives to developing countries (e.g. the *Ubuntu* operating system). This means that students not only develop new literacy skills associated with the electronic medium, but also the macro-competences of adapting to different software patterns and routines, which demand (and develop) more advanced conceptualising.

To extend further the contexts provided by Leu *et al*. (2004) above, literacy can be viewed in the context of both contesting political oppression in South Africa (e.g. *Drum* magazine and other resistance literature), and in subsequent post-colonial oppression elsewhere in Africa, as in the muzzling of the press and harassment, torture and murder of journalists. Literacy can be viewed in the context of government corruption in South Africa, both in the flood of commercial literature representing luxury goods as markers of success, and the role played by both the press and government-based media in exposing or playing down corruption. It can be viewed in the context of the exploitation of newly-literate societies, as the following examples suggest:

- the monopoly on print (and electronic) media by majority political parties;
- the flood of hard sell commercial literature, touting products which will magically impart "first world" quality of life;
- corporate medical exploitation, particularly of African women (e.g. by means of glossy brochures colonising popular women's magazines, and stressing the need for a lifetime regimen of largely unnecessary pharmaceutical drugs and operations);
- the irreversible damage caused by resistance medical literature (e.g. the role of dissident Aids views in postponing the Government roll-out of anti-retrovirals in South Africa);
- the exploitation of newly-literate student populations (e.g. by registering students who do not have the minimum level of literacy required to complete their courses, without making provision for their needs).

The fact that literacy is shaped by its social context has implications for education: "Throughout history, literacy and literacy instruction have changed regularly as a result of a changing social contexts and the technologies they often prompt" (Leu *et al.* 2004:1574). And it is in the context of education in South Africa that this study is based, not a neutral context, obviously, and as Bhaskar comments, any "truths" discovered will be tentative, incomplete, and driven by local needs. At the time of formalising this study as a doctoral project, I worked at a multicultural technikon in KwaZulu-Natal (now a "University of Technology"), in a Service Department which offered vocationally-geared Communication courses to over 6,000 students, 70% of whom were ESL speakers who would have been classed as educationally disadvantaged in more developed countries. Rather than holding a deficit view, I had come to see my students as having specific language and communicative needs

which were for the most part not recognized, let alone catered for, by the institution. Many of our students came from newly-literate or illiterate communities, and enquiries by students showed their need to learn English, because they did not have even conversational fluency in the language. The institution did not offer English tuition, and our Centre for Higher Educational Development saw its role primarily as the facilitation of academic literacy. This is not to say that academic literacy can be separated from linguistic competence, or that language can be acquired in a social vacuum, but there is no point in exploring academic requirements with students who lack conversational fluency or the ability to read and write in English.

When limited ESL tuition was offered in the past by a "Second Language Unit" (circa 1990), students did not attend, firstly, because their time was completely taken up in trying to cope with subject lectures and reading materials, and secondly, because they felt that attending special lessons stigmatized them as deficient (this in the context of emerging political liberation). In 1993 my ESL Journalism students, who were on the whole more literate than other groups of students, told me that they understood about a third of what their mother tongue (MT) English lecturers were saying in lectures, and that they had difficulty accessing reading materials geared to their level of English language proficiency. At least then the situation was one of immersion, with 30% ESL speakers and 70% MT English speakers: later the situation was reversed, with most students speaking indigenous languages in social interactions, and even in group discussions during lectures (see Hodgson 2002:44–47). We used an integrated communicative approach in Communication courses, in which we tried to develop academic literacy, hard print literacy and computer literacy in a scaffolded constructivist approach, using "new technologies" in web-based learning where possible (Pratt 2009c). However, there were just too many students for us to make a real difference, as there were over 6,000 students to 15 full time academic staff members.

This state of affairs reflects the general tendency in Higher Educational institutions in South Africa to pay lip-service to the importance of literacy while increasing student numbers and cutting down on language staff (National Languages Working Committee for Technikons 2003). Moreover, as a member of a Service Department (i.e. at the time of this investigation), I saw it as my brief not only to develop professional literacy in vocationally-geared Communication courses, but also to collaborate with colleagues in the disciplines in facilitating academic composing for students. This often required a change in the kind of assignments set, in order to give academic composing a meaningful social context which would drive the process from start to finish, involve authentic learning, and necessitate meaningful revisions for a real audience and purpose rather than "patching in" text verbatim off the Internet (the context of "new technologies" for literacy can create new problems or exacerbate old ones). It also required a consideration of the lecturer/student demographics, the nature of learning in that subject, and the desired outcome (vocational as well as academic), rather than: "An assignment has to be set to produce a mark."

My experience of liaising with other departments, both in the past as Communication lecturer and writing consultant/researcher, and later, as Faculty Research Co-ordinator, has suggested that academics tend to identify student writing problems as connected with orthographic features and language proficiency (see MacKenna 2004). Many of our ESL students do in fact have conversational fluency in English, but their problems lie rather in the fact that academic requirements and conventions are not made explicit at the outset, and assignments are not contextualised in ways which will make them socially meaningful and drive revision until the text is socially polished. In fact, because course delivery at DUT is still emerging from the corporate technicist approach of pre-liberation South Africa, often *learning* is not contextualised in ways which make it meaningful and relevant to students and their prospective careers. As the majority of our students need to develop professional (rather than "academic") writing competences in both their disciplines and in their careers, I favour an approach which involves students in researching and reporting back formally on professional topics or areas of expertise (a "soft" or "scaffolded" constructivist approach being compatible with critical realism, see Fleetwood 2005b and Sayer 2000). In this type of approach students engage in integrated learning scenarios which develop both discipline-specific professional knowledge and the higher-order competences described by Spady as being essential for life skills (1994:63–65). Learners work from their own personal aspirations so that knowledge is internalised, and so that during composing they are engaged in knowledge construction rather than just "knowledge telling" (Bereiter & Scardamalia 1985).

2.7 Critical Realism and Composition

As it is the process of *production* which critical realists have represented as being crucial in transforming social structures, the focus of this study is composing. To transform academic writing so as to apprise educators of the social issues which permeate individual instances of production, and to empower learners by showing them which social issues (i.e. socio-cultural) are negotiable and which are less amenable to change (i.e. systemic), it is necessary to see how individual acts of composing reflect the larger social forces involved. This requires a model of composing which shows how social elements operate both within and outside of the system.

Critical realism offers an appropriate perspective from which to view the complex processes involved in composing. The critical realist philosophy represents reality as complex and dynamic, and inquires into the way things work – particularly the deep-structure causes of events and social processes. Critical realism is particularly concerned with the formulation of models which have "explanatory power" (Judd 2003:55), and therefore is a suitable orientation for a study involving the modelling

of a social process, that is communication in written mode, moreover, communication from the point of view of the participant. The participant focus is also favoured by critical realism, which views human action not as governed by behaviouristic laws, nor as a conditioned responses to pre-determined social structures, but as individual agency (Archer 2002) with a fair amount of freewill within any given social order. Human agency is both enabled and limited by the opportunities and constraints afforded by social structures, at the same time maintaining the fabric of these structures, which are fairly stable, but capable of gradual change, usually by one or more of the complex social mechanisms which maintain these structures rather than as the result of individual human agency (or specific interest groups) per se. This means that, while learner writers always find themselves operating in a "given" (but not fixed or static) context, where academic writing is an undisputed fact of academic life, they are able to make efforts to empower themselves by gaining insight into and expertise in academic composing, in spite of the constraints set by academic requirements and other factors (e.g. lack of experience and/or background knowledge). However, while the learner writer comes to an already existing context of academic practice, it must be remembered that social practices are reproduced (or changed) by the actions of its participants. As Judd points out:

> In other words, we not only produce social products, but we produce or reproduce the conditions of their production. Thus, the social relations that must exist to make particular social phenomena possible must be social relations of production. And in order to understand the essence of a particular social phenomenon, we must understand the *social relations of production* making that phenomenon possible (2003:56, my emphasis).

As applied to academic writing, it is not enough to analyse academic texts (i.e. social products), or the relationships between individual participants, or even the socio-cultural setting, but the social relations which govern the production of the phenomenon of writing (i.e. as social process, not product). As it is the process of *production* which critical realists have represented as being crucial in transforming social structures, the focus of this study was on composing. However, Judd adds a caveat by pointing out Bhaskar's warning that there is an intransitive aspect to social phenomena, and that our experiences of them, while providing a tentative concept of their operation, may cause us to overlook possibilities for transformation because our concept is based on superficial or "false" aspects of the phenomenon (1979:65–66). This means that an experiential model of writing, that is one which falls within the scope and experience of the learner writer, needs to be underpinned by a theory which explains the complex systemic relations involved in communication in written mode. It is the formulation of a theoretical model underpinning communication in written mode which is the focus of this study, its use in explaining and refining an experiential model of composing, and the subsequent application of the (now validated) experiential model in the production of a writing tutor program. Focusing on the area of social production (i.e. composing) may not necessarily transform the social structure, but has the potential to transform the quality of life of participants

in dealing with the social order in which they find themselves when they come to academic writing in formal institutions of learning.

Bhaskar's "Transformational model of social activity" (Fig. 2.1) represents social structures as a pre-existing condition of human agency, and shows them acting as enablement and constraint in both "framing" and yet setting limits on human behaviour. A social structure such as literacy enables and facilitates human endeavour by bridging temporal and spatial distances, as well as expanding the limitations of individual human experience. Its multitudinous applications have permeated every aspect of modern-day human activity. Leu *et al*. (2004) trace its development from keeping agricultural records, through both maintaining and resisting oppression, to its use in education, the latter because it enables learning more about human and natural affairs, events, and processes than can be directly experienced. Because it places thought processes (including learning processes) on record, it also facilitates reflection and consolidation on learning in ways which oral inner talk cannot do.

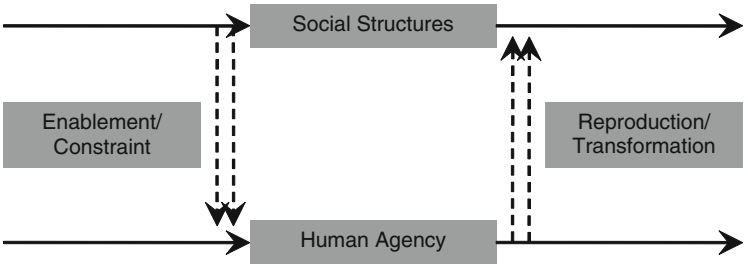

Fig. 2.1 Bhaskar's transformational model of social activity (Bhaskar 1994:92 in Judd 2003:49)

When people engage in literate practices they therefore both reproduce and transform the social phenomenon of literacy itself (social structures are *activity-dependent*). Social structures by their very definition do not admit of ad hoc or random functioning, or there would be no social constraints on human action, nor would self-actualisation through human agency be possible, as we would have no concept *of* the social genres available, or knowledge *how to* engage in them. This means that there are generalities which exist over and above local social conditions or mores, for example, the existence of social genres or forms: precisely what shape these forms take in specific instances is the work of the social anthropologist or ethnologist. There are systemic relations in both the structure and operation of language, illustrated by various grammars and schematics (e.g. Chomsky's generative grammar, 1965; Halliday's functional grammar, 1985) and also in communication (e.g. Grice's maxim's, 1975; Hymes' Model of Interaction, 1967; Searle's Speech Acts, 1969). It is the contention of this study that there are systemic relations in human communication which operate at a deeper level than the surface idiosyncrasies of the specific social context in which communication occurs. It will be suggested that the social aspect of communication operates at two levels: intra-systemically, as part of the system of functions involved in the social structure,

and as input into the system, that is features of the specific socio-cultural context which impact on the system. The intra-systemic operation of a social function in communication can be explained by the fact that communication is a key social process, without which social cohesion could not occur. The extra-systemic operation of the socio-cultural context has long been acknowledged by sociolinguists, social constructionists, and movements such as the New Literacy approach. However, it is the discovery of the intra-systemic relationships in communication, and the interplay between these and specific local circumstances which has made it possible to explain the constants and variants in composing which make individual instances highly idiosyncratic and open-ended.

The results of this study suggest that different inputs (e.g. immediacy/distance and the material mode of production) into the system of communicative functions give rise to the different communication modes, and that in composing the communicative functions become strung out into the typical series of recursive stages observed by teachers and researchers. By identifying the constants in written communication (i.e. the communicative functions performed) and the variables (i.e. the socio-cultural input provided in specific instances of composing), it is possible to account for the idiosyncratic form composing takes in specific instances in terms of the mechanism whereby the communicative functions (including the social function) are effected.

2.8 The Nature of the "User's Model" of Composing

In attempting to transform social practice, this study is directly related to Bhaskar's contention that social structures are both activity-dependent and concept-dependent (1979:63). This is borne out by the emphasis on composing and the proposed use of a model of composing to assist learners to understand both reproduction and transformation of the social practice of academic writing. The user's model of composing formulated in my masters research (1987), and identified in this study as an empirical (i.e. practical) model suited for pedagogical use, does not fall within the expressivist or cognitive composition schools of thought identified by Judd (2003:69–72, 88), and avoids the theory/practice inconsistencies of the social constructivist school (and later discourse approaches), while at the same time suggesting an immediate practical means of transforming not only social practice but the conditions of their production. The user's model is not a cognitive (positivist) or expressive (hermeneutic) model, nor has the huge amount of literature on discourse dominating the field been overlooked. This study is not a belated attempt at revival of the process approach: the user's model is in fact based on research and literature into *composing*, including that of educationists and curriculum theorists, and not necessarily the work of teachers and researchers working within the process approach alone. As the thesis title suggest, this is a "realist approach" to composition, and the user's model is a *conceptual mechanism* which can be of more help

than rule-of-thumb advice in informing everyday social practice, because it reflects the deep-structure communicative functions which constitute felicity conditions for effective communications in written mode. Finally, the model of communicative functions found to be underpinning the user's model does not imply that there is a set of simplistic, generalizable communication *skills* (Fairclough 1999) but that there are systemic *functions* in human communication which are carried out in infinitely diverse ways depending on the mode and social context.

2.9 Use of the Term "Discourse" in This Study

There is no common position on the use of the term discourse in critical realism, and Bhaskar himself uses it fairly frequently, as do researchers such as Nellhaus and Fairclough. Judd (2003), however, who is so far the only critical realist researcher who has published a definitive work on written composition, qualifies his (infrequent) use of the term with "i.e. language". When dealing with the issue of discourse Bhaskar also refers to it as "language" (1994:48), although at times he seems to use it in the wider sense of the "discursive" as opposed to the "extra-discursive", as in the "Discourse theory vs. critical realism" debate (Laclau & Bhaskar 1998). The findings of this study suggest that, as Bhaskar says, "discourse is a case of an efficacious *mechanism* which operates on the world and is embedded in the world" (1998:12, my emphasis), which requires some precision of definition. This is because, while a mechanism (e.g. language) can take an infinite number of specific *forms* in any given social practice, it cannot (at least, not in any rigorous social modelling process) keep changing its nature or definition depending on what the modeller may want it to mean, or be a part of what is simultaneously the whole. The term discourse is problematic in this study because of its protean capacity for signifying diverse referents, which are rarely defined (or, once defined, kept to), for example, in the large body of literature referring to academic writing as "academic discourse".

Van Dijk identifies three main dimensions in the concept of discourse: "(a) *language use*, (b) the *communication of beliefs* (cognition), and (c) *interaction in social situations*" (1997:3). Van Dijk admits that these three interpretations are by no means definitive, as "language use" can include talk (spoken) or texts (written), and he points out that talks can be viewed as a form of interaction, and that texts seem to be *objects* rather than interactions (1997:3). From a critical realist perspective, there are already a number of problematic conflations inherent in the above, between utterance (i.e. event) and text (i.e. material object, acting as mechanism) and interaction (i.e. event, but at a more complex level than "utterance"). Van Dijk himself acknowledges these ambiguities:

> It is true that discourse analysts also sometimes use their own notions somewhat casually. Although they may characterise discourse as a communicative event or as a form of verbal interaction, *they often focus on the verbal dimensions*, that is, what is actually being said or written by language users as part of such an event or action. Thus, in the same way that

> 'text' is mostly used to refer to the product of writing, 'talk' is often studied as the product of speaking or as ongoing interaction, without paying much attention to the language users involved or the other aspects of the whole communicative event. Theoretically, it is however emphasized that discourse studies should deal with both the properties of text and talk and with what is usually called the context, that is, the other characteristics or the social situation or communicative event that may systematically influence text or talk. In sum, discourse studies are about *talk and text in context* (1997:3, my emphasis in the first instance).

Without proceeding further to the ambiguities noted by van Dijk (e.g. discourse as social language repertoires, discourse as specific utterances), whatever meaning one might wish to ascribe to discourse – language, utterance (the first two are not synonymous), text, interaction or beliefs – it is clear that discourse studies as defined above do not deal with social conditions of reproduction and transformation. It is also clear from what van Dijk says that the "Critical realism vs. discourse theory" debate is justified in making the following distinctions between critical realism and discourse theory, as shown in Table 2.2. According to Laclau, discourse theory is "a set of methodological rules for the analysis of text", whereas critical realism is a "whole ontology" (Laclau & Bhaskar 1998:9). It is not surprising then, that discourse-based approaches to written composition view writing predominantly as text, and inquiry into written composition as analysis of written texts. More seriously, no ontological distinction appears to be made between the situation in which the social practice of writing is embedded and the texts produced in writing, that is, between "the discursive and the extra-discursive" (1998:13), so that reality-as-text becomes self-constitutive. This creates an unacceptable philosophical dualism, according to Bhaskar (1998:13), who, however, acknowledges the reciprocal interaction of discourse on the *world* (1998:13, my emphasis). As Archer points out, with some acerbity, to base a social ontology on text alone is just not feasible (Archer *et al*. 1998).

Apart from the ontological incompatibility of the two approaches (i.e. discourse theory and critical realism) Fig. 2.2 shows that applying only the three dimensions of discourse noted by van Dijk to composing results in (at least) six different possible

Table 2.2 The distinctions drawn between discourse theory and critical realism

Discourse theory	**Critical realism**	**Source in Laclau & Bhaskar**
Text-analysis	A comprehensive ontology	1998:9
An "ontology" which *is* discourse	The tripartite critical realist ontology	1998:13
Reality mediated by grammar (i.e. discourse)	Reality apprehended by transcendental argument	1998:9
Discursive practices embedded in discourse	Discursive practices embedded in nature	1998:13
Practice conflated with discourse	Real events as experienced (including communicative events)	1998:9
Agency conflated with discourse	Causal agency	1998:13–14

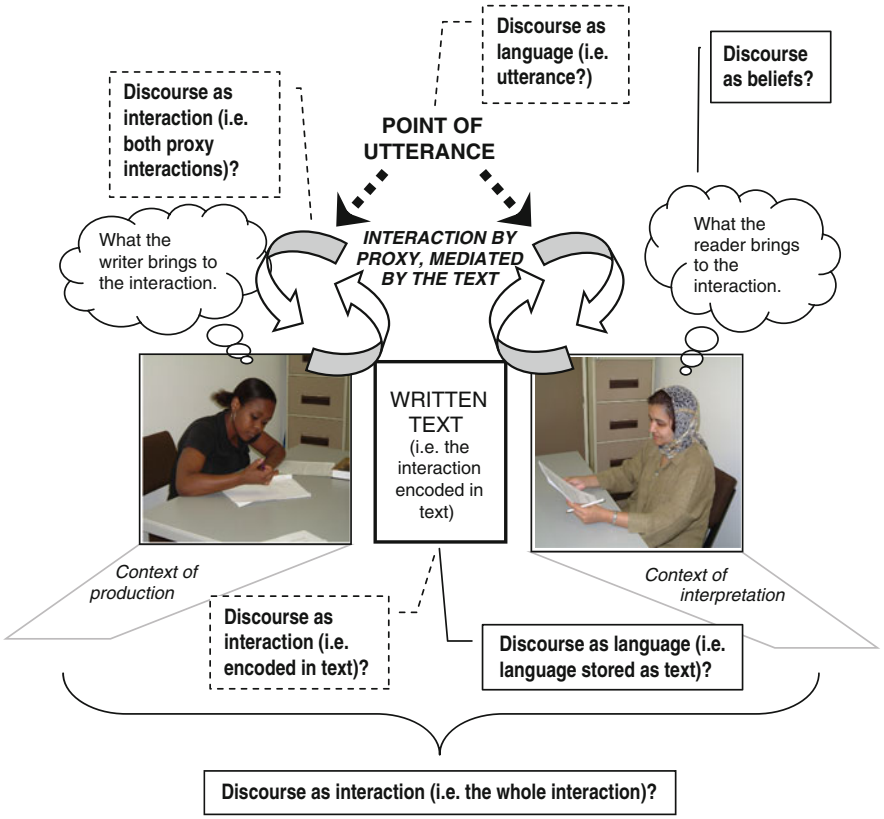

Fig. 2.2 Van Dijk's three definitions of discourse as applied to academic writing

referents. There are already too many potential meanings for the term, without adding some of the referents suggested by Gee:

- social "role" (1990:xv ff.)
- the ways of "thinking, feeling, believing, valuing, and of acting that can be used to identify oneself as a member of a socially meaningful group or 'social network', or to signal (that one is playing) a socially meaningful 'role'." (1990:143)
- "a set of values and viewpoints" (1990:144)
- "a set of views, norms and standpoints" (1990:144)

For the above reasons, and for the sake of consistency in this account, I have chosen to use the following definition of discourse: "socially differentiated language repertoires", whether referred to in the potential or in the utterance, except where reference is made to citations involving other meanings. This is not to underplay the role of discourse in composition, as it is considered to be a key mechanism effecting the social function in communication.

2.10 Conclusion

It must be emphasised that critical realism is a life philosophy, and not an orientation which can be taken up and set aside as needed depending on the subject and purpose of investigation. My reason for consciously adopting this approach and studying some of the philosophical issues underpinning it (as in Bhaskar's works) was that it was congruent with my personal life philosophy at the time of focusing on this particular research project (i.e. modelling in order to produce a writing tutor program which reflected the reality of composing): it had possibly been implicit for some time, perhaps from the very start. According to Grundy (1987:21) paradigms more properly authenticate practice, rather than being consciously adopted constructs. Moreover, theoretical modelling, while involving abstract concepts, does not imply detachment or non-involvement in the issues concerned, and the key role of personal experience and involvement in this inquiry must be stressed.

The inquiry started with an affinity for both the subject I was investigating and the liberal humanism which underpinned the approach, was fuelled by the frustration of not being able to find satisfactory answers for a process which is a key part of everyday educational functioning, and finally sustained by innate curiosity and a sense of wonder at the unfolding layers, and a sense of being close to the truth: not Plato's ideal forms, or a sanitised socially manufactured truth, but the fabric of raw reality itself, the pulse of being. However, the result is ultimately my truth, driven by pressing educational needs and a context where humans are poised for our great venture into the order-in-chaos of the hypermedia: readers must make of it what they will. Critical realism emphasises that truth is shaped by context and local needs: the context here is education in South Africa, with a growing number of disadvantaged students, and where computer and information technology enhancements are being considered to compensate for the dearth of Industrial Age resources. The current trend of ever-increasing student numbers and diminished numbers of teaching staff in the languages requires new solutions (National Languages Working Committee for Technikons 2003).

Media reports suggest that in developed countries literacy skills are dropping because children are more attracted to computer games and hypermedia, so that students do not communicate clearly in writing. Yet, paradoxically, we have found that exposure of our students to hypermedia where academic tasks are involved leads to enhanced communication, not only in the multimedia (i.e. web page design), but also in the quality of hard print literacy (Pratt 2005e): the use of electronic interactive texts, as well as exposure to professional websites, gives students a good grasp of text "packaging", which leads to better structured hard print copy reports. The Internet involves not just print text but hypermedia communication: the writing tutor program produced in this study has connections with the multimedia design process, so that its development is not an attempt to "put back the clock" with a return to hard print literacy.

The "New Electronic Writing Tutor" (*NEWT*), which was the teaching intervention I developed as a result of this study, was not meant to replace the human

teacher, but to amplify and spread the effects of the best which is known about writing. Interactions with computers are ultimately interactions with self: as with all delayed interactions, the writer/reader dialogues with self by proxy for the other interactant(s), and it is the dialogue with self by proxy for the intended audience which is a key feature of asynchronous interactions. We are in fact poised on the hypermedia/print literacy interface, where the emerging electronic mode is not only developing from but feeding back into the former – and in this inquiry it helped to re-define print literacy by indicating both where and how it is developing.

Chapter 3
The Modelling Process

3.1 Introduction

As this study involves modelling, which is a typical preoccupation of critical realist inquiry, and modelling can be considered to be a type of theory, this chapter will first look briefly at the notion of theory in general. It will then go on to describe the dual role of theory and practice in critical realism, and indicate the nature and use of the models produced in this study. Next, Franck's (2002) modelling process, which was used to arrive at the models formulated in this study, will be described. While what Bhaskar describes as "mechanisms" are thought to play a key part in explaining social systems and how they operate, Franck's account of modelling shows that, before significant mechanisms can be identified, there is a need to identify both the theoretical architecture of functions underpinning them and the shape the working out of these functions takes in real-life contexts. Franck's account of the modelling process can be viewed as complementing Bhaskar's philosophical overview by showing how various key elements are worked out at the methodological level. After an account of the modelling process used, the concept of the social mechanism is explored to attempt to gain some clarity on its nature and use. The issue of model validation is then dealt with, followed by overviews of the course of the research and the nature of the findings and conclusions. The chapter concludes with an account of how the modelling process will be presented in subsequent chapters.

3.2 The Nature of Theory

In the list of terms included in the Glossary, theory is defined as "a hypothesis about the formal conceptual structure of a natural or social system, which attempts to abstract the necessary principles without which the properties of the system could not be fulfilled", with the addition: "A theory is generally judged in terms of its clarity in explaining phenomena with a particular end or purpose in view." This summary is based on Franck's (2002) description of theory, as it is his modelling process which is used to arrive at a "theoretical model", which he defines as an "architecture of functions" necessary for a social phenomenon to be effected. Before

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moving on to Franck's modelling process, however, a brief general overview of the nature of theory will be given.

A theory is generally understood to be an abstraction where key elements of complex natural processes or social practices are elicited to explain the workings of these processes or practices. It is also generally understood that theories necessarily focus on some, and not all, aspects of a process in order to simplify it and make the basic workings clear. As Cupchik points out, "An abstract account of a phenomenon places it within an intellectual framework or nexus of general ideas and exemplary instances" (2001: para 13). The ability to theorise as part of inquiry (or at least to demonstrate expertise at negotiating one's way around or innovative use of existing theories) is taken to be a sign of advanced intellectual endeavour, and a prerequisite for serious investigation. This means that value judgements are placed on the use of theory itself, which is considered superior to practice, apart from the vested interests and power politics which favour certain theories over others. The value placed on theory is explained to some extent as Cupchik continues:

> The intellectual framework therefore stands in a complementary relationship with the phenomenon. The phenomenon can only be discerned in relation to an intellectual framework, but the phenomenon in turn provides an opportunity to both elaborate and clarify the theory. It cannot exist without a collective mind that apprehends it against some kind of intellectual background (i.e., context). At the same time, a mind that cannot perceive patterns, similarities, or repetitions is lost in a concrete and arbitrary solipsism, and cannot engage in abstraction (2001: para 13).

References to "intellectual framework" and "nexus of general ideas and exemplary instances" suggest intellectual functioning of a higher order, which is also required to understand the complex reciprocal relationship between theory and phenomena, elucidated in further cycles of inquiry to "elaborate and clarify the theory". The term "collective mind" suggests the elitist nature of the body of peers who will not only "apprehend" but also judge the emerging theory on its intellectual merit and rigour. The final statement suggests that an inability to abstract or generalize is the mark of a mind which is incapable of perceiving "patterns, similarities, or repetitions", and which is therefore limited to arbitrary personal impressions and ad hoc judgements.

Should a theory be valued only because it denotes advanced intellectual inquiry, however? Cupchik describes what are considered to be the marks of a "productive theory", productive in providing a "lens" through which to observe (and better understand) phenomena:

> A productive theory is one that balances abstract ideas against the particularity of relevant events. Such a theory summarizes across instances of individual historical episodes, while fostering predictions pertaining to the timing and qualities of future ones. In a sense, a productive theory is like a lens which, when interposed between the viewer and particular instances of a phenomenon, permits a closer look at their various qualities without distorting them. While theory is at first grounded in observational data, whether of a direct sensory or mediated-instrument origin, mature theorizing searches for coherence among the various concepts and propositional assertions. This fosters clarity and parsimony, the aesthetic hallmarks of a coherent theory (2001: para 14).

Yet the theorists who are considered "great" in both the natural and social sciences are those who have not only provided insights into phenomena but have improved (or provided the means to improve) human life. As mentioned in the previous chapter, not only quality of life, but human existence itself is constantly under threat, owing to the tenuous nature of our "ecological niche" (Baëhr 1990:769) and the distressing depredations of humans upon one another. The implication is that theory-building should constitute more than an academic exercise, the latter tendency no doubt being what prompted Robert Ebel to declare that Education is not in need of research to make it work better, but "creative invention" (in Farley 1982:18). While theories may well "foster predictions", all theories are not necessarily predictive, particularly in social science, and may describe conditions or prerequisites: they can also, however, "have a *prognostic* quality regarding possible outcomes of a particular phenomenon" (Judd 2003:54, my emphasis). The latter quality is important in terms of the use to which theory is to be put in this account, as one of the key functions of a human tutor is accurate diagnosis of a student's writing problems, followed up with practical suggestions as to how these problems can be addressed.

3.2.1 The Relationship Between Theory and Practice

While it is of course possible to generalize about the nature of theory, Allmendinger (2002) points out that the precise meaning of the term "theory" depends on its context and use. Within the context of critical realism, where human action takes place within social structures, and both replicates and – slowly – changes the social order, theory is viewed as having the potential to transform social functioning (and thus society) by showing participants how complex social processes function. But this is not sufficient: working within a critical realist orientation, the would-be theorist must also suggest practical ways to improve any given social situation, as it is praxis (and not theory) which has the potential to transform the social order. According to Bhaskar, social science "always consists in a *practical intervention* in social life" (1986:169), and as Judd, interpreting Bhaskar, comments, "It is only by moving to the level of praxis that the belief that knowledge is power can be realised" (2003:59). From a critical realist perspective, then, practice does not have an *inferior* role to theory, but a *dual* one with theory, and a theory/practice inconsistency is considered a serious flaw in the validity of any given theory, no matter how elaborate or prestigious the theory (see Judd 2003, on theory/practice inconsistencies in composition theories).

Moreover, theory has a particular force, not just for academics, but for all members of society. According to Bhaskar, humans not only create social products, but also create the social conditions for their creation (1979:48). As Judd explains, "social structures are activity-dependent, in that they would not exist apart from the human activities they both enable and limit" (2003:50). However, "they are also concept-dependent in that *they would not exist apart from the concepts that human agents have of their activity*" (2003:51, my emphasis). This does not mean that the concepts which inform human activity are necessarily an accurate representation of

the actual complexity of the social and natural forces operating at any given point, merely that all humans need concepts, whether rule-of-thumb or complex theories, to inform social practice. To improve the quality of life by developing insight into and successfully negotiating (or transforming) social practices we therefore need theories which explain social processes from a *participant* viewpoint. But to claim that such "practical" theories as might prove useful to participants in their personal experience accurately reflect the complexity of real events, the researcher needs to investigate the social functions which are being performed, so that rule-of-thumb advice can be underpinned by a model of reality which echoes the complexity and layering of the deep-level generative mechanisms whereby social processes are effected. Since an abstraction has no observable reality and a mental existence only, some means needs to be found, as Cupchik puts it, which "balances abstract ideas against the particularity of relevant events" (2001: para 14). According to Bhaskar, the means whereby this can be done is a type of dialectic in which the generative mechanisms postulated as effecting the processes (social or scientific) investigated are tested empirically to arrive at an approximation of the "real" (1978:145). The dialectic between theory and empirical data is echoed in the relationship between theory and actual social practice. Judd, commenting on Bhaskar, sums this up as follows:

> . . .the relationship between theory and practice under a critical realist description is dialectical. Theory mediates between the real world and our empirical experience of it. Being that we do not typically have immediate access to generative mechanisms or social structures, *theory is our provisional method for making our way in the world* (2003:59, my emphasis).

The relationship between theory and practice in critical realism is complex, however, and there is not necessarily a simplistic one-to-one relationship between surface manifestations of a social phenomenon and its deep-level structure as represented in theory. According to Bhaskar, "Theory is not an elliptical way of referring to experience, but a way of referring to hypothesized inner structures of the world, which experience can . . . confirm or falsify" (1978:158).

3.2.2 The Use of Theory in This Study

This study is concerned with the formulation of a model of composing in the general context of improving the quality of life by assisting learner writers to gain *insight into* (meta-cognition) the social process of communication in written mode and *knowledge how to* (practical expertise) engage in this social practice. More specifically, it is a model which could be used as the basis for composition instruction, particularly in a context (i.e. South Africa) where many student writers come from disadvantaged educational backgrounds and communities which are either newly literate or illiterate, and, as a result, are unfamiliar with many aspects of communication in written mode which students in more developed countries take for granted. For example, considering one's audience and purpose when preparing to write, or re-drafting to communicate more clearly rather than for cosmetic purposes, while not necessarily "universal" practices, are strategies currently available (and in

general use worldwide) for exploiting the modal possibilities of writing. Arguably these strategies have been developed to this point comparatively recently in the context of a western literate education, but they are not necessarily culture-specific, any more than are the current strategies exploiting the options offered by mobile phones, which, like writing/reading, are mechanisms used to negotiate distance communication.

While our students are as intelligent and motivated as students in First World countries, and just as capable of advanced intellectual development, in South Africa students even at masters level have been known merely to rewrite their work more neatly or produce a verbatim typed text when encouraged by supervisors to "redraft", simply because they are unfamiliar with literate strategies which are common knowledge elsewhere. The practical model of composing developed in my masters research (1987) was intended to give students an overview of these strategies, as well as guidance and practice in using them. However, the practical model, which may well change over the years because of increased sophistication in the use of electronic media for composing, goes beyond rule-of-thumb advice because it is informed by a theoretical model of the systemic relations hypothesised to be involved in human communication. It should by now be clear that this study's preoccupation with the deep-level systemic functions involved in composing and the way(s) in which these might drive the mechanisms involved, as well the intention to apply this theoretical knowledge in practical interventions, are congruent with the scope and purpose of the critical realist philosophy.

3.2.3 The Relationship Between Theory and Models

Before proceeding with the modelling process used in this study, however, it is necessary to clarify the relationship between theory and models. Since a model is a simplified representation of a phenomenon which abstracts certain elements for the sake of clear explanation, it could be considered to be a type of theory. It is in fact listed as such in Allmendinger's six broad categories of theory (derived from Judge, Stoker, & Woman 1995), which are useful in categorising the *type*, *focus* and *scope* of any given theory:

- *Normative theory* says how the world *ought* to be and provides ideas about how to achieve this state.
- *Prescriptive theories* concern themselves with *how* to go about things or the means.
- *Empirical theory* explains and interprets reality and focuses on causal relationships and dependent and independent variables. Hypotheses form part of empirical theory which allow it to be tested and adjusted.
- *Models* are more simple representations and pictures of reality that do not always include hypotheses but are still testable.
- *Conceptual frameworks or perspectives* are really a linguistic analysis of situations and ideas leading to perspectives and critiques that might otherwise be lost.
- *Theorising* generally is a catch-all category that covers thinking and debating ideas and other theories as to their suitability and applicability (Allmendinger 2002:8–9, slightly adapted).

Allmendinger cautions against making rigid distinctions between the different types represented above and points out that there are considerable overlaps. An example of overlap is provided by Bhaskar, who suggests that theory of necessity involves some kind of modelling, but that there are prerequisites for models to achieve the status of theory:

> Needless confusion has been engendered by the failure to distinguish models, theories, paradigms, etc. Very roughly, a theory is a model with existential commitment; that is, a model conceived, and meant to be taken, as true; i.e. a model in which the entities posited and mechanisms described are conceived as real. It is relatively easy for the scientist to invent models, but much more difficult for him to construct theories. There were several models of the ether, but never a satisfactory theory of it (1978:192).

A model might, to follow Bhaskar's example, explain the functioning of ether, but not the rationale for its functioning in this specific way (i.e. the causal mechanisms involved), or at least reasons which could be verified against the observable/measurable properties of the system involved. White and Arndt's diagram of process writing (in Furneaux 1998) is an example of such a model, as no hypothesis is provided to justify (1) the choice of elements and (2) why they should be seen as significant, except to expand on what their names already indicate that they do (Fig. 3.1). According to Judge, Stoker and Wolman (1995) models are: "Representations or stylised and simplified pictures of reality". Such representations, as Bhaskar has suggested, may be useful, but clearly do not achieve the status of theory in explaining the essences of things. However, it must be remembered that inquiry in the critical realist philosophy is viewed as following a process of stratification, where subsequent cycles of investigation may reveal that surface level formulae or rule-of-thumb precepts are underpinned by depth-explanations which are more satisfactory in explaining the intrinsic nature of phenomena (natural or social). Moreover, where rule-of-thumb is seen to work in actual practice, there is all the more reason to carry out a depth-investigation to formulate a theory which might explain its functioning.

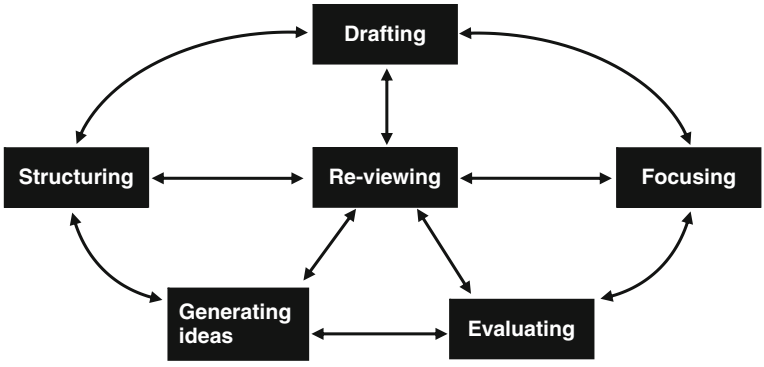

Fig. 3.1 White and Arndt's (1991) diagram of process writing (in Furneaux 1998)

3.3 The Models Produced in This Study

While Franck's modelling process involves two models, an empirical (practical) model and a theoretical model (system of functions), one theoretical model and two empirical models were actually produced. The model which was the starting point of this investigation, the user's model (or *Stages of the writing process*, Pratt 1987), started off as a simple representation for teaching/coaching/self-help purposes which was found to be accessible to multicultural undergraduate students, and, in simplified form (i.e. *Steps to good writing*, 1987:49) to younger learners (i.e. from Grade 8 to Grade 12). The user's model is partly descriptive in detailing the stages observed by teachers and researchers, and partly prescriptive in advising learners what to do at various stages of composing. It does not include hypotheses at any deep level (except perhaps those relating to Widdowson's focal and enabling functions 1984:49), but is based on observations of, and consequent generalizations on, the behaviour of experienced student and professional writers. It does however, contain the functions which Franck (2002) suggests form the framework of a theoretical model, and distinguishes between functions and mechanisms in ways which White and Arndt's model cited above does not. Thus, while the user's model might contain rule-of-thumb advice, it was clearly underpinned by a more complex systemic operation which merited further investigation, that is the five composing functions. While not properly a theoretical model, the five functions could be said to have the status of a "proto-law" or "proto-theory" (Bhaskar 1978:164–167, 1979:61–63), that is an initial hypothesis leading to the later development of a theory.

The initial rationale underpinning the user's model of composing was frustratingly circular and ostensibly value-laden: "Good" writers write thus: this procedure is therefore "good". However, the model of communicative functions which was found to underpin (and thus explain) this practical model suggests that the concept of "good" is not value-laden but descriptive, in that the model constitutes a complex layering of processes which provide the prerequisites for (but do not guarantee) communication in written mode. Moreover the systemic model developed here (i.e. the theoretical model) goes some way towards explaining some of the mechanisms hypothesised as operating in Bhaskar's domain of real, and does in fact focus on "causal relationships and dependent and independent variables" (Allmendinger 2002:8). As Meehan points out:

> A system explanation can be viewed as a formal pattern, a map, that can be imposed or overlaid on the empirical world. If the pattern fits the empirical data, it serves as an explanation or guide to the empirical events that fall within the pattern (1968:63 – note that Meehan's "empirical" is the equivalent of Bhaskar's "domain of real", and *not* his "domain of empirical").

The empirical data analysed in this study constituted part of testing and adjusting the systemic model, and feeding back possible adjustments to the practical models.

What force and scope do systemic models possess in terms of a potential theory of written composition, however? The models produced in this study achieve the status of theory, according to Bhaskar's description above, in that they have

"existential commitment": the point of their formulation was to present an accurate representation of composing on which to base the teaching or coaching of written composition, and more latterly, educational software. The entities posited and mechanisms described in both empirical models were conceived as real, and could be identified in the actual composing of student writers. However, while they throw considerable light on the nature of written composition from the perspective of the writer, the "system of functions" formulated here, while a true "theoretical model", according to Franck's (2002) description, is in no way intended to provide a comprehensive theory of composition. The study was strictly delimited in that the purpose of the systemic model was to explain and underpin certain facets of composing contained in a practical model of composing which has proved useful to both teachers and learner writers, in other words, which has "explanatory power", and, as a result, the practical model has potential application for the development of composing expertise in a wide variety of educational contexts. This is because the modelling process has been able to identify some of the commonalties in composing (i.e. some key systemic relations) which in turn has suggested which aspects need to be left open for users of the writing tutor program to customise according to specific local needs (i.e. the social influences on composing). Perhaps because of the simplicity of the abstraction in the model of communicative functions (Cupchik's principles of "clarity and parsimony"), this model was subsequently found to provide a principle which has been applied in other fields (primarily in mixed mode course design, Gutteridge 2006, Pratt 2005c, 2007a, but also in research processes, Pratt 2008, 2009a, b).

The "theoretical model of composing" (i.e. the system of communicative functions), then, makes no claim to be a comprehensive theory of written composition, and in fact its "leanness" is an advantage, as the practical model (and software) based on it could in fact be used within any one of the current approaches to written composition. This is because it starts from a consideration of the activities of the real composing of real students observed by educationists and researchers not bound by a common ideology for prescribing how writing "ought to be", and any theories developed about writing were grounded in actual practice (see Sayer 1992:73–74 for a refutation of the notion that theory determines observation). It is important to bear in mind that the model of "good" writing is not prescriptive in the sense of saying what "should" happen, but in terms of describing prerequisites for effective composing. If students are not perceived to write in the ways described in the more detailed analytical version of the empirical model of composing (as established by think-aloud or video protocols), it is not necessarily because the prerequisites for effective composing are not described accurately in the model, but possibly because the prerequisites are not actually being fulfilled in those cases (this can be established by means of empirical data). It must also be remembered that, in the case of the latter, students may still obtain high marks for assignments through plagiarism or where transmission rather than composition is required in student assignments, and that a very gifted few, such as the author Arundati Roy, appear to be able to write without redrafting (on paper, that is – the processes may well be entirely mental and subconscious).

3.4 Franck's Modelling Process

Franck's (2002) compilation on modelling has proved to be invaluable in not only defining the nature of the methodology used to arrive at an explanation of composing procedures, but also in clarifying the nature and force of the explanation. Firstly, his explication of the relationship between theoretical and empirical modelling, using examples from numerous disciplines, to some extent provided the theoretical underpinning for the methodology used in this inquiry, where the development of theory was grounded in data throughout the inquiry process. Next, his account of the modelling process clarified both the nature of the user's model (*Stages of the writing process*, formulated in my masters research project in 1987) and the theoretical models which were developed in the course of attempting to explain the deep structure of the user's model. His overview of the modelling process (2002:295) is congruent with the retroductive methodology typical of critical realist research, in that it starts by observing the phenomenon in the domain of *actual*, postulates the *real* structures and mechanisms underpinning observable events, and demonstrates the existence of these structures and mechanisms (Sanghera 2004). However, retroduction provides a weak argument:

> The implication of retroduction for empirical research is dubious. Assuming that transfactual social mechanisms become manifest through their effects only means that they can only become objects of empirical study when they are triggered and operative. Working from the empirical domain we must try identify such mechanisms through abstraction which can be said to explain the experiences understood as effects of these 'hidden' mechanisms. This process of abstraction does not necessarily validate the explanation empirically because the explanatory mechanism may not be factual in other ways than though the effect to be explained. In short, we do not know whether we explain the phenomenon with something qualitatively different or just call the same phenomenon by different names (Wad 2001:4).

Franck's use of classical induction provides a stronger argument than retroduction, and his use of two kinds of models, empirical (practical) and theoretical, enables a more rigorous testing of hypothetical constructs against actual data.

After moving in stages through examples provided by modellers working in twelve different areas of social science, Franck arrives at a summary of the key elements of the modelling process as follows:

> (1) Beginning with the systematic observation of certain properties of a given social system, (2) we infer the formal (conceptual) structure which is implied by those properties. (3) This formal structure, in turn, guides our study of the social mechanism which generates the observed properties. (4) The mechanism, once identified, either confirms the advanced formal structure, or indicates that we need to revise it (2002:295).

Two different types of model are involved in the above process, a theoretical model and an empirical model. The theoretical model, while representing an abstract set of systems, is grounded by means of its being actualised in the specific case of the empirical model, which can be shown to relate to actual instances of the social phenomenon or system being investigated. The working together of theory and actual instances (as reflected in a real life situation which yields verifiable data) is very similar to the type of theoretical development achieved through grounded theory

methodology. However, Franck's explication of the modelling process provides a rigorous theoretical framework illustrating more precisely the ways in which theory and data interact to develop a theoretical model. The theoretical model is still, of course, only a hypothesis, and its source is in fact irrelevant (2002:252), but the type of theoretical model described by Franck is not just an ad hoc abstraction loosely connected with real events, but the systematic representation of linked groups of social functions which can be shown to "fit" the social system they underpin by being essential to bring about its properties. Such a systematic representation, or architecture of functions (2002:88), can then act as a lens focusing the researcher on the nature and type of the actual mechanism which carries out the functions, and leads to the construction of an empirical model which can be tested out in specific cases, either validating the conceptual model or suggesting further modifications.

According to Franck, this grounding of the theoretical model in an empirical model – which can then be verified by actual data – gives models in social science not only great explanatory power, but also a status comparable with those derived from research in the natural sciences: "The explanatory power of a theoretical model constructed in this way can equal the explanatory power of natural laws" (Franck 2002:298). Franck's specific and directed methodology thus dovetails effectively with the general overview provided by Bhaskar's orientation, which is also concerned with "the explanatory power" of hypotheses (Judd 2003:55) but leaves the specific methodology open to the field studied. It must also be noted that Bhaskar's philosophy, while applicable to social science, is predicated on the effective functioning of *natural* science; that both Bhaskar and Franck come to inquiry in the social sciences from a philosophical background; and that both explore the common ground between inquiry in the natural and social sciences in ways which give rigour, depth and complexity to the latter.

The modelling process provided by Franck is the summation of conclusions based on examples of modelling in very different areas in social science, as presented by the authors of the 12 chapters in *The explanatory power of models*, and grouped so as to develop a "model of modelling" which in itself can be seen to contain the kind of generalizable principle which Franck recommends. To show the correspondence of the modelling process used in this inquiry with the process as summarised above, it has been broken down into the following stages, showing how the process can cumulate in the formulation of a general principle:

1. The *properties* of a social system are carefully observed and defined.
2. A *theoretical model* is formulated on the basis of the functions needed to achieve the above properties: the model consists of an "architecture of functions".
3. The *mechanism* which achieves the system's properties is inferred from applying the theoretical model to real-life situations or data.
4. An *empirical model* is formulated, depicting the operating of the mechanism in a real-life situation.
5. The empirical model is then *tested* in a real-life situation or against data, to see whether it actually generates the properties of the system.

6. The theoretical model is *validated* by being tested against the empirical model, to see whether the theoretical model needs adjustment to fit the real-life functioning of the social system.
7. If the theoretical model, that is the system of functions, is seen to be generalizable so as to explain the properties of a process in another discipline or field, it can be said to have the force of a *principle*.

According to Franck, the eventual formulation of generalizable principles in social science research is desirable, as generalizability offers researchers the opportunity to consolidate their knowledge base by testing the same principle in a different discipline, area or field (2002:297). As a principle involves the system of functions underpinning a process, and not the process itself, principles derived in the context of social science may be applicable even to phenomena in physical science and vice versa (Franck 2002:297–298, see also the example of the Hotelling model, transferred from a spatial to a non-spatial context, in Peeters 2002: 158–160).

In actual instances of modelling there can be considerable overlap and recursion, particularly in steps 1, 2, 3 and 4 of the modelling process. Franck comments that it is not unusual for the empirical model to pre-empt implicitly the deeper level system of functions which would form the theoretical model:

> In truth, when we construct a causal model, we quite naturally take advantage of the resources of the functional approach, without taking the trouble to model the combination of functions of a system. It is no accident that we select, within our causal model, certain variables in preference to others: we choose those variables because we think they are covering this or that social function (2002:96 – note that Franck uses the term *causal model* interchangeably with *empirical model*).

Initially I assumed that the empirical model of composing had been formulated before the theoretical model. On closer study of my thesis text (Pratt 1987), however, I found that I had in fact followed the order suggested by Franck in my masters, but had not known the formal terms for the entities postulated, and had not gone beyond step 5. As I shall describe in more detail in the next chapter, I had established the property of the system (i.e. writing as a complex process by proxy carried out in recursive stages) and the functions specific to composing, but these were not initially recognisable as communicative functions because modal peculiarities masked their communicative aspect. The mechanism was in fact the series of composing strategies identified in the literature. However, while I had already arrived at a "system of functions" for composing in my masters research, this did not properly constitute a theoretical model, as the hypotheses or systemic relationships still remained implicit, and the communicative functions which were later found to operate in composing had not yet been identified. The reason why I thought at first that I had worked backwards, as Franck describes above, was that there were in fact two cycles of modelling involved (perhaps three, if one counts software development), as will be described in more detail at the end of this chapter. In the second cycle, which occurred at greater depth, certain elements of the modelling process (e.g. property, functions, mechanisms) were reformulated, but it was not so much a

case of working backwards but of repeating the cycle consciously working out the hypotheses and systemic relations which had remained implicit in the first cycle, and which had meant that the user's model of composing (*Stages of the writing process*), while supported by literature and research on composing, remained no more than rule-of-thumb.

3.5 The Nature of Social Mechanisms

It was suggested earlier (in Chapter 2, p. 41) that a focus on causal mechanisms in explaining phenomena might prove problematic in a complex social process such as communication. While events can be verified by being recorded, measured, triangulated or by finding regularities in the accounts of a variety of participants/observers, it is extremely difficult to begin to identify the key mechanisms involved in social processes, as many of these are not (directly at least) observable and the complex, layered, dynamic nature of social processes typically results in a patina of myriad surface impressions from which it is difficult to elicit significant patterns (Bhaskar 1979:62). Moreover, the literature is vague in defining the nature of social mechanisms as opposed to the mechanisms involved in natural processes, apart from confirming that human agency is clearly not in the same category as natural agency. The term "social mechanism" is defined very generally by Franck as "the factors which, in combination, generate the phenomena which one wishes to explain (that which is commonly called a *mechanism*)" (2002:234, my emphasis). It is also used with a very wide application in social science literature generally, as shown by Mahoney, who lists twenty-seven different definitions (2003:14–15). However, Franck points out the need for identifying a definite form in the processes which are considered to be social mechanisms:

> Researchers working in social sciences often treat the word "mechanism" as a synonym for "process". These words both serve to indicate a sequence of events which gives rise to observable phenomena. But "mechanism" emphasizes, more than "process", the idea that the sequence of events that has given rise to the observed phenomena is not fortuitous, but rather obeys definite *forms* (2002:88, my emphasis).

Danermark comments on the regularity of such mechanisms:

> Mechanisms have the power to produce events. This is often described as a 'generative process'. 'To "generate" is to "manufacture", to "form", to "produce", to "constitute"', write Pawson & Tilley (1997:67), 'the generative mechanisms thus actually *constitute* the regularity; they *are* the regularity' (2001:4).

While the notion of "regularity" or "form" frequently crops up in definitions of mechanisms, Franck makes it easier to specify what constitutes a mechanism by separating its formal characteristics from its practical operation, while at the same time showing how the systemic relations govern – and thus make sense of – the operation of the mechanism:

> How can we recognize a mechanism in a sequence of events? I will propose one answer to these questions: the form of a mechanism, which gives it a certain unity, is the combination of functions which govern its operation in general, or in other words its functional architecture (Franck 2002:88).

The emphasis on "forms" and "regularity" fits in with Bhaskar's identification of mechanisms with structures: it is as if mechanisms are the essence or potential-to-become of things, as with a DNA code, which has a definite structure and form and the potential to specify what a given cell will become, or an atomic structure which will cause an element to react in predictable ways. The "essential" nature of mechanisms is borne out by Bhaskar's own definition:

> There is nothing esoteric or mysterious about the concept of the generative mechanisms of nature, which provide the real basis of causal laws. *For a generative mechanism is nothing other than a way of acting of a thing.* It endures, and under appropriate circumstances is exercised, as long as the properties that account for it persist. Laws then are neither empirical statements (statements about experiences) nor statements about events. Rather they are statements about the ways of acting of independently existing and transfactually active things (1978:51–52, my emphasis).

However, when it comes to social and not natural science, we find that the world is full of not only things but also people, who have more complex "tendencies, liabilities and powers" than things, and who interact in intricate systems and by means of complex processes. Is a social mechanism, then, nothing other than a way of acting of a person – or group? People (and possibly social systems) are more properly classified as causal agents (Mahoney 2003:9–10) rather than causal mechanisms: it is our tendency to act in certain ways which constitutes the mechanism. Our tendency to act includes our emotional tendencies, motivations and reasons. Morén and Blom, in applying a critical realist approach to social work, state:

> We define generative mechanisms in social work practice as forces (reasons and motives) which – primarily activated by social workers' and clients' united efforts – generate client effects. Generative mechanisms are real, but seldom directly observable (2003:55).

Morén and Blom provide examples from cases studies which show how the potential of people to act in their own interests – the potential consisting in individual motivations and reasons – can be mobilised in complex systems (e.g. therapy or consulting structures) to produce, in some cases, a better quality of life for clients. Mechanisms, then, are used in social science to explain not only social trends, but individual human behaviour (see Gambetta 1998:102, in Mahoney 2003:14).

3.5.1 Contingent and Intentional Causality

Terms such as "generate", "give rise to" and "produce" have been used in the sources cited above to describe the effects of mechanisms. But can one equate such forms of production with both sentient intentionality (e.g. writing a novel) on the one hand and insensate contingency (e.g. the formation of a cyclone) on the other? Some form of distinction appears to be required. Granted that people do not always act with conscious intent, and much – most, in fact – of what we communicate is involuntary,

sentient behaviour would appear to require more than instrumental causality. This is where the issue of agency can become problematic in critical realism (Hodgson 2003), although Archer has presented something of a tour de force in showing how human agency can in fact be accommodated within the realist framework, providing us with the concept of an agent who is "active and reflexive . . . someone who has the properties and power to monitor their own life, to mediate structural and cultural properties of society, and thus to contribute to social reproduction or transformation" (2002:19). Such an agent as described by Archer is implicit in the user's model of composing – negotiating social situations by acting (i.e. communicating in writing), temporising between social requirements and individual needs, monitoring results and reflecting on progress, and, in the process, contributing to "social reproduction or transformation".

To emphasise the fact that human agency is involved in writing, I would like to suggest that the communicative processes which are used (whether consciously or not) by people to achieve certain ends should be viewed as examples of intentional determination (see Bhaskar 1979:102–103, Ekstrom 1992:110), and that factors which impact circumstantially on the writing process be viewed as possessing contingent determination. With reference to the notion of intentional determination, communicative processes could in fact generally be said to have "performative" force (see Fairclough, Jessop, & Sayer 2001:4), but it is beyond the scope of this study to examine in detail the role of semiosis in society: my brief is to work through the modelling process to suggest a theoretical underpinning of the empirical model. The tentative identification of possible intentional and contingent factors in composing is not meant to set in place a general hierarchy, merely to effect a tentative distinction between the different types of mechanisms involved in carrying out the system of functions involved in writing. Moreover, in spite of what I have said above about "sentient intentionality" and "insensate contingency", this is not intended to make a simplistic distinction between animate and inanimate causality: human agents may well be a source of contingent determination.

In this study at least two layers of causal factors were found to be involved in composing, the contingent variables which, as input to the system of functions, affect output, that is, the properties of the system (i.e. the phenomenon in question), and the intentional generative processes which carry out the functions of the system. The output of the latter could be expected to constitute a contingent variable for a later stage, and contingent variables could be expected to impact on composing throughout the process, which was found to be the case, and is what has made composing procedures so difficult to categorise. I would also like to suggest the term "conceptual mechanism" for concepts which inform everyday social practice (Judd 2003:51). An empirical model of composing can in itself constitute such a mechanism, as it offers learners a meta-cognitive view of the prerequisites for effective composing, as has already been demonstrated with the user's model of composing in case studies (Pratt 1987) and subsequent teaching programmes (Pratt 1988). The point of using an empirical model of composing as the basis for a writing tutor program was to provide learners with an overview of composing which might

give them insight into their communicative performance and suggest both areas for improvement and the means whereby this might be achieved.

Viewed in the light of Bhaskar's statement, "Society is both the ever present condition (material cause) and the continually produced outcome of human agency" (1979:43–44), communication is not merely an event, but a pivotal social process which both reflects and reproduces (or transforms) societal relations, at the same time itself being the outcome of the societal relations thus set in place. The fact – or existence – of the phenomenon of communication itself could be considered a primary social mechanism, as it is both bound and transformed by social relations, and at the same time, binds, but also acts as a catalyst – arguably slow – but pervasive – in further transforming social relations. The crux of the matter is how human agency actually contributes to "social reproduction or transformation", and precisely how the variously identified "sequences of events", "motives" and "regularities" combine with human agency in producing certain described effects or outcomes. It must be remembered that critical realism is a philosophy and not a methodology, and that Bhaskar's brief was to formulate an ontology which might make sense of human inquiry, not to specify exactly how the details might be played out in the real world. Moreover, there are times (such as in the above definition of mechanism, 1978:51–52) when Bhaskar appears to be conflating what Franck would refer to as an "architecture of functions" (2002:88) with the mechanism which performs these functions, particularly in his emphasis on structure: the system of functions is in a sense the "deep structure" which explains the operation of mechanisms. A similar confusion is apparent in the twenty-seven definitions of the term "mechanism" as applied to social science provided by Mahoney (2003:14–15).

Archer *et al.* (1998) admit that the methodological consequences of adopting a realist research orientation have not yet been worked through satisfactorily. While it is beyond the scope of this study to suggest general answers, it is evident that dynamic social processes such as communication, while affected by external factors (as I shall show later), are effected by human agency, with open-ended outcomes: learner writers who follow the stages reflected in the empirical model may not necessarily communicate well (if at all), as data from the video protocols have suggested. The empirical model – the five stages of composing – does not guarantee success in composing, but merely describes the generative mechanism which is used in real-life instances of composing to carry out the functions in the system of functions, that is, the theoretical model. The model could be considered to be a stochastic algorithm (Pratt 2005a:251) describing the prerequisites for successful communication. The first of the theoretical models to be formulated in this study turned out to be not specific to writing, but generic to communication (2005b:137): the causal variables which make writing what it is could be seen to be a case of specific input to the system of functions, as will be shown later. The causal variables, as I have suggested, should perhaps be seen as examples of contingent determination, while the mechanism constituted by the empirical model is an example of intentional determination. This does not exclude the possibility of contingent – and intentional – determinants from intervening in – and further shaping – the unfolding layers of the process.

3.6 Validation of the Models

As Young (2003) points out, there is no one method of validating human performance models, and different types of models require very different validation techniques. Overall, the validity of a model needs to be assessed in terms of its purpose. The purpose of the empirical model formulated in the first cycle of modelling (resulting in the user's model of composing) was to serve the ends of teaching written composition by providing both teacher and students with a meta-cognitive view of effective composing practices: this gave the teacher a structure on which to base appropriate responses to student texts throughout the stages of composing, and the students a flexible framework which would lead them through composing by giving them advice appropriate to whatever stage they had reached. An empirical model of composing needs to be validated in terms of whether the stages of composing it describes are confirmed by reported and first-hand data relating to the observed behaviour of actual writers, particularly professional and student writers whose performance is judged to be proficient. As the first empirical model was formulated for pedagogical purposes, it describes the prerequisites for written communication in lay terms, and does not in fact claim to describe all instances of composing. For this reason a more "analytical" empirical model was formulated for this purpose in the second cycle of modelling.

The theoretical model produced in this study was formulated to establish whether the effectiveness of the user's model, based on the observed composing behaviour of proficient writers, could be explained in terms of a "deep structure" or "essence" (Bhaskar 1979:16) of composing, that is the purpose of this model was its general explanatory power. Thus, while the pedagogical model was formulated expressly for the purposes of teaching and learning, the theoretical model needed to look beyond the teaching of written composition to the actual nature of composing itself. While knowledge is provisional and tentative, and teaching and learning change according to beliefs and fashions, in critical realist terms, writing, though effected by human agency, is a real phenomenon existing independently of people's preconceptions as to what it might constitute. As Judd points out, people need concepts to inform social practice, but the concepts which guide behaviour do not necessarily correlate with real events, particularly when many factors in composing are unconscious or so familiar than they have become implicit. The theoretical model, then, in spite of being an abstract system of functions, would need to explain real instances of writing in a variety of specific situations. It would need to explain not only the user's model, but to be able to abstract some of the key functions performed in writing.

Of validating theoretical models, Franck says:

> This validity and explanatory power are such as we are accustomed to attributing to theories which pass the tests of the hypothetico-deductive approach: the model, like any theory, will be verified or corroborated if the facts that can be deduced from it conform to the facts as observed (2002:286, my emphasis).

In this study, the theoretical model was validated by the following means:

- The principle of necessity in classical induction, which reveals the functions "without which" the properties of a social system or process would not be realised.
- Its practical exemplification in the mechanisms contained in the more detailed "analytical" empirical model, based on the observations of experienced teachers and researchers, and on first-hand observation and reconstruction of composing procedures using video protocol analyses.
- The interplay of data and theory throughout the course of the inquiry which grounded theory in practice and vice versa.
- The insights which the theoretical model offers into the nature of written composition, as corresponding with points of agreement found in the literature (i.e. relating to other current approaches to, and/or theories on, written composition).
- The case that the theoretical model can be seen to constitute a general communicative principle, which could be extended not only to fit other genres of writing, but communication in general, and which could be applied in other areas or fields, notably educational design (Pratt 2005c, 2007a).

It must be noted that Franck's account of classical induction avoids the problems raised by Sayer, who states that "where we have good knowledge that events are causally connected, we don't *need* induction" (1992:159). Induction is, however, needed to arrive at a hypothetical system of functions which is not directly observable. It should be noted further that Sayer also questions the usefulness of models as explanations (1992:171), but appears to be targeting in particular the reduction to abstruse mathematical terms of social functions and processes, an objection with which I sympathise, in spite of the possible generalizability of such models to other fields. The first empirical model (the user's model) was confirmed at its inception in the sense of being grounded in observations of effective composing practice in both teaching and research, and its applicability to actual composing was further explored in depth in over 40 instances of video protocol analysis in different contexts by the researcher (both sources of validation will be referred to in this account). The second empirical model, which arose out of reflection on the insights gained during the video protocols, was tested out further in thirteen more video protocols. The theoretical model explains the empirical models by showing how they are underpinned conceptually by an "architecture of communicative functions" which can be seen to correspond to the five stages of both models. The theoretical model thus has explanatory power for a practical teaching application: in this case, it explains the efficacy of the user's model, and supports its use as the basis for a computer mediated learning (CML) application.

3.7 Video Protocol Analysis

While video protocol analysis (VPA) is being used increasingly for research into usability evaluation of software (Macleod & Rengger 1993) and interactions between people and machines (Cockburn & Dale 1997), comparatively little research appears to have been done into written composition using VPA, apart from studies done by Jones (1982), Matsuhashi (1982) and Pianko (1979). From 1986 to the present I developed and refined a version of VPA for reconstructing composing procedures, at first using borrowed equipment, but later obtaining research funding to set up a console which included two camcorders, an MX10 digital mixer (for split screen recordings), and two video recorders (two, so that reconstruction of composing could be carried out with one writer while another was engaged in composing). Late in 2005 I added a digital recorder, at first using it to convert videotapes already recorded to digital format, and later to record composing sessions directly onto DVD+RW disk. As composing takes place more and more on computer, screen-recording software combined with computer camcorders, and mixed through editing programs rather than electronic mixers, will take the place of the electronic analogue equipment used for VPA.

Video protocols were preferred from the start to think-aloud protocols using tape recorders as the latter (1) require some prior training of student writers, (2) are more intrusive and (3) introduce an element of verbalising which may well interfere with the kinds of cognitive functioning which help to generate ideational content during composing. Think-aloud protocols might also interfere with the inner dialogues whereby the writers negotiate the interaction-by-proxy. When a videotaped composing session is played back to the writer, visual cues in the playback, in combination with the drafts produced in the session, can assist students to recall complex cognitive processes in some detail. A video camera could, of course, be considered more intrusive, if not more potentially threatening, than a tape recorder. This can be avoided by establishing a collaborative relationship with the writers, who can be asked to help to monitor the recordings occasionally as they write, which also means that they are aware from the start of how the recorded footage will appear. The writers also need to have the modus operandi made as transparent as possible: they need to know in advance that their composing procedure is going to be recorded so as to facilitate recall of what they were doing as they composed (some students even assisted by making annotations to assist recall). They also need to be reminded that this is not an examination mock-up, and that they should compose as far as possible as if there were at home or in the library.

It is not considered necessary for composing to take place in a completely natural setting for familiar composing patterns to emerge (after all, what is “natural” about academic writing?) The key issue is to note the variables which constitute input into the system of functions involved in composing, given that the writing task is challenging enough for the writer to exploit the array of resources available in composing and close enough to actual writing in the disciplines. Most of the protocols involved revision assignments in various subjects set and marked by the students’ usual lecturer and close enough to examination time to merit genuine effort. There

Table 3.1 An overview of the video protocol analyses investigating composing

Date	Project	Main conclusions
1986	Masters research project involving video protocol analysis of the composing of 6 high school pupils writing typical English composition topics.	Communicating the user's model to learner writers can effect a change towards "good" composing behaviour.
1991	Pilot study involving video protocol analysis of the composing of 4 university students writing sample assignments.	Composing in a second language is not significantly different from composing in mother tongue.
1993	Project involving video protocol analysis of 18 technikon students writing revision assignments in three academic subjects.	Academic composing involves the social construction of knowledge in different academic subjects.
1995	Project involving video protocol analysis of 5 technikon students writing a revision assignment in Economics.	Inability to understand subject concepts results in poor composing performance or pastiche writing.
1999	Project involving video protocol analysis of 11 fourth semester Electrical Engineering technikon students at various stages of writing their Electronic Design Reports.	Academic writing is discipline-specific, as defined by the lecturer: technical expertise appears to be a more fundamental requirement than composing expertise.
2005	Project involving video protocol analysis of 13 first year Town & Regional Planning university students writing a revision assignment on Land Reform.	The revised empirical model corresponds to actual instances of composing in an academic discipline.

is evidence that students were not unduly stressed by the VPAs in the recorded video footage of students primping, yawning, stretching, using mobile phones, eating corn chips and chocolates, pulling faces at the camera, and emptying my water carafe. Besides the research projects shown in Table 3.1, video protocol analysis was also used in 2005 to gauge initial product response to the writing tutor program of the same Town and Regional Planning students who had been involved in the composing sessions.

3.8 Generalizability of the Theoretical Model

That the theoretical model appears to be a general communicative principle was in fact an unexpected side effect, and was not sought at the outset of this inquiry, although I suspected early on that the form and function of the user's model of composing had something to do with the inherent nature of communication itself. It was

in fact the temporal layering of communicative functions in composing, exposed in much the same way as different chemical compounds are revealed in staggered, striated layers by chromatography, which revealed the system of communicative functions in ways which are not immediately – if at all – apparent in other modes, or in the reading of written texts, for that matter, where the functions operate in a gestalt. The general principle is of course not capable of conclusive proof, any more than the majority of the so-called "covering laws" in natural science, which, it has been argued, are not laws derived from a cumulative summing up of data, but hypotheses logically inferred from supporting data and generally accepted as the current best explanation (Bunge 1997, Meehan 1968).

The point of developing theoretical models is not to prove that they are literally correct, but to use them to gain insight into natural and social phenomena, and, where applicable, to predict the course of physical or social events. Once the architecture of functions which explains the properties of a phenomenon has been hypothesised, further instances of these phenomena can be re-examined in a new light, potentially giving yet more insight into aspects of their functioning. The system of five functions "without which" communication cannot occur (at least, not successfully) had already suggested that the terms asynchronous/synchronous as applied to speech and writing give rise to a misleading dichotomy, and that the concept of distancing (not only temporal, but also spatial and social), combined with a consideration of the material mode of production, provides more insight into the characteristics of different instances of communication. This study suggests that it is misleading to speak of writing as an "asynchronous mode": asynchronous communication using recorded spoken or graphic texts does not share identical characteristics with writing. The term "mode" should perhaps be reserved for written, graphic or spoken communication modes. Finally, modelling the mechanism involved in composing helps to explain its idiosyncratic nature as a series of complex recursive stages.

3.9 Interplay Between Data and Theory

The modelling process developed by Franck shares resonances with grounded theory methodology. Grounded theory works explicitly towards "verification of its resulting hypotheses" (Strauss & Corbin 1994:274) and involves the complex interplay of data and theory throughout the course of the inquiry (1999:12–13). Strauss and Corbin point out that "when grounded, this [i.e. general theory] differs from more deductive types of general theory because of its generation and development through interplay with data collected in actual research" (1994:274). In critical realist terms, the type of grounded theory methodology used in Franck's modelling process can be seen to involve a type of triangulation between the domains of the real, the actual and the empirical. Aspects of the empirical and actual domains are harnessed to work together in this way: a process of classical induction is used to infer a system of functions (empirical domain) from data obtained by careful observation (actual domain), the theoretical framework provided by the system of

functions is then used as a lens to focus back deductively on events in order to detect the mechanisms driving them (real domain). The construction of an empirical model showing the application of the hypothetical system of functions makes it easier to identify the mechanisms effecting the functions, which would otherwise be difficult because of the probability of a mismatch between causal events and experiences (Bhaskar 1978). Moreover, postulating a system of functions with which to scrutinise events is more likely to link their complex, disparate and multi-layered causes (i.e. causal mechanisms) which are masked by the apparent homogeneity and continuity of experience. Academic writing, for example, is so much a normal part of academic functioning that it is almost impossible for researchers, who are also academics themselves, to appraise the phenomenon with fresh eyes: functional modelling allows one not only to view the process from a different perspective but to see it as one instance of a generalizable system of communication, and to see correspondences and differences with other instances in a whole range of communicative phenomena.

3.10 Stratification in the Inquiry Process

Earlier it was suggested that the inquiry process was typical of critical realism in following a process of stratification. The following levels of stratification could be seen to operate in this study, arranged in depth layers rather than in temporal sequence:

1. The rule-of-thumb description of composing and advice contained in the user's model of composing (i.e. *Stages of the writing process*).
2. The system of communicative functions constituting the prerequisites for effective communication, namely, the contextual, ideational, interactive social and reflexive functions, as well as the inter-systemic relationships between these.
3. Theories indicating the role of communication as both reflecting and recreating/transforming social structures, for example, relating to Bhaskar's contention that society is both the condition and product of human agency (1979:43–44) and that humans create not only social products, but also the social conditions for their creation (1979:48).

The levels listed above represent the "layers" of complexity involved in the inquiry but not the order of discovery, which went backwards and forwards along the levels. Another type of layering is involved in the theory itself, as the complexity in systemic relations of various elements of composing (i.e. the mechanism which effects communication in written mode) was found to lie not only in the dynamic nature of composing processes but in their complex layering. More than one level of systemic operation appears to feature in written communication, each level involving both external and internal causal factors. Figure 3.2 suggests that different input into the system of communicative functions, as will be shown in more detail later on, is thought to result in the different modes. In composing, the communicative functions become adapted to suit the particular form communication takes in written mode.

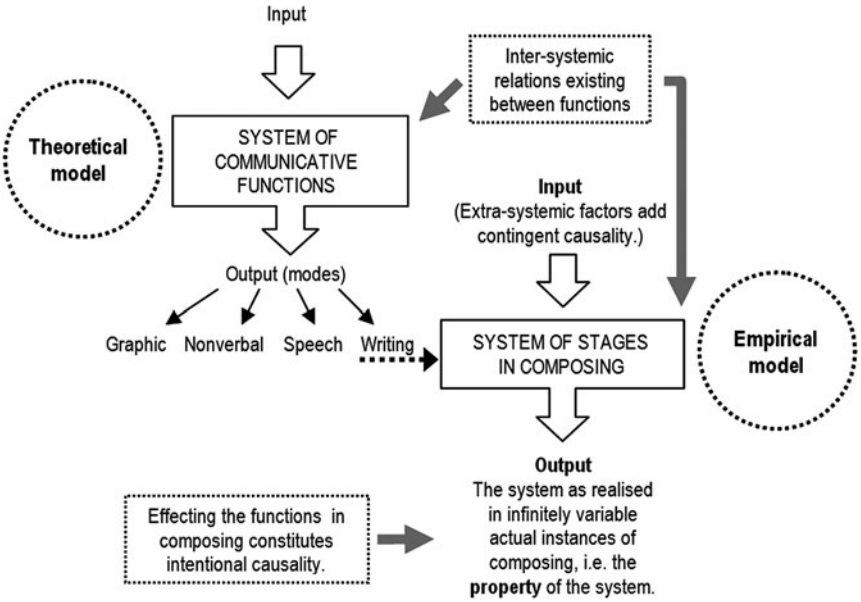

Fig. 3.2 The complex layers of systems involved in composing

Some of the causal factors involved in composing are as follows, as shown in Fig. 3.2. Contingent causal determination impacts on the composing system in the form of extra-systemic factors (e.g. time constraints, lack of resources, or lack of interest in the topic). Intentional causal determination (i.e. human agency) must be applied to complete each stage of composing. Thereafter, a domino-like set of further contingent factors is set in place as the output of each stage impacts on the next, as will be shown later (see Fig. 6.4 in Chapter 6). When one considers the meagre surface manifestations (i.e. instances of composing and text) of this complex, open-ended interplay of forces, the fact that many of the processes involved in composing are mental (and subconscious), and that the bulk of research into writing involves the analysis of texts, it is little wonder that composing has been considered too complex and idiosyncratic to categorise (Raimes 1985, Spack 1984).

3.11 Cycles of Modelling Involved

As will be shown in subsequent chapters, Franck's modelling process was followed to arrive finally at a theoretical model of composing. The theoretical model could be seen to explain and underpin the *Stages of the writing process* (i.e. the pedagogical version of the empirical model) which could then used as the basis for the design of the writing tutor program, as it was now underpinned by a model depicting the

systemic inter-relationships of communicative functions (i.e. the *stages* had been confirmed: further modifications could be added later). The writing tutor program, was in a sense a continuation of the modelling process (see Fig. 3.3), as the educational artefact needed to be based on a theory which had "explanatory power" in making sense of best practice. The original empirical model was developed in masters research, of which a retrospective overview is given in some detail in order to show its relevance to the present study. It must be remembered, though, that, as with composing, modelling is a complex recursive process which loops back constantly to correct or adjust versions formulated at earlier stages, and that some key stages are achieved almost instantaneously in what at the time seems a gestalt, and can only be "unpacked" later in retrospect (if at all, in the case of subconscious processing). For example, in my masters I was grappling to complete some of the modelling stages all at once, although the account in the thesis roughly followed the order given by Franck – a case of converting rope logic into chain logic.

In Fig. 3.3 an attempt has been made to illustrate the complex recursive modelling process, looping back in stages, and to indicate which part of the modelling process fell within my masters research and which within my doctorate. Future areas of model development, running parallel now with artefact development, are also indicated. While the cycles in Fig. 3.3 are represented in roughly chronological sequence, there was some overlap in the actual research, as already mentioned. The processes in the repeating cycles are also not exact mirror images: in the first cycle the proto-functions were not validated as a theoretical model, nor were they envisaged as constituting such (they were represented in the initial empirical model as underlying functions, though). In the last cycle (still to be completed) the emphasis was on the model-as-artefact, and any future adjustments are likely to devolve around its use in (and possible adaptation for) composing in various different contexts. A more detailed account of the cycles illustrated in Fig. 3.3 follows.

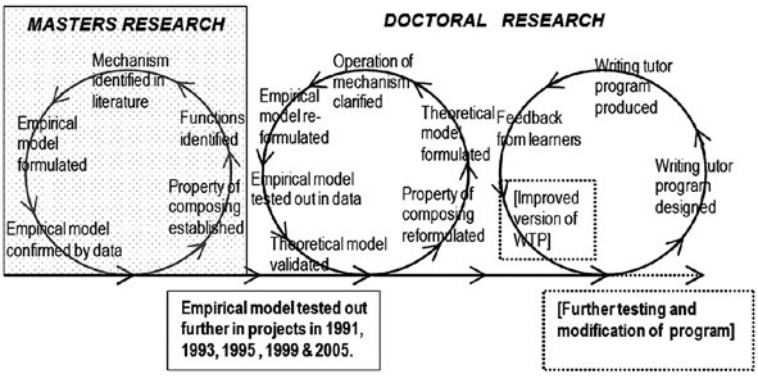

Fig. 3.3 The complex recursive process involved in modelling composing

3.11.1 First Cycle of Modelling (Masters Research)

1. The *property* of the social system was established by the literature to be an interaction by proxy mediated by the written text and occurring in a complex series of recursive stages.
2. The *functions* were identified as data-gathering, idea generation, idea organising, editing and evaluating. They did not as yet constitute a theoretical model, as the nature of the functions and systemic relations between these remained implicit. However they could be considered to be a "proto-law" or "proto-theory" (i.e. an initial hypothesis leading to the development of a theory).
3. The *mechanism* which achieves the system's property (i.e. a complex process by proxy carried out in recursive stages) was identified as the system made up out of the composing strategies described in the literature. While known to be a means of effecting composing, it was not formally identified as a mechanism.
4. An *empirical model* of composing (the "user's model" of composing) was formulated in a tertiary teaching context. The user's model of composing was part description and part advice to the learner writer, in effect a "pedagogical model".
5. A simplified version for secondary school use was *tested out* and the stages identified in actual student composing (i.e. six students writing typical English compositions).

(continued in doctoral research)
Subsequent *testing out* of the empirical model in video protocol analyses and coaching suggested that the social element (involving mainly – but not only – academic requirements) is a key issue in academic writing throughout all stages of composing, but more so in Stages 1 and 4 (and to some extent, 3) when students are preparing to write, and while they are editing their texts to fit in with social norms. (This was later explained by distinguishing between the social function in composing – in Stage 4 – and social features which were input into the system, which affected all of the stages.)

A *theoretical underpinning* was sought for the empirical model, and, working back from the first empirical model, the contextual, ideational, interactive, social and reflexive *aspects of communication* were seen to be implicit in the empirical model, but it was not known why these should be significant, or what their exact nature was.

3.11.2 Second Cycle of Modelling

1. The *property* was re-conceptualised as communication in written mode.
2. It was found that the *theoretical model* of composing was a system of the functions which need to be carried out for effective *communication* to take place, and which had became adapted in written mode (the adaptation to some extent masking their communicative aspect). The system comprised the contextual,

ideational, interactive, social and reflexive functions (i.e. the "aspects" of communication identified earlier in fact comprised a *system of functions*). The inter-systemic relations between the functions could now be hypothesised, as well as the possible nature of the input which might result in the various communication modes and genres.
3. The *mechanism* (i.e. composing) which achieves the system's property (i.e. communication in written mode) was clarified with reference to both the functions and the actual operation of composing in the many instances of composing observed in various projects.
4. A second, more analytical version of the *empirical model of composing* was formulated, the earlier pedagogical version being retained for educational purposes, for which it had already proved highly effective (the term "analytical" will be used to distinguish between the second empirical model and the first, as the former provides the basis for a more precise analysis of actual instances of composing).
5. The reformulated empirical model was *tested out* in a further round of video composing protocols to see whether the mechanism identified could be established to operate in actual instances of composing.
6. The theoretical model was *validated* by being tested against the empirical model.
7. The theoretical model of communicative functions was considered to have the potential to constitute a generalizable communication *principle* in terms of its hypothesized use in informing the various modes, and which could be applied in other areas (e.g. educational design), as exemplified by its actual use in effective mixed-mode course design (Pratt 2005b, 2007a).

3.11.3 Third Cycle of Modelling

The use of the empirical model as the basis for a computer program could in itself be considered a new round of modelling, in which the first empirical model (the user's model) was *reformulated* in the form of a help menu, and was *tested* out further by obtaining learner response to the program (as well be tested out further in academic contexts). At this stage, however, the model is being tested out as a pedagogical tool *informed* by theory rather than as a theory itself. Subsequent findings may still feed back into theory, however, as might the application of the principle to learning and research processes, as well as my current endeavour to establish whether the theoretical model might provide the basis for a generalizable principle of interactive causality (see Conclusion).

The modelling process is unfolded in subsequent chapters as follows:

Chapter 4 deals with the first cycle of modelling, with a detailed retrospective account of the formulation of the first empirical model of composing (i.e. the "user's model"), and a summary of the findings when it was tested out. While much of this chapter is derived from my masters research, it is dealt with retrospectively from a critical realist perspective and in the light of Franck's modelling process, and

achieves a very different focus and scope, while at the same time clarifying the nature of the user's model.

Chapter 5 deals with the further testing out of the first empirical model in a series of video protocol analyses, and shows how this contributed to building up a picture of actual academic writing in the disciplines, as well as the implications of this for subsequent modelling.

Chapter 6 deals with the second cycle of modelling and the formulation of the theoretical model underpinning the empirical model, the model of communicative functions. The chapter suggests how/why the communicative functions are masked in written mode, at the same time offering a hypothesis as to how the various modes and genres can be viewed as the result of different input in the system of communicative functions. The reformulated empirical model of composing is described (i.e. as a research tool for analysing composing), as well as the correspondences between empirical/theoretical models, which pre-empts the validation of the theoretical model.

Chapter 7 deals with the results of testing out the "analytical" version of the empirical model in further instances of academic composing, completing the validation of the theoretical model.

Chapter 8 describes the application informed by the modelling process (i.e. the writing tutor program) and shows how key features of the models influenced software design.

3.12 Conclusion

It must be stressed that this is an account of not just a "realist approach", but a real enquiry: from the outset, I really did want to know why the user's model of composing appeared to work, and what its exact nature was. Was it a description, or was it just a handy rule-of-thumb device? What was the relation between the user's model of composing and the actual phenomenon of composing? What was composing? It irritated me that a process so – apparently – integral to intellectual development was so ill-defined, and that the field of written composition was so fraught with confusion, dissent, politics and in-fighting. I also genuinely wanted to create a writing tutor computer program which would replicate some of my own areas of teaching expertise in a creative, open-ended way, and would have continued to attempt to do so even if this had not become formalised as a doctoral research project. In a sense, this specific practical application (although there were, and will be, other applications) and the exigencies of completing the doctorate drove the theoretical enquiry to its conclusion. It must be remembered, though, that while the user's model was formulated in the context of my masters research, this current project did not start off as a formal research project, but as a personal initiative. Moreover, at the outset I had begun to doubt seriously the efficacy of formal research procedures in finding meaningful answers to real-life problems.

My faith was restored when I was introduced to an orientation which accepted the complex, tripartite nature of reality, and when I discovered a research methodology which reinforced the concept that reality is a complex interweaving of events, experiences and mental reflection, and which recommended detailed observation and intelligent thinking rather than merely deferring to received opinions. But while reality is incontrovertible, and methods are dictated by necessity, truth becomes what it is by virtue of personal endeavour. I would ask the reader, no matter what preconceptions they currently entertain about writing, or what orientation they favour, to suspend belief while I further present my case.

Chapter 4
The User's Model of Composing

4.1 Introduction

This chapter deals with the formulation of the first empirical model featuring in this study, the user's model of composing, working retrospectively with the findings of my masters research, but presenting the latter from within a critical realist orientation, and from within the frame provided by Franck's modelling process. The value of the masters study was to summarise key aspects of composing in a model which made them easily accessible to teachers and students, and provided them with a schematic which gave practical advice as to how composing could be carried out as effectively as possible. But the empirical model was not just rule-of-thumb: it was faithful enough to instances of real-life composing as to afford a means of analysis as well as a pedagogical intervention. As mentioned at the end of the previous chapter, in showing retrospectively the formulation of the empirical model, this chapter will deal with the property of the social system involved in composing, the identification of the functions involved in composing, as well as the mechanism which can be seen to achieve the system's properties, and the formulation of the empirical model depicting the operation of this mechanism, as tested out in actual instances of composing. The retrospective account given here is necessary in order to explain the modelling process satisfactorily, and, as mentioned in the previous chapter, is thought to achieve a very different focus and scope from that of my masters project, while at the same time answering questions raised as to the actual nature of the user's model.

4.2 The Property of the Social System

When Franck introduces the concept of the "property" of a social system, he is clearly referring to the phenomenon itself. The property is the manifestation of the social system, that is what we observe to happen (or can be established to happen) in the acting out of the social process. In formulating a theoretical model of a social process, the researcher attempts to identify a system of functions which need to be performed for that given social process to take place. This is the sense in which Franck's modelling process involves reverse engineering (de Callatäy

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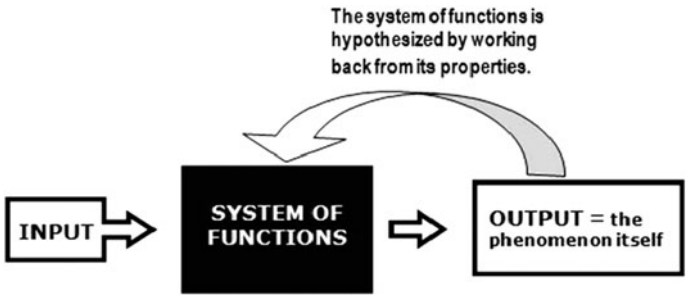

Fig. 4.1 The "black box" method involved in reverse engineering

2002:107–108), in that, given the output to a system, the researcher works backwards by a process of classical induction to generalize about the functions which are (apparently) being performed in the real-life manifestations of the actual process (see Fig. 4.1).

As applied in Biology or Medical Studies, the "black box" (reverse engineering) type of problem-solving might ascertain that, as blood enters the heart and exits in regular bursts, and as various muscles and valve-like structures observed in dissected hearts appear to operate as pumps, the "system of functions" involved in the operation of the heart is concerned with both pumping and regulation of the blood flow around the body. Different input (e.g. resting states, strenuous exercise, stress) might result in different output in terms of actual performance as measured by pulse rate, but the system remains constant: it is a mental abstraction (i.e. theory) which makes it possible to generalize about the operation of the heart. The identification of the system of functions performed by the heart has made it possible for physicians not only to heal the heart itself, but to use pacemakers for regulating its flow, and even to replicate the whole organ out of synthetic materials, that is a mechanism performing the same functions as the muscle and sinew of the human heart. As de Callatäy points out:

> The aim of an engineer studying a system by *reverse engineering* is to find machines functionally equivalent to this system (de Callatäy 1997). If an artificial heart is grafted to a patient, this heart is an engineering model of the natural heart. This heart uses different pumping principles. It does not self-repair nor adapts its size to the efforts required as a natural organ does, and it will not self-reproduce. It requires anticoagulants in the blood. It performs anyway the main function (2002:108).

Is it possible – or appropriate – to use reverse engineering to arrive at, by induction, systems of social functions in the same way as is possible with biological or mechanical functions? It is the contention of this study that this is so, even with a process as inchoate, open-ended and seemingly personal (and idiosyncratic) as composing. Both Bhaskar and Franck suggest that the social sciences can benefit from the kinds of rigorous modelling procedures which are routinely applied in the natural sciences. It must be stressed, however, that these procedures are applied in this study in a qualitative way which has nothing in common with the surface measurements of a positivist approach.

This is because one cannot "measure" composing: but the researcher can investigate composing processes by assisting participant recall with the help of models which focus on and make sense of surface manifestations. Earlier protocols paid lip service to the inflated status afforded to positivist research by measuring the amount of time spent on various surface activities and/or the number of repetitions. This may suggest, for example, that ESL students are inclined to spend more time on revisions, but unless the commonalities of composing are first established so that one can gauge the significance of surface variations in a given case with reference to the stated intentions of the actual writers, such statistics cannot form the basis for meaningful generalizations about composing. Moreover, writing serves a social function, and while social functions can be generalized and hypothesised about in the same way as biological or natural functions, they are infinitely more complex, and driven by unpredictable human agency, so that at best, only stochastic algorithms can be formulated.

4.3 The Phenomenon of Composing

Viewed from the perspective of the writer, as noted by observers and reconstructed in think-aloud and video protocols, composing is an individual act, a solitary process involving a dialogue by proxy with the intended reader, in which the writer engages in a complex series of recursive stages. The following points about composing were established before the formulation of the first empirical model, and can be seen (in retrospect) to contain a mixture of property, functions and mechanism:

- While it is manifested as a solitary procedure, composing is a social act (Szwed 1981), and is a "provoked activity . . . located in ongoing social life" (Widdowson 1984:6)
- Composing is part of a delayed interaction "in that the reader at a later stage converts the product of writing text, into discourse" [i.e. *interaction*] (Widdowson 1984:51).
- Composing is a complex, recursive process requiring redrafting (Emig 1971:57, Hairston 1982:85, Raimes 1985:229–230, Spack 1984:650–651, Zamel 1985:95, 1987:698, 1992:463).
- Composing is infinitely flexible (Bereiter & Scardamalia 1981, Flower & Hayes 1981, Raimes 1985).
- Composing, while flexible, occurs in stages (Candlin 1981:181, Emig 1971:33, Shaughnessy 1977:81, Zamel 1985:96), some of which had already been identified as follows: prewriting, drafting and judging.
- Composing involves inner dialogues (Daiute 1983:137, Widdowson 1984:75), including an idea-generating dialogue and a reader-accommodating dialogue.
- The ideas which writers access while composing are "spawned" in data (Shaughnessy 1977:245).
- Composing involves cognitive processes and is a kind of thinking: the logical as well as the creative faculties of the brain are involved (Britton 1981:16).

- Composing has the capacity to generate new ideas (Britton 1981:16, Widdowson 1984:75).
- Expressive writing plays a key role in composing (Britton 1981:16–18).

Also available at the time of the formulation of the first empirical model were generalizations about the composing procedures used by experienced writers as opposed to those used by inexperienced writers, as summed up in Table 4.1, comprising a combination of points from Bereiter and Scardamalia (1981), Daiute (1983) and Raimes (1985). As mentioned earlier, the fact that some composing behaviours are categorised as "good" and others as "bad" need not necessarily make these observations suspect, as competent writers are presumably fulfilling the prerequisites for effective communication in written mode. Composing is a form of communication, or at least part of the process. This is why, to make sense of composing behaviour, it was necessary to formulate a theoretical model of communicative functions before the property of composing and the mechanisms could be satisfactorily identified.

To pre-empt the formulation of the theoretical model produced in this study, whatever the definition of communication used (e.g. stages, negotiating of meaning,

Table 4.1 The differences between experienced and inexperienced writers

	Experienced writers. . .	**Inexperienced writers**. . .
1.	. . .are generally more flexible in their approach.	. . .are generally less flexible in their approach.
2.	. . .consider their purpose and audience.	. . .do not consider their purpose and audience.
3.	. . .consult their own background knowledge.	. . .do not consult their own background knowledge.
4.	. . .let ideas incubate.	. . .do not let ideas incubate.
5.	. . .spend some time planning.	. . .take less time to plan.
6.	. . .are flexible in their planning.	. . .are less flexible in their planning.
7.	. . .write first, revise later.	. . .are prematurely concerned with accuracy.
8.	. . .read back over what they have written to keep in touch with their own ideas.	. . .scan large sections less often and then concentrate on surface areas rather than ideas.
9.	. . .rework ideas until they are satisfied with them.	. . .seldom rework ideas once they are written down.
10.	. . .have developed an internal dialogue between writer and imagined reader.	. . .have not developed internal dialogues.
11.	. . .can switch to reader roles in editing their own work.	. . .find it hard to switch to reader roles in editing their own work.
12.	. . .have developed strategies to relieve pressure on short-term memory.	. . .have not developed these strategies.
13.	. . .focus on the different stages of writing one by one.	. . .try to carry out all stages of the writing process at once.
14.	. . .can evaluate their own progress.	. . .cannot evaluate their own progress.

co-creation of reality), it is generally agreed there is a continuum ranging from absolute failure to communicate, through partial success, to near-perfect sharing of meaning. As mentioned before, communication in written mode is a social process subject to the whims of individual participants, as well as being subject to unforeseeable (and often unseen) complicating circumstances provided by the complex dynamic forces of the domain of real, including the complications provided by social structures. Composing is then a social act (Pratt 1987:17–18), manifesting as a solitary act only because it represents half of a delayed interaction, in which the sender is separated spatially and temporally from the intended receiver. The fact that it is an open-ended social process means that a formula for near-perfect achievement of communication in written mode cannot be provided, any more than it can for face-to-face communication, as there is always an unpredictable response from the intended reader, including refusal to participate or cooperate, equivocation, or inability to understand. An advantage of immediate communication is that its effectiveness can be regulated by the opportunity for immediate feedback, so that meaning can be re-negotiated rapidly if necessary, which is not the case in distanced communication mediated by writing. In the case of composing, the best that can be offered is to suggest optimum conditions for successful communication. Reinterpreted in this light, "good" writing behaviour suggests that the prerequisites for successful communication are being fulfilled. Successful communication cannot be guaranteed, however, and a model based on such behaviour can constitute no more than a stochastic algorithm (Pratt 2005a).

4.3.1 The "Property of the System" Involved in Composing

As explained above, a description of the phenomenon itself would constitute the "property of the system" involved in composing. The literature revealed that composing was described generally as an interaction by proxy mediated by the written text and usually occurring in a complex series of recursive stages, the view which informed the formulation of the first empirical model composing. Not all of the features of composing identified above are included in this definition, as they were considered to represent the working out of this process in the actual model. In retrospect, they jointly constitute the mechanism which effects composing.

4.3.2 The Functions Performed in Composing

Initially preparatory, expressive, enabling, corrective and evaluative functions were identified in the literature, but not clearly, and not in those exact terms (the vagueness of "prewriting" is summed up in "preparatory"). Eventually the functions crystallised as follows: data-gathering, idea generation, idea organising, editing and evaluating (the choice of "data-gathering" unfortunately excluded the extremely important preparatory function of considering purpose and audience, but this was retained as advice in the user's model). It must be remembered that in the first round of modelling I was attempting to identify/formulate the stages involved

in composing, and not a system of functions per se. The following stages had been identified: Prewriting, Composing, Editing and Judging (Pratt 1987:28). "Composing" was subdivided further into "Draft writing" and "Major editing" to accommodate Widdowson's "focal" and "enabling" acts. Yet the word "function" features repeatedly in my account of the putative stages of composing and what needs to be achieved during each stage, as emphasised below:

> Each stage can be seen to perform a necessary *function* in the actual process of writing, and each stage has a distinct focus, different from that of other stages (1987:35).
>
> Thus the description which informs the suggested target behaviours takes account of both creative and logical *functions*. The advice offered to the learner also takes account of both creative and logical *functions*: "suggest" and "jot down" describe unconscious, expressive acts, whereas "structure" and "order" describe conscious, logical, reflective acts (1987:37).
>
> The advice focuses on "checking" rather than correcting, as correcting is seen as a teacher *function* (1987:34).
>
> The reason for this *[i.e. adding a fifth stage]* was that all students evinced the need for an evaluative response from me, and I realized that they would not become independent adult authors until they learned to internalize and perform the evaluative *function* for themselves (1987:34).
>
> The inclusion of "Evaluation" in the stages makes it clear that it is an important writer *function*, and not just the prerogative of the teacher. The allocation of the evaluative *function* to the writer means that he is made aware that he is in control of the process: he is under no obligation to submit a substandard piece of writing (1987:38).

In the actual description of the stages of the initial empirical model, however, I referred to the "underlying process" of each stage (1987:36–39) as the data-gathering, idea generation, idea-organisation/structuring, editing and evaluating processes. The underlying processes, while they can be observed to occur in actual instances of composing, had to be simplified in the user's model so that learner writers could easily understand the overview of composing it provided.

One of the problems experienced (then and later) with generalizing about the system of functions underpinning composing was that the more specifically one phrases the composing functions to fit actual instances of composing, the more their communicative force is masked by modal peculiarities. As this account proceeds, I will suggest that in composing the communicative functions, paradoxically, are both masked and exposed by the idiosyncratic nature of communication in written mode. They are exposed by being separated into stages as a result of the distancing involved in communication, and masked because the etiolated shape into which the interaction is contorted forces the writer into exigencies which override the more spontaneous "give-and take" of immediate communication. This notion will be taken up again later when the final formulation of the model of communicative functions is discussed. To sum up: it is unlikely that these communicative functions would have been identified at all had the focus not been on *written* communication, where the functions had become separated in practice, but the functions had mutated to such an extent in their migration to written mode that it was difficult to envisage them as general communicative functions.

4.3.3 The Mechanism Involved in Composing

The mechanism which achieves the system's properties, that is the mechanism involved in composing, can be seen to comprise the actual stages of the writing process (Fig. 4.2), as suggested in my initial formulation of the user's model: "each stage can be seen to perform a necessary *function* in the actual process of writing" (1987:35, my emphasis). The stages were as follows:

Stage 1: Prewriting (focus: data gathering)
Stage 2: Draft writing (focus: idea generation)
Stage 3: Major editing (focus: idea organisation/structuring)
Stage 4: Minor editing and polishing (focus: editing)
Stage 5: Evaluation (focus: evaluating).

However, while the names of four stages describe an actual activity or process (e.g. draft writing, evaluation), "prewriting" does not (and although "data-gathering" does, it does not have the sense of contextualising which is so important at this

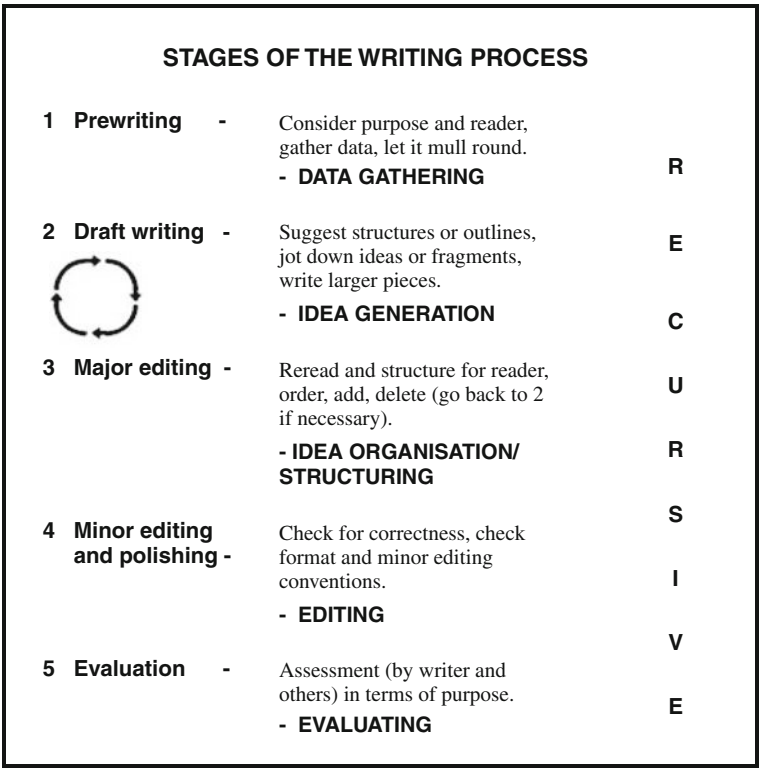

Fig. 4.2 The user's model of composing: *Stages of the writing process*

stage). Moreover the other "activities" are generalized and vague, so that while the stages could be said to constitute a mechanism in the sense that they carry out the functions necessary for composing to take place, they needed to be grounded in real-life events to be confirmed as the mechanism operating in composing. These activities (some cognitive, some unconscious) were pre-empted from the literature (i.e. in points 1–10 above, and the strategies of experienced writers) and my own observations of student writers at secondary level, and later observed in the actual composing behaviour of over fifty student writers as reconstructed in video protocol analyses. The tentative identification of the composing mechanism as represented in the first empirical model pre-dated the video protocol analyses, however, and was based on the literature (including accounts of think-aloud protocols) and observations during my own teaching. The mechanism is best illustrated with reference to the empirical model itself, described below.

4.4 The Empirical Model of Composing

4.4.1 Background to the Formulation of the Model

The user's model of composing, the earliest version of the empirical model, was intended as a simplified conceptual framework of writing. It was formulated after 5 weeks' intensive preliminary reading for my masters degree (Pratt 1987), and was based mainly on research and literature connected with the process approach (see Appendix A for an overview of the process approach). The concept of a user's model was derived from Widdowson's suggestion that language models drawn *from the perspective of the language learner* might be more helpful for language learning than models derived from pure linguistics (1984:9). The user's model of composing was based on a body of research into composing processes, but was expressed in ways geared to make it correspond with the writer's experience of composing so that it might be accessible to the learner writer. I had come across repeated references to the stages of composing in literature on the process approach, and had hoped to find a comprehensive account of the stages which would assist me in conferencing (i.e. informal feedback) sessions with my students. In particular, I hoped it would suggest what types of feedback might be useful at the different stages of composing academic essays. A full account was not forthcoming in the literature at that time, however, and, as my scheduled student interviews were drawing uncomfortably close, I was obliged to construct my own model.

The resulting framework depicts composing as a series of five recursive stages, Prewriting, Draft writing, Major editing and structuring, Minor editing and polishing, and Evaluation. The fact that it took the form of a series of stages was influenced by Shaughnessy's suggestion that learner writers "need to experience the stages involved in composing in a structured, orderly way" (1977:81). The *Stages of the writing process* was intended to assist me to give helpful feedback to some of the first-year students I was tutoring as graduate assistant in 1986. However, as it gave students an easily grasped meta-view of composing, I communicated it directly to

the students instead, which appeared to give them more authority and control not only when discussing their written texts with me, but also when composing on their own, when I was not present to coach or advise them. In retrospect it could be seen to constitute a type of re-usable learning object (Rowley 1998, Marsh 2003) which helped me to avoid the drudgery of repeating the same advice and guidance over and over again to students. This left me with more quality time for feedback to students on their drafts and discussion of specific writing problems.

4.4.2 The Concept of a "User's Model"

As Widdowson's notion of a "user's model" of language learning (1984) is a type of empirical (i.e. practical) model, and the *Stages of the writing process* model was formulated on the basis of Widdowson's description, a brief overview of this concept (apparently not developed further by Widdowson) will be given. Widdowson (1984) suggested that language learners need to be given models of language use which reflect their own experience, which he termed "user's models", rather than abstract models derived from linguistic theory. According to Widdowson, a user's model would:

- have as its starting point its need and purpose (1984:27),
- have some validity as a description of language use (1984:2),
- be "consumer based" (1984:26), that is geared to the needs of the students and teachers for which it was designed,
- be congruent with the language user's attitude and knowledge (1984:26),
- take into account the user's creative as well as rational cognitive functions (1984:26),
- reflect the principles of the discipline in which it is set (1984:26),
- be set in a cultural context and reflect language use in this context (1984:26),
- reflect the sets of beliefs and values of that culture, as well as the ways in which these are expressed (1984:26–27).

While it would be partly descriptive, the user's model would have relevance for language teaching and would be geared towards a learner-centred approach to language teaching (1984:20).

The concept of the user's model suggested an effective way to concentrate the findings of various process teachers and researchers and make these immediately accessible to the teacher (1987:14), not only myself, but other teachers (I was HOD of English at a secondary school at the time). This was congruent with the brief of my masters research, which was to investigate the process approach with the intention of discovering effective teacher interventions (1987:1). However, since the user's model of writing would describe composing processes from the point of view of the writer, one form of teacher intervention would be to communicate the model directly to the learner writer (1987:15), which would make the user's model truly "participant-oriented" (Widdowson 1984:20).

4.4.3 The "Stages of the Writing Process" Model

The user's model formulated in 1986, *Stages of the writing process*, matched most of Widdowson's specifications for a user's model. It had some validity as a description of language use, as it was based on researcher/teacher observations of the composing of experienced student and professional writers. The model was consumer based, in the sense that it was designed to explain the stages of composing to both the teacher and the students. It was congruent with the learner's experience in that it went some way towards explaining the processes in which they were involved as they composed a composition or essay. It also took into account the writer's creative and logical functioning by separating idea generation from structuring, thus making it less likely that student composers would block their own production of text. The last three criteria were not met, however, as I was looking for general aspects of composing which could be applied in any discipline or cultural context: contextualising the model would need to be dealt with in an ad hoc way by individual teachers and student writers. In retrospect, as the last three criteria are entirely dependent on local conditions, they need to be considered in the light of "input" into the composing system: they are therefore represented as contingent factors in the reformulated "analytical" empirical model (see Fig. 6.4 in Chapter 6).

My intention in constructing a user's model (1987:16) was to arrive at a description of the writing process from the writer's perspective, which:

- identified underlying processes,
- gave clear direction to the learner writer as to effective composing strategies,
- was accessible to the learner writer, that is, was framed briefly and simply in easily understood terms (the target groups were adolescents and young adults), and
- provided the teacher with a basis for effective composition instruction.

The user's model of composing needed to accommodate the features of composing (see points 1–10) which had already been identified in the literature, and also needed to account for the differences observed in the behaviour of experienced and inexperienced writers, as shown in Table 4.1.

The resulting model described composing as an infinitely flexible permutation and combination of five recurring stages, with each stage having its own purpose and focus, as shown in Fig. 4.2. The stages were as follows: Prewriting (focus: data gathering), Draft writing (focus: idea generation), Major editing (focus: idea organisation/structuring), Minor editing and polishing (focus: editing) and Evaluation (focus: evaluating). While each stage was shown as having a distinct purpose and focus, and while the writer was seen as starting at stage one (Prewriting) and working through to stage five (Evaluation), the writer could go back to any stage any number of times in order to complete a piece of writing (the recursive factor in composing). In particular, the shuttling between stages two and three (Draft writing and Major editing), as shown by the drawing of a circular vortex, appeared to constitute a powerful means of generating new ideas (Widdowson 1984:75).

(a) *Complexity and recursion*
The model represented composing as an interrelated system of stages, and attempted to represent the complex interplay of both cognitive and procedural processes. Composing was represented as being recursive, in the sense that the writer could go back to any stage any number of times until the piece was completed to his/her satisfaction.

(b) *Flexibility*
The fact that the model provided for the writer going back to any stage any number of times represented composing as infinitely flexible. The user's model also allowed for the eventuality that some one else (e.g. a publisher or critic) and not the writer, might perform some of the stages, such as editing or evaluation.

(c) *Stages*
The model showed composing as a series of stages, each with its own purpose and focus. Prewriting, drafting and judging (i.e. as suggested by the literature) were included as stages, but a distinction was made between Major editing, where the text is structured or organised to make it accessible to the reader, and Minor editing and polishing, which focuses on surface issues such as correctness and conventions.

(d) *Inner dialogues*
Inner dialogues, while explained by the user's model, could not be accommodated within the model itself (hence the dashed line enclosing the label "Dialogues" in Fig. 4.3). They were, however, included in a separate model, complementary to the user's model (see Table 4.2). Two different kinds of dialogues could be assumed from Widdowson's account of the focal and enabling acts performed by the writer (1984:49): a focal dialogue in Stage 1, generating ideas, and an enabling dialogue in Stage 2, rendering these ideas accessible to the intended reader. The existence of additional inner dialogues were hypothesised during the Prewriting, Minor editing and Evaluation stages of composing, with the notion that these dialogues would be closely linked to the focus of the stage they accompanied.

(e) *The source of ideas*
Shaughnessy's notion that "ideas are spawned in data" (1977:245) defined the focus of the Prewriting stage. If ideas are generated from data, then a key feature of the Prewriting stage must be data gathering, as it is a necessary precondition for the generation of ideas. However, the model not only accounted for the derivation of ideas, but also went some way towards accounting for the actual ways in which ideas are generated, as will be shown in the next three sections below.

(f) *The role of expressive writing*
Expressive writing played a central part in the user's model in that it was thought to generate the raw materials (the ideas) out of which the finished piece of writing was crafted (see Lindfors 1986:3). The raw materials thus generated could then be reworked, that is elaborated and refined, in successive stages, namely Major editing, Minor editing and polishing, and Evaluation.

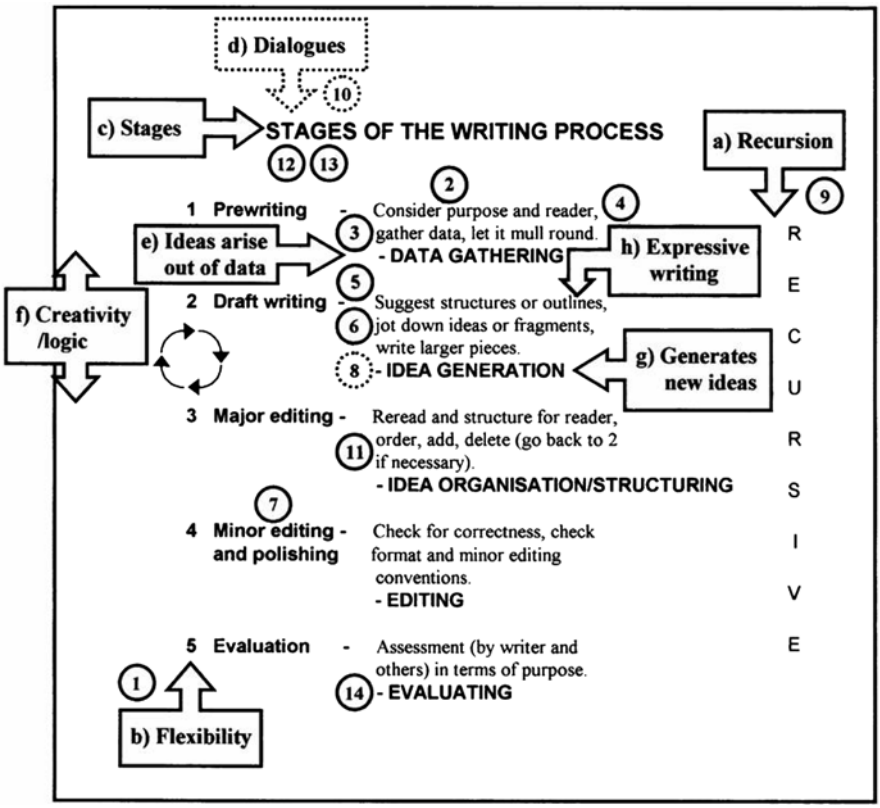

Fig. 4.3 Key features of composing incorporated in the user's model

Table 4.2 Complementary model of reader roles

Reader role	Inner dialogue function	Stage of writing
1. Deliberate	Question how it can be done.	Prewriting
2. Collaborate	Respond to ideas: creative discussion.	Draft writing
3. Elaborate	Analyse for meaning, argue, demand elaboration or textual detail.	Major Editing
4. Denigrate	Nitpick, criticise, tidy up: corrective criticism.	Minor Editing
5. Evaluate	Objective appraisal.	Evaluation

(g) *The logical and creative faculties of the brain*

The literature suggested that expressive writing, often messy, disorganised and unconnected, was associated with the creative faculty of the brain, the so-called "right brain" (Blakeslee 1980), which has the capacity to generate ideas but not to organise or structure them coherently. The capacity to organise ideas could be

seen to depend on the logical faculty of the brain, or "left brain". This logical faculty was not seen as operating simultaneously with the creative faculty but in rapid alternation with it.

(h) *The capacity to generate new ideas*
For this reason, the ordering function of the logical faculty or left brain was depicted as operating in a separate stage of composing, that is in the major editing stage. While ideas might arise out of data and be released in expressive writing, further new ideas would be generated by the interplay between the creative and logical mental functioning, or "left and right brain in intimate collaboration" (Britton 1981). As Blakeslee points out, "the synergistic relationship between the left and right brains is the real basis of creativity" (1980). The creative energy generated by the interplay between left and right brain was indicated in the diagram of the user's model by the pictogram of the vortex between stages two and three. The two different types of dialogue identified by Widdowson are associated with each type of mental functioning, the focal dialogue, with the creative functioning of the brain in the generation of ideas, and the enabling dialogue, in the logical functioning of the brain during the editing of these ideas. Both types of dialogue appeared to assist with the generation of ideas: the focal type dialogue would cause the writer to respond with increasing excitement to his/her own ideas, while the enabling type dialogue would prompt further ideas or elaborations on a theme in response to an imagined reader.

(i) *The behaviour of experienced writers*
As indicated in Fig. 4.3, the user's model incorporated the behaviour of experienced writers. The fact that the writer can go back any number of times to any stage accounted for the flexibility (1) of experienced writers. That experienced writers consider their purpose and audience (2) was included in the prewriting stage. While consulting one's own background knowledge (3) was not included specifically in the prewriting stage, it could be seen as being included in gathering data, which is the main focus of the prewriting stage, as gathering data includes consulting one's own background knowledge. To express the idea of letting ideas incubate (4), "let it (data) mull round" was used. The fact that experienced writers spend some time planning (5) was reflected in the first two lines of the Draft writing stage: "Suggest structures or outlines" and "jot down ideas or fragments". Giving alternative forms of planning was meant to indicate that experienced writers are flexible in their planning (6). That experienced writers write first and revise later was reflected in leaving minor editing and polishing until a much later stage of composing (7).

That they read back over what they have written to keep in touch with their own ideas (8) was not included in the user's model itself but in the complementary model of reader roles (see Stage 2, Collaborate, in Table 4.2). The idea that experienced writers rework ideas until they are satisfied with them (9) was reflected in the recursive nature of composing, which offers an infinite number of permutations for redrafting and revision. The internal dialogues between writer and imagined reader (10) in which experienced writers were found to engage were reflected in the associated model of reader roles (Table 4.2), which showed the reader roles which experienced writers might assume in editing their own work (11). One of the key

strategies available to experienced writers to relieve pressure on short-term memory (12) is the strategy of focusing on the different stages of writing one by one (13). Stage five, Evaluation, was included to show that experienced writers can evaluate their own progress (14): they are also more likely to be able to evaluate their own texts. The fact that evaluation appears last in succession does not mean that both the writer's performance and emerging texts cannot be monitored by the writer or a teacher at any time during composing. It does suggest, however, that it is not possible to evaluate one's performance or piece of writing until the latter is more or less complete (this does not rule out the possibility of rejecting the finished text and starting again).

Not only did the first empirical model explain the composing procedures of experienced writers: it also provided a rationale for writer's block in terms of the interference provided by the focus of a stage other than the one with which the writer is currently involved (see Pratt 1987:139–142 for an account of the various types of block involved, which have been included in the writing tutor program).

4.5 Application of the First Empirical Model

The model showing the stages of composing was simplified for use at secondary level and tested out on six students to see what changes, if any, took place in the students' perceptions about writing, written texts and actual composing procedures (Pratt 1987, 1990). The results seemed to indicate that marked changes in writing procedure could be brought about merely by communicating the model to students, particularly students whose composing strategies were rudimentary or ineffectual (more proficient writers tended to make small adjustments merely). The model was used as the basis for a secondary school instructional programme in written composition at the school where I was HOD of English, and I have continued to use the model in various ways at secondary and tertiary level (diploma and post-graduate) up until the present. At the time of constructing the model (early in 1986), I could see its potential for providing the basis of a computer program which would assist students to develop effective composing strategies, and had wanted to continue with doctoral research along those lines, but did not: fortunately, in retrospect, because a number of issues needed to be dealt with first.

4.5.1 Interfacing Composition Software with Word Processors

Firstly, technology had not reached the stage where programs could easily be interfaced with commercial word processors, which meant that a special word processor would have had to have been programmed for learner writers to use along with the composition program. This was not feasible for a number of reasons, the chief of these being that students would have had to learn to use a new word processor (and probably not a very advanced one, either) as well as the composition program, and that the cost of programming such a package was well beyond my means.

4.5.2 The Issue of Social Context

Next, there were some key issues which the model did not deal with, particularly in contextualising composing or considering the social context in which composing took place. In particular, the user's model did not directly address the issue of academic requirements or how they might impact on composing, which Widdowson's definition of a user's model can be seen to require. The model appears to posit a universal process, "the writing process", a concept which a number of writers in composition took issue with, claiming that writing was too idiosyncratic a process for the discovery of universals (Lynn 1987, Raimes 1985, Spack 1984). This is because observers were not easily able to separate the variables operating within the system from the variables operating outside and impacting on it. One cannot usually arrive at an empirical model of a social system from observation alone because key elements of the social system are masked by too much detail (see Franck 2002:229–231, 285–294, particularly his comment in 2002:288, "It is not phenomena *in all their complexity* which are the object of scientific investigation", my emphasis).

4.5.3 The Lack of a Theoretical Underpinning to the Model

Finally, there was no satisfactory theoretical explanation as to why the model worked, or why it should take that particular form, or, for that matter, exactly what it was: it seemed to be partly descriptive, yet partly rule-of-thumb guidelines. What really intrigued me was whether there was a "deep structure" underpinning the form it took which might account for its effectiveness in the composition programmes in which it had been applied: even in the early stages of my inquiry I thought that the model's apparent effectiveness might be because it reflected something inherent in the nature of written communication itself. While subsequent teaching and further research projects over the next 13 years (1987–2000) gradually uncovered layers of explanation, I did not directly address the issue of what kind of deep structure(s) might underpin the user's model until 2000, when I undertook the task of translating the user's model into a computerised writing tutor as a doctoral research project, which necessitated an in-depth investigation into the exact nature of the user's model. It was only when I was considering writing as an asynchronous interaction in the early stages of developing the writing tutor that I realised that the user's model not only accommodates the fact that writing is a delayed interaction, but exploits it by giving writers the option of focusing on key aspects of communication separately rather than simultaneously, and, in the process, facilitating the process of crafting whereby the text becomes a social artefact. The fact that key aspects of communication become separated in written interactions is, of course, a feature of asynchronous written communications, as Nellhaus (1996) points out: I still had not worked out why and how they became separated at this stage, however.

4.6 The User's Model as a Description of Real Life Composing

In a section headed "The model and reality" (Pratt 1987:45) the relationship between the model and reality was touched on:

> It must be emphasized that neither the model nor the diagram in which it is set forth is meant as an actual literal description of the writing process as it occurs in reality. Although the model does contain many descriptive features, it is an abstraction and idealization of selected features of the writing process. This abstraction was formulated to help learners to understand the nature of the actual process and to give them concrete advice as to how to go about the process, step by step. In a sense, it is an attempt to provide them with a mental "schema" of the process of writing; the readings suggest that good writers already possess these "schemata", but that poor writers do not.

The above excerpt shows that the model was never intended to be an exact representation of composing but a schematic representation of its key features. The user's model has in fact already jumped ahead from describing the real-life composing mechanism by phrasing it in the form of advice to learner writers. Thus in one sense the model is not an ideal description of actual composing, because it is limited (i.e. by space constraints) to certain strategies. To include a wider range of strategies used, the model would need to be phrased in more general terms, as in the revised empirical model described in Chapter 6.

However, the identification of stages and the focus of each stage did go some way towards describing what occurred in actual composing, which is why the stages of the model could be used to provide a structure for both the video protocol analyses and the resulting graphs, and why the user's model proved successful in a variety of teaching and tutoring contexts. However, the first version of the empirical model, the user's model, is a simplified structure showing key points, and not a depiction of real-life events: the divisions in the model are not as clear-cut in real life, and there is considerable overlap. The behaviour of writers in actual instances of composing may not match the schema provided by the user's model. This is because the *Stages of the writing process* is in fact a systemic model, where input into the whole system impacts on output (output being specific instances of composing – see Fig. 4.2 in Chapter 4). Moreover, the inter-systemic relations between stages means that the extent to which the various functions are performed successfully at each stage impacts on the potential for successful performance of subsequent stages (as shown in Fig. 6.4 in Chapter 6). If writing is not successfully contextualised, which is the case with much school writing or lower-level tertiary writing, or if composing takes place within a transmission mode of education, the social context will very likely prove insufficient to drive the whole revision process or to require any degree of recursion.

There is also a strong possibility that not all of our student writers write as in the user's model because it contains "literate" strategies, and they are using "oral" strategies. This is supported by Ong's suggestion that "many cultures and subcultures, even in a high-technology ambience, preserve much of the mindset of primary orality" (1982:11). Gee's comment on Ong's features of oral cultures also supports this possibility:

> Though Ong restricts these *features [of orality]* to primary rather than residually oral cultures, it is striking how similar they are to characterizations linguists have offered of *the differences between 'good' and 'bad' writers*, and sociologists have offered of the differences between the way black lower socioeconomic children and white middle-class children tell stories. . .(1990:55, my emphasis).

If the strategies contained in the empirical model are "literate" rather than as "culture-specific", then the model supplies a much needed resource for students coming from newly literate or illiterate communities in quickly and easily conceptualising effective literate strategies. In support of this, there was an example in the last round of video protocol analyses which showed how an isiZulu-speaking student who did not appear to distinguish between speech and writing responded very positively to the strategies offered in the writing tutor program.

To conclude the formulation of the first empirical model, it must be remembered that the composing process is no more static than any other social process. While I have attempted to track and document its current shape faithfully, in the next few years electronic media may rapidly change the shape of composing strategies in very much the same way that inventions such as the mobile phone have transformed communicative habits (including orthographic conventions) almost overnight. The translation of the model into a writing tutor program with advice for composing on computer in fact pre-empts this change and moves the model in the direction of further adaptation and change. While the theoretical model of composing is considered to have – tentatively and provisionally – identified some of the basic prerequisites for human communication, the empirical model is not intended as a static "universal" description of composing, but one which will move with other changes in the social fabric in the unfolding development of a dynamic universe.

4.7 Conclusion

I have attempted to show in this chapter that the empirical model is thoroughly grounded in the observations of composing found in the literature, as well as being supported by the type of theory supplied by the generalizations the authors made on the basis of their observations. Because the user's model is based on the observed behaviour of proficient writers, it combines the functions of a description of composing with that of an exemplar of composing procedures to be followed, as in the political models analysed by Mironesco (2002:181, see also McCarty's reference to "models *of*" and "models *for*", 2003:3). The exemplar aspect is in keeping with the purpose of the model, which was formulated as a practical means to facilitate the development of composing expertise. However, it is the descriptive aspect of the user's model which made it "a tool to explore empirical relationships", and not just a rule-of-thumb teaching device. The user's model, then, is clearly an empirical model, and typical in that it shows the specific application in the practice of composing of the system of communicative functions which will be shown to underpin it.

This will be explained in more detail later, but I will reiterate here that, while the theoretical model of communication developed in this study has relevance for forms of communication other than writing, it is not likely that this model could have been inferred by a process of induction from a consideration of instances of face-to-face communication. This is because the functions occur near-simultaneously in this case, making it difficult to delineate between them. Paradoxically, while the communicative functions are masked by the crafting aspect of composing, it is this very aspect which causes them (i.e. the functions) to become separated into distinct stages, which is what rendered them distinguishable to experienced practitioners, who did not need to have read Franck's account of the modelling process to grasp intuitively the functions underpinning composing. Finally, it must be emphasised that the empirical model was already implicit in the collective thinking of the time (i.e. 1986), and was merely formalised systematically in the user's model of composing. The systemic nature of the user's model, however, which is not apparent in other models of composing, meant that it constituted an empirical model as described by Franck.

Chapter 5
Testing Out the User's Model

5.1 Introduction

The motivation for reformulating both the empirical modelling and the property of writing arose out of insights developed through an extensive collection and analysis of data in different contexts, so that the modelling process, as emphasised previously, is not a neat progression of events and processes, and not only involves repeated cycles, but recursivity within cycles. The empirical work carried out as part of my masters research was outlined in the last chapter to delineate clearly between that work and new work which was to form part of the subsequent doctoral inquiry. The empirical work described in this chapter is new work, carried out after the masters, and was a precursor of the second round of modelling in that it suggested how the social aspects of composing (notably academic requirements) might be incorporated into the empirical model. It was followed by a period of reflection which culminated in the recognition that the model was underpinned by communicative functions, and that social requirements appeared to impact on all of these functions. The latter aspect is understandable, as one would expect the situated nature of communication in social contexts to be reflected in its systemic relations. It also meant that the second round of modelling could work from the reformulated property of composing as "communication in written mode", with the communicative functions already identified, although their exact nature (or significance) was not known until Franck's (2002) work was published. Investigating academic composing in the disciplines could then be seen as an important step in ensuring that the empirical model was congruent with the concept of situated practice by either seeing whether academic requirements were catered for in the empirical model, or how the model could be modified to include a consideration of local academic requirements.

There are two questions which this section will attempt to answer:

- Can it be established that students are carrying out the various stages of the empirical model of composing when they write?
- Do competent (i.e. successful) student writers actually use the strategies contained in the user's model?

The first question could be answered with reference to the video protocol analyses carried out, but the second required an assessment of the written texts produced

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in the recorded composing sessions. In the video protocol analyses discussed here, the topic assignments were set and the resulting texts were assessed (by means of their usual marking rubric) by the students' usual lecturer in that specific discipline. Success at academic writing also requires a consideration of the nature of academic writing itself, and this will be discussed in relation to the empirical model.

5.2 The Video Protocol Analysis Method

The function of the video protocol analysis is to re-construct composing with the writer by playing back the videotape (or DVD file) of the recorded composing session and referring to the drafts produced during the session. The discussion during the re-construction is also captured, on audiotape. It is not feasible to synchronise the discussion with the playback, because 10 min' playback might be summarised in one sentence, while a few seconds' playback might generate a discussion lasting 10 min, and occasionally the discussion requires rewinding to an earlier section of videotape. Ideally the reconstruction itself should be videoed, but this requires additional technical assistance, which was not available at the time, and would have been impossible to synchronise with the students' available free time. The researcher therefore needs to refer to the video playback continually so as to "anchor" the discussion to various sections of the playback: time/date options on the camera which show seconds as well as minutes are useful in this respect (as in Fig. 5.2). As well as being recorded, the view through the camera is shown through a monitor screen, which not only allows the researcher to make adjustments before the session starts, but also helps to reduce any stress the videotaping might cause the writers by showing at all times what is actually being recorded. Initially it was a matter of setting up a video camera to record the emerging text over the student's shoulder, and playing it back afterwards to assist recall of composing procedures, but later this method was refined to include split-screen recordings (See Figs. 5.1 and 5.2), as well as composing on typewriter or computer, where students indicated a preference to do so.

Can recordings of student composing made for the purposes of video protocol analysis be said to be a true reflection of what happens when students write academic assignments? The issue is not so much whether the situation is "natural", but that the researcher has shown transparency in making clear the attendant circumstances and how they might impact on composing procedures. The circumstances constitute input into the system involved in composing, which gives different output in the form of specific instances of composing. It was the regularity of the system which I was attempting to confirm in the VPAs, not necessarily a regularity in the actual activities used to achieve the functions, either within the behaviour of a range of different writers or of individual writers (a very creative writer might well use different activities on each occasion, but for carrying out the same set of functions).

There are some obvious differences between how students might usually compose assignments at home and how this occurred in the video protocols, which need to be made clear. Firstly, while the students were writing with materials at hand and,

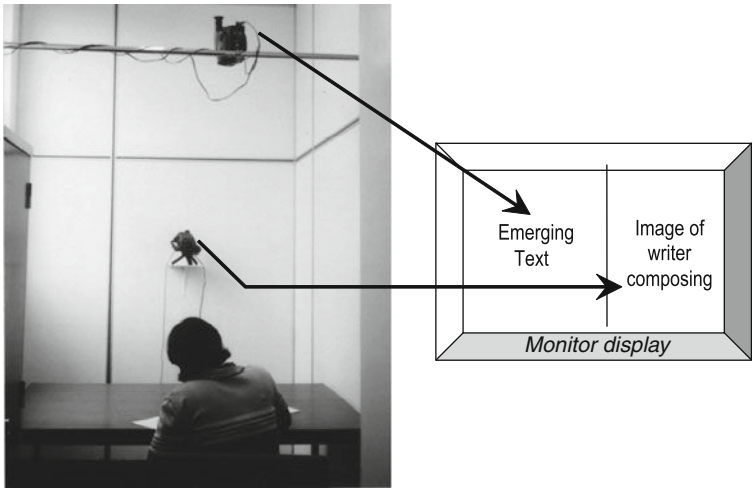

Fig. 5.1 Recording composing in split screen mode

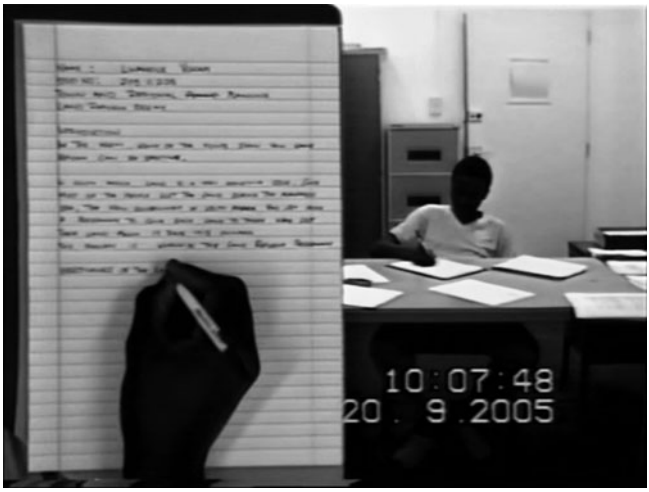

Fig. 5.2 A frame from playback of composing recorded in split screen mode

in theory, taking as long as they needed to finish, a time limit was imposed by the time available, and issues such as transport home, and the danger involved to students travelling late from a campus situated adjacent to urban crime "hot spots" to township areas or informal settlements where late arrival could mean not only mugging but loss of life. Some students wrote for a few hours (which took more than double the time to reconstruct) others took less time than they usually would have, or rather, concertina-ed into a shorter time what they would have completed over a longer period. The shorter time frame made it easier to see the emerging patterns of

composing, but there was obviously less time for recursion within a cycle, and the looping back of repeated composing cycles, except in the profiles of the students who composed over a longer period. Next, in all but the Engineering project, students were writing a simulated assignment, and not a "real" one for marks, although all assignments were related to the students' actual academic subjects, and in over 40 cases I was able to obtain lecturer assessment of the completed assignments, or lecturer comments on work in progress. Finally, while all student writers appeared to forget about the camera once they had started composing, the fact that their composing was being monitored might to some extent have inhibited not only creativity, but also some of the more dubious practices, such as plagiarism. However, I have on videotape examples of students copying verbatim from the text book and lecture notes, as well as a student very adroitly reworking a few excerpts selected from an earlier essay, much in the same manner that experienced academics rework earlier materials for conference papers and journal articles.

To address the above concerns, once students had a chance to explore thoroughly their composing as recorded on video, they were asked how this compared with their usual modus operandi. In the final project, which dealt with 4th Semester Engineering students composing their Electronic Design Report, it was not feasible to record each student's complete composing procedure, which meant that the recordings captured their work on whatever part of the assignment they had reached by the time they could be scheduled for an appointment. By then it had, however, become clear that (1) actual patterns of composing behaviour reflected the series of stages identified in the empirical model and (2) that the issue of academic requirements appeared in stark counterpoint to the steady cadences of the model, and did not necessarily show in the "good" writing profile I had identified in the video protocols conducted with high school pupils in my masters research (Pratt 1987). This is because (as was found later) academic requirements act as input into the system, where they permeate the stages in actual instances of composing, but are not an integral part of the system.

5.2.1 Advantages and Disadvantages of Video Protocols

Playback of videotapes not only prompts detailed recall of composing procedures, it also provides visual corroboration that the account is based on events and not hearsay or memory alone, and facilitates calibration of change of focus between stages along a time scale (using the camera clock facility) much more quickly and efficiently than audiotape. Videotapes also provide a more accurate record of composing procedures. For example, a student verbally recording the start of a procedure might continue with that procedure for some time without necessarily repeating the verbal cue to show that this is happening, or when it ends. Best of all, the camera does not lie, and most large (and some small) body movements are involuntary and unconscious.

The camera presence might well inhibit behaviour considered illicit – such as plagiarising – but many writing habits appear to have become implicit and largely

unconscious by the time students reach secondary or tertiary level, and this is where the video protocols are really effective – in picking up the involuntary and mainly unconscious habits signalled by body (including facial) movements and involuntary actions. It also means that the writers are extremely vulnerable, with their thoughts exposed by the camera as they become engrossed in their composing, although they may choose the option – with justification – to hedge or withhold potentially embarrassing information when explaining verbally later. It must be remembered that the participants in the protocols were students at an age – adolescence and young adulthood – which is most stressful and fraught with insecurity and uncertainly about their sense of self and purpose in life. It is also the age at which writers are most creative and resourceful, and most optimistic about developing talents yet unknown to them, and untried in the real world: there are graphic examples of this creativity, resourcefulness and optimism in the videotapes. Written consent was obtained from all participants who were involved in the video protocols.

5.2.2 Composing Profile Graphs

The graph profiles produced are for the purpose of representing the focus during composing, as established by the videotapes, the drafts produced, and the reconstruction of composing behaviour with the writer and are not arrived at quantitatively by a positivist-type methodology. Writing procedure is not "measurable" this way, and earlier attempts to measure the number of times/minutes students spent on discrete procedures (as opposed to carrying out composing functions) did not only not offer much insight into composing procedures but also (predictably) appeared to yield contradictory results (Raimes 1985). As writing does occur over a time frame, the time axis (in minutes) is used to construct the emerging profile: it does not actually matter how many minutes a writer spends on an activity, or how many times the activity is repeated: the point is whether the strategies used by the writer are achieving the communicative function which each stage of writing is intended to perform, and how this impacts on the composing process in general. For example, if a writer spends 2 min out of a total of eleven worrying about how to spell a word, and this can be seen early on to halt the idea flow completely, apart from the anxiety caused to the writer, this is clearly an example of inappropriate focus causing writer's block (Pratt 1987:86). For this reason, the graph profiles, while illustrating the order in which writers move through the various stages of composing, need to be supplemented with narrative profiles which sum up their writing procedures in terms of their intentions and whether these were achieved (the graphs show focus on, not actual achievement of the purpose of each stage). Finally, success in academic writing does not depend on communicative ability alone, but also on the teacher's assessment of how well academic requirements have been met, which means that the narrative account should include assessment of the piece of writing produced in the recorded composing session.

5.3 Confirmation of Phases in Composing

The video protocols revealed that there are distinct phases in composing, common to all writers, although not all writers complete all stages, and none of them complete the stages in exactly the same way, as one would expect, as each writer and each situation brings different input into the system. Moreover each stage is focused on recursively as each individual writer requires, dependent on a infinite series of external and internal variables (the latter being generated in the course of the process itself). In spite of this recursivity, and the fact that writers can (and do) switch their focus between stages rapidly when composing, distinct phases emerge, signalled mainly by body language, and confirmed in post-performance discussions by the writers themselves. The fact that forty of the protocols recorded instances of composing from start to finish might have meant a somewhat artificial foreshortening of composing as opposed to that done in a more natural setting, but the advantage was that it succeeded in capturing the complete range of composing patterning from start to finish. While most writers are unaware of their composing procedure, much of which is implicit or unconscious, the video playback and discussion process appears to facilitate recognition by hindsight of some of the patterns and behaviours by giving writers a meta-cognitive view of writing as well as a discourse (i.e. specialist language) with which to talk about it. It must be stressed that students were not writing in an examination situation, where strict time, behaviour and space constraints – as well as lack of reference materials – leads to the flattening out of composing into the steady transcription pattern which most teachers are familiar with from invigilation.

For most of the protocols, students composed with pen and pencil, although one student completed her polished version on typewriter, as she said that this was her usual procedure, and another student insisted on typing out his final version on computer. Some of the Engineering students were recorded composing on computer, but these were excerpts only, they were not composing from scratch, so I was unable to gauge the effects of using word processors on the general pattern. It would be interesting to set up a study to see if significantly different phases emerge with composing on computer (i.e. test out different input into the system of composing functions), but my own experience of composing on computer over a period of 15 years suggests that it is unlikely that the actual phases themselves would be different: one would expect a greater amount of rough drafting, more – and more marked – revisions to take place, and less time spent on minor editing because of help from spell-check facilities, style sheets, and the falling away of the need to transcribe the "fair copy" from scratch, which leaves more time for revisions of style and considering the general effect: there would also be more marked revisions, because large sections of text can easily be shifted around, as Daiute (1983) points out, using her own article as an example. These would constitute the kinds of variations to the empirical model caused by changes in external circumstances, that is input to the system of composing described in the model.

5.3.1 Description of the Phases

The video protocols revealed the following common phases in composing, with slight variations (posed in Figs. 5.3, 5.4, 5.5, 5.6 and 5.7 by a student from Theatre Craft). There was always a stage of preparation, no matter how brief, marked with what appeared to be rituals involving the placement of writing (and sometimes reference) materials. At this stage the topic (or writing task) would be scrutinised carefully and often analysed into its component parts by techniques such as underlining and/or bracketing key words. The writer would then briefly reflect on mental resources if writing school type compositions, but usually consult notes and materials for academic subject assignments. Next would come the planning or drafting activities, slow and hesitant at first, but with gathering momentum, resulting in bursts of increasingly faster and more prolonged episodes of writing which I came to refer to as the "writing frenzy".

Ritual placement of materials

Analysing the topic

Consulting materials

Fig. 5.3 Phase one of composing: prewriting activities

There would then be a change of pace, during which texts would be considered, blocked out in pencil and re-arranged, alternating with further episodes of intense writing, interspersed with reading as the writer considered the possible effect on the intended reader. During proof-reading the writer would physically disengage from

Planning

Jotting down ideas

The "writing frenzy"

Fig. 5.4 Phase two of composing: planning and drafting

the close, head-down involvement with the emerging text, scan the text rapidly, and often make darting stabs with the pen or pencil to correct errors. When evaluating the finished piece of writing, the writer would disengage almost completely, often sitting back and appraising the text as from a distance. The whole process was something like a dance in which the writer's body language mimed the stages, first of engagement, and later of disengagement, and finally closure, with an imaginary partner (Pratt 2002). The patterning was apparent in the writer's musculature, and not in the emerging text, and was largely unconscious, as with body movements in face-to-face social interactions. The phases would repeat and recur in different combinations much in the manner of themes in a symphony: now strident, now tentative, sometimes trenchantly overstated, at other times so subtle that they were mere fleeting nuances.

What, if anything, does the patterning communicate about the interaction in composing? It is a fascinating study of intra-personal communication in interaction-by-proxy, and signals the potential of writing for intellectual development, as student writers are engaging in learning interactions with self, which develops their capacity to become independent learners. It is the quality of the interaction

Structuring Return of the "writing frenzy"

Fig. 5.5 Phase three of composing: structuring/redrafting

Correcting errors

Fig. 5.6 Phase four of composing: correcting

Judging the final effect Finished at last

Fig. 5.7 Phase five of composing: judging

which decides the degree of intellectual development, however, and not the interaction per se. Academics who set only transmission type assignments where the students merely manipulate what is already known because they "know too little about the subject to be able to think for themselves" should not be surprised if little (if any) intellectual development occurs, and if students do not learn to engage in the independent inquiry required in higher degrees. It is an issue familiar to educators: it is not what students know, but how they go about the act of learning itself. Context and audience are critical factors in the learning which occurs in writing, which is not a solo act at all: the writer has nothing to say if there is no compelling – communicative, that is – reason to speak out in the first place, if no one is interested in listening, and if there is no social mileage to be made out of the saying.

5.3.2 Confirmation of the Stages in the Empirical Model

The overall patterning also suggested that the stages of the user's model reflect what actually happens when students compose: Prewriting is signalled by the preparatory phase in considering audience and purpose, Draft writing, by the planning – and tentative first draft – phase. Major editing is signalled by the moves to structure larger blocks of text, interspersed with frantic scribbling as the process gathers momentum and segues into the writing frenzy proper, revisiting in turn Draft writing and Major editing, playing out the interaction between writer and proxy-reader. Incidental automatic-type corrections made while recording ideational content can happen throughout composing and do not necessarily reflect a focus on correctness. Minor editing is signalled by a distinct change in body orientation and much more reading of text and reflecting on what has been read, and a focus on correcting text. In the Evaluation stage, the writer tends to sit back further and appraise the text from a greater distance, with a more considering and less critical mien, reflecting the "judging" process that earlier observers noted and recorded (Handel in Britton 1981:15).

The recursivity of composing, as well as the fact that combinations of different activities make up the various stages of composing, mean that it is well-nigh impossible to make sense of the recurring patterns in composing without considering the deep structure of the communicative functions which drive the process. This begs the question that the above phases were found because that is what the researcher was looking for: but this is precisely why the modeller arrives at a system of functions by induction, so that the carrying out of these functions can be consciously sought and confirmed in further data. The point of formulating hypotheses is so that the social science researcher can sift relevant details from the mass of inchoate surface impressions generated by social phenomena (Bhaskar 1979:62). As Sayer points out, observation which is theory-laden is not necessarily theory-determined (1992:73), and use of technology in the form of video recordings assists the researcher to examine real events and not just what the hypotheses suggest will occur. Moreover, the theoretical model underpinning the user's model had not yet been formulated at the stage when the video protocols discussed in

this chapter took place. In spite of this, the fact that the communicative functions were inferred from the user's model meant that it was possible to observe and verify that these functions were carried out right from the outset of the series of data collections.

5.3.3 The Emerging Picture of Composing

Table 5.1 gives an overview of the projects carried out during this phase of the study, carried out as part of the doctoral study, and constituting a preamble to the second phase of modelling, while at the same time validating the user's model (the 2005 VPAs are not included in Table 5.1).

(a) *The 1991 project*
This project was carried out as a pilot study for my doctoral research, which was initially intended to focus on ESL writers. The tentative conclusions of this preliminary (i.e. to the 1993) study, which involved four first year university students in a bridging programme, have been confirmed in a much more extensive study by Cumming (1989) using think-aloud protocols with 23 young adult student writers. Cumming concluded that there was no significantly different composing procedure for second-language writers. There were, of course, individual variations in the composing procedures used by the ESL students in my pilot study. For example, Cyril, who said that he "thought in English" while composing, showed the typical pattern of starting off tentatively, gathering speed and polishing and evaluating at the end. By contrast, Gabriel produced text at a uniformly steady rate, choosing to check and

Table 5.1 Video protocol analyses carried out between 1991 and 1999

Date	Project	Main conclusions
1991	Pilot study involving video protocol analysis of the composing of 4 university students writing sample assignments.	Composing in a second language is not significantly different from composing in mother tongue.
1993	Project involving video protocol analysis of 18 technikon students writing revision assignments in three academic subjects.	Academic composing involves the social construction of knowledge in different academic subjects.
1995	Project involving video protocol analysis of 5 technikon students writing a revision assignment in Economics.	Inability to understand subject concepts results in poor composing performance or pastiche writing.
1999	Project involving video protocol analysis of 11 fourth semester Electrical Engineering technikon students at various stages of writing their Electronic Design Reports.	Academic writing is discipline-specific, as defined by the lecturer: technical expertise appears to be a more fundamental requirement than composing expertise.

evaluate at the end of each paragraph. Primrose's composing showed a distinctive pause pattern, which was, however, caused by the time correcting fluid takes to dry rather than the fact that she was composing in a second language. There was some evidence of "spelling anxiety" with all writers, but not more so than in the 1986 study. This project suggested that there is no typical "second language composing strategy", which is borne out by Cumming's (1989) study.

This is not to say that second language writers may not use strategies to compensate for lack of linguistic proficiency in English, and that it might not slow them down or take away from the overall effect of the texts they produce. Once more, it is the case that different input may impact on the shape the overall pattern takes, but it does not change the systemic relations found in composing. This is not to say that composing is experienced in the same way by second language learners, as the 1993 study showed in graphic detail the hard work, hardships and relatively meagre returns experienced by our second language students, who in spite of being highly intelligent, motivated and hard-working are too often labelled "deficient" by an educational system which judges learning in terms of text output rather than learning process. In terms of the empirical model, the data from the 1991 study and Cumming's more extensive study suggest that no specific adaptations to its basic structure are needed to make it applicable to composing by ESL students. Thereafter, students participating in projects were a multicultural mix, including first, second and "other-tongue" speakers of English (i.e. students who spoke three or more languages, of which English was one).

(b) *The 1993 project*

The research project carried out in 1993 was designed to test out the relevance of the (first) empirical model for academic writing at tertiary level. In spite of the fact that composing procedures were thought to be essentially similar for first and second language students, it was anticipated that Stage 4 (Minor editing and proof-reading) might need more attention during teaching or coaching in the case of ESL students because of anticipated language difficulties. A satisfactory rationale for the empirical model was also sought, which, it was hoped, might go some way towards explaining the nature of composing: it was anticipated that some of the answers might be found in the intrinsic nature of human communication itself. In retrospect, my intuitions were on the right track, but the answers were still a long way away, with an extended but unhelpful diversion into the area of communicative competence. At the time I was also working on a linguistic model by Coseriu (Shaw 1992), which suggested that three levels of competence might exist in writing: the model was flawed for my purposes, because it (or rather Shaw's rendering of it) confused language with the purpose for which it is used, that is as a mechanism carrying out certain communicative functions.

However, my investigation into academic writing was not limited to testing out Coseriu's model, and yielded extensive information on academic composing. Case studies were set up with 18 first-year students writing revision assignments in three different academic subjects, namely, Education, Social Science and Political Science, and detailed writing profiles were drawn up using the video reconstruction

protocol method formulated in the 1986 project. A vast amount of data was gathered, which took over 4 years of ongoing reflection and intensive reading to analyse. Language proficiency did not emerge as the key issue in ESL composing, except to confirm that, when language proficiency has not reached at least conversational level, a student cannot make sense of what the lecturer is saying in lectures, understand key readings, or negotiate meaning effectively in writing. It appeared that most lecturers would accept conversational English in written assignments at first year level, provided that students presented a clear argument backed up with supporting evidence. Advanced proficiency in English was found to be useful to students when picking up nuances hinting at their lecturer's academic requirements, but this was as much a cultural as a language consideration, and some students who were not very fluent in English were more in tune with their lecturer's requirements than students with more advanced English language proficiency. It must be conceded, however, that writing academic assignments in a second language is a heartbreakingly arduous task, and, according to my student informants, takes up to seven or eight times as much time and effort as writing in one's mother tongue, with little enough return for all that effort. In particular, ESL students struggled to find books or articles which were accessible to them when looking for data for assignments.

The picture which finally emerged from the case studies was as follows. The academic subject lecturers had translated into learning programmes for their students what specialist groups in society (Health Specialists, Journalists and Educators) defined (or reflected) as knowledge in their crafts, professions and/or milieus. The written assignments set by these lecturers all had very different specifications as to what learning constituted, and, in each case, learning was strongly linked to the vocational slant given to each subject. It appeared that those students who were more in tune with either the teacher or the tenets of their chosen calling tended to be more successful at the written assignment set, in spite of the fact that some of these students came from disadvantaged educational backgrounds and showed poor proficiency in English.

As far as the potential effectiveness of the user's model for teaching academic writing was concerned, the following picture emerged:

- The writers who obtained the best results did in fact show classic "good" writing profiles in following the recursive pattern suggested by the user's model, *provided that* their efforts were geared towards fulfilling academic requirements as specified by their lecturer, as in the next point.
- Success in written assignments appeared to devolve around engaging in the type of knowledge construction required by the lecturer in any given case, rather than being dependent on composing expertise as such.
- Student writers who were not deemed by the assessor to have engaged in the required type of knowledge construction performed poorly, no matter how "good" their writing profiles (or English language proficiency, for that matter).

It could be concluded that academic writing requires students not just to engage in communicative processes, but to be involved in the construction of knowledge

during composing. One way of dealing with this insight is to view academic composing as a specific case of interactions within an "academic discourse community". However, to avoid having to posit every genre and type of human written interaction as a "special case", the results of this study will suggest that all of the factors associated with the academic context should rather be seen as a form of *input* into the communicative *system* involved in composing. A model based on this principle could clarify how social input impacts on the system for all types of composing, and not just academic composing. It should also be able to explain variations in different instances of academic composing.

Certain of the writing profile graphs will be used to illustrate the above points. The graphs and composing profiles of students not mentioned here are contained in Appendix B of my thesis (see Pratt 2007b:265–308). Cheryl's composing profile graph (Fig. 5.8) is used as an example because it follows the "good" composing profile, as suggested by the empirical model and the observations of teachers and researchers studying composing. She used a mind-mapping technique suggested by her Social Science lecturer to generate ideas, and obtained 70% for the revision assignment produced in the composing session (the lecturer said that she would have obtained a higher mark if she had referred to some of the models they had been studying). So what went wrong for Rupert? Superficially his profile is just as "good" as Cheryl's, and yet he received only 60%. A closer look at his profile, however, reveals that his composing has been influenced by time pressure to structure in advance and not to allow the main ideas to unfold before structuring. His profile also suggests that he is writing about a body of knowledge (i.e. knowledge-telling) rather than constructing an argument out of his own experience, which is what the lecturer actually required (note that this is not indicated by the topic, "Evaluate the family system"). His English proficiency was excellent (he was in fact a mother tongue speaker of English, while Cheryl spoke mainly Afrikaans at home) his subject knowledge was extensive (he received 85% for his first test, as compared with Cheryl's 60%), and he wrote with some flair and perception as to what he was doing and why. His Social Science lecturer said of him: "Even his handwriting shows how precise he is, as if to say: 'I can get the job done, I'm very capable, and I'm a scientist.' "

Yet Rupert obtained a lower mark (60%) for his Social Science revision assignment than Sanele (65%), a mother tongue isiXhosa speaker, who was living hand-to-mouth, and whose finished text structure was convoluted and difficult to negotiate, according to his lecturer. Sanele was also fluent in Southern and Northern Sotho, isiZulu and Afrikaans: English was not so much a second-language for him as an "other-tongue". Of assessing Sanele's revision assignment, his lecturer said:

> Uh, it's – for me, he shows better than average – the understanding and internalization of the information, I mean, he can walk into a community and understand what's happening in a family and relate to those people.

This suggests that the paradigm within which the Social Science lecturer was working required passion and empathy when responding to the topic of the family system,

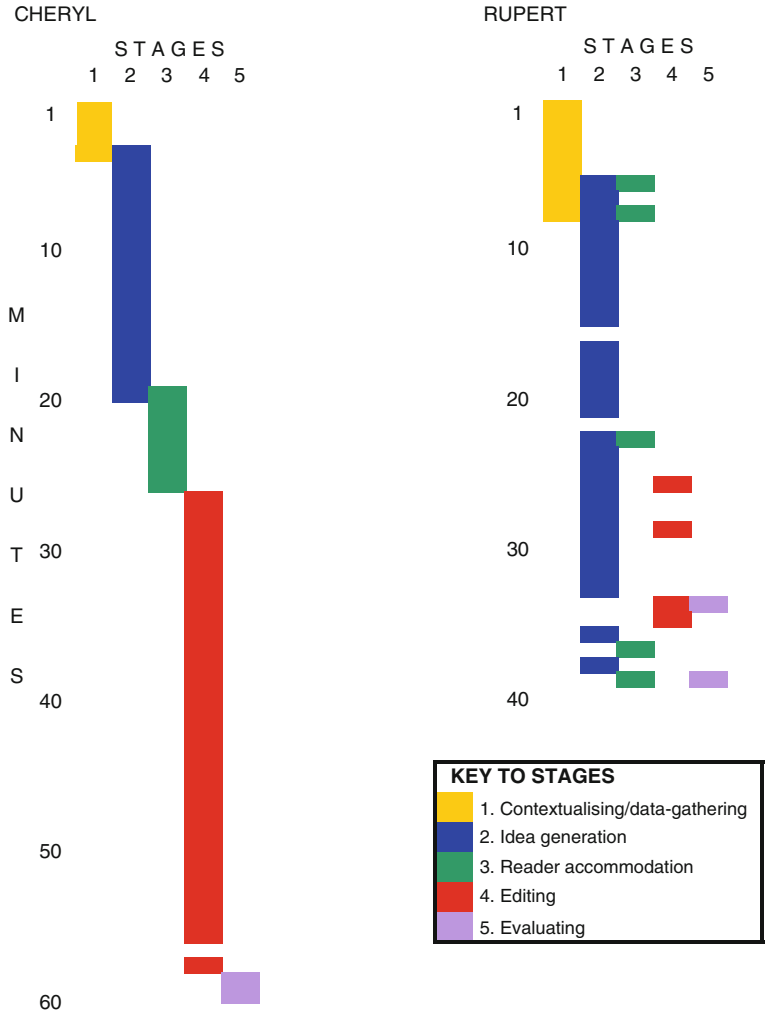

Fig. 5.8 Composing profile graphs of Cheryl and Rupert

and not an analytical approach. Rupert's approach to the assignment was too "scientific": what the lecturer had wanted was a more personal response to the concept of the family system, a response coloured by the student's own experiences of family life. Rupert was in fact working within the wrong paradigm when composing: analytical/empirical instead of hermeneutic. Of Rupert's mark (60%) in the revision assignment, his lecturer said:

> I think Rupert probably had a lesser mark than Sanele because he – again – he – he's got the – the right answers, the right – the right outline, and – and – good sentence structure, and very mechanical, but with – again it comes down to how he's going to relate to a family that is in trouble.

While Cheryl adopted a somewhat detached clinical approach in her assignment, this worked for the lecturer, as (she said) it showed an understanding of the emotional issues and yet remained detached enough to draw conclusions. The lecturer thought that she would operate very well in the field of Social Work:

> I think she's just a very – just generally a practical, down to-earth person . . . and she's an observer, you can get that as well. She very much watches what works and what doesn't work and then takes what does work.

Rupert's choice of format – the formal expository essay – was also inappropriate to the task, according to the lecturer:

> The only person who didn't succeed in terms of the format they produced was Rupert, because he set himself up for long explanatory essay, which he couldn't do [i.e. because there were page-length constraints]. I think Rupert was very confused with my marking, because he's used to doing very well.

The above samples from the project, which generated a huge amount of data, illustrate that, while the most successful students did in fact follow the pattern suggested by the empirical model, some students whose graphs followed this pattern did not necessarily score good marks. Moreover, the video protocols revealed that students were involved in constructing knowledge from start to finish throughout composing: why was this not reflected in the empirical model? Or, if it was already reflected but not obviously so, how might it be highlighted for students? This set of video protocols cuts to the relevance of the model to academic writing in actual academic contexts. If following the stages of the user's model does not correlate with success in academic writing, then the relevance of the empirical model to academic writing comes into question. It must be remembered that the relevance of the process approach (on which the model was based) to academic composing was also being challenged by more socially conscious approaches gaining prominence in the 1990s (e.g. critical approaches and social constructionism). I shall suggest answers to these questions (and solutions to the issue of the empirical model's relevance to academic composing), after completing a summary of the projects and a review of the relevant literature.

The last two projects were planned to be the first in a proposed series of projects to establish how different types of knowledge construction might take place in composing in different academic subjects, and which might perhaps lead to a rejection or modification of the user's model. As they merely confirmed the conclusions of the 1993 project, this line of research was not continued. The last (1999) project was very useful, however, in relating the empirical model to an assignment which was part of course marks and written at a fairly advanced level (4th Semester Engineering): it also helped to dispel the notion that knowledge is constructed in text. Knowledge in writing may be sanctioned as such by the discourse of the completed text, but the knowledge aspect of the Electronic Design Report is derived from expertise in Electronic artefact design and construction, learned mainly experientially in a laboratory by apprenticeship with an expert mentor-supervisor. It is a case where the veneer of socially appropriate language (specialist technical language, in this case) cannot mask a student's inability to create and carry out the design of an

artefact which must actually be demonstrated to work as designed. Students who could not successfully complete their artefacts tended to fail the Design Report.

(c) *The 1995 project*
As with the 1991 project, this was more in the nature of a pilot study to test out not only investigative procedures but also new research equipment, including a video mixer which could now be set up permanently in secure circumstances. The students once more followed, with individual variations, the stages described in the empirical model, but the lecturer who had set the assignment became ill before it could be assessed, which means that successful composing could not be judged against the results. However, this study did emphasise the importance of mastering subject concepts in academic composing. Baijnath (1992) has pointed out that lack of suitable reading materials and inability to understand the subject matter can result in revisions which are not meaningful or particularly effective in student composing. This is confirmed by a study based on a revision Economics essay written by five first-year students, who all experienced difficulty expressing subject concepts.
In particular, they had difficulty understanding and internalising material from their prescribed reference book so as to be able to rephrase it to fit the expository account required by their topic. This meant that the students whose command of English was poor and who attempted to express the concepts in their own words had not understood them sufficiently to be able to do so, and even the mother tongue speakers of English resorted to copying passages out of the text book, slightly disguised, rather than attempting to frame concepts in their own words. When student writers have not integrated and internalised subject concepts sufficiently be able to talk about them in their own terms, they cannot move away from composing "pastiche" texts made up of fragments from notes or the text book: composing processes are hampered by the students' inability to construct knowledge which is personally meaningful (Zamel 1993:32–34).

It is not the phases of composing which are at issue here, where the patterns superficially resembled those of competent writers, but the underlying processes which are not being carried out properly because of an inability to master the subject content. Moreover, the revision was set on a stock transmission type topic, where students were asked to explain Economic concepts (the difference between the long-range and short-range cost curve). Students cannot even begin to explain concepts which they have not internalised and understood, let alone work with them. A depth-analysis of composing using video protocols is far more useful in pinpointing where student difficulties lie than analysis of the polished texts alone, which would have suggested that (1) the students were unable to express themselves in English, and/or (2) they did not know how to write Economics essays. The reality was that Economics concepts were not understood sufficiently for students to be able to express them accurately in formal terms, although a few students managed to explain to me the mysteries of the long- and short-range cost curve quite effectively in informal conversation. For others, it was just another section to be learned off by heart or copied verbatim out of the text book.

(d) *The 1999 project*
Case studies of eleven students writing their design report were carried out. This was made possible because the lecturer supervising this group encouraged his students to take part in the project in the hope that they would produce better reports. Informal interviews were mainly used, in which the students' progress on both the design and the report was monitored and followed up. Specific topics and themes were pursued, in particular lecturer feedback on the students drafts, what this had meant to students, and how they were proceeding as a result of this feedback. Video protocols were carried out on each of the students composing drafts of their design report. It was not feasible to capture a complete record of each student's entire composing procedure because of time constraints, and because composing of extended expository prose does not happen in a neat, linear sequence, but is erratic and sporadic, and part of it occurs at a subconscious level when the writer is not actively engaged in composing (e.g. the "mulling it over" of the Prewriting stage). For this reason, and because the video sessions had to be staggered over a period of weeks, samples of students' composing were recorded depending on which stage they had reached by the time of the session. Two students were not actually engaged in composing at the time: one was engaged in further reading recommended by the lecturer and the reading session was recorded, which, however, yielded interesting information on the stage of composing the student had reached; the other had actually finished composing most of his report, and wanted advice on structuring and polishing, so that a conferencing session was recorded instead.

The result was a mosaic of student experiences which, taken together, built up a comprehensive composite picture of the composing of the design report. It also built up a picture of the students' aspirations, their hopes and fears, successes and failures. An ATI video card which transmitted the image on the computer screen through a video mixer, to be combined with the image from the camera trained on the student. This meant that the emerging text on the computer screen could be captured on videotape in split screen mode, and played back in order to reconstruct student composing on computer. Many of the Electronic Engineering students composed on word processor, but not all did, which meant that I had to set up the equipment to accommodate two video cameras or one video camera and a computer.

The findings of this project constitute the composite picture constructed of what it is like for students supervised by a particular lecturer to compose an Electronic Design Report in the fourth semester of their diploma. However, it was possible to generalize on the writing of Design Reports by consulting the students' supervisor, an experienced lecturer. While complete composing profiles could not be captured, this project was valuable in showing how societal expectations of Engineering as a profession were translated by the students' supervisor into the requirements for carrying out the Design Project, the "proof" of competence requiring not only the design and construction of a working electronic artefact, but that it be written up in a formal report with very definite and complex discourse conventions. The students who could produce the artefact generally managed to master the discourse conventions because they had some referent for them: on the other hand, mastering the discourse conventions alone did not help them to design and construct electronic

artefacts which actually worked, for which they needed creative design capacity and technical aptitude. While the discourse conventions of their reports acted as "knowledge indicators", scholarly-looking texts did not compensate for an unsuccessful design. Nor were good composing procedures necessarily guarantors of success: a student who took some pains in unfolding elements of his design by including the circuit diagram, explaining this verbally, and referring the reader to application notes in an appendix, did not obtain a high mark, as his design was not considered particularly challenging. A young woman student whose use of graphics in explanation was exceptional (from a communicative point of view) had the same problem, and, to compound matters, was attempting to gain entrée into a male-dominated field.

5.4 Key Issues Emerging from the Video Protocols

While there was sufficient evidence from the above data to suggest that students were constructing knowledge throughout composing, it was not immediately clear how this could be represented in modelling terms. The results of the protocols initially suggested that student success depended more on constructing knowledge within the paradigm within which the lecturer was operating for that specific assignment than on composing expertise. But this did not factor composing out of the equation. During coaching sessions carried out as part of a "Writing clinic" service, a Journalism student improved her assignment marks from 17 to 80% after just one diagnostic session with the user's model. To sum up, the key issues emerging from the video protocols were as follows:

- There was evidence of some (if not all) of the phases of composing in all of the composing profiles drawn of the student involved in the projects.
- The composing profiles of successful student writers on the whole matched the stepped, recursive patterning suggested by the first empirical model (*Stages of the writing process*).
- Factors such as time pressure and accessibility of resources clearly impacted on composing, but it was not known how to account for how these impacted on composing, apart from shortening the profiles and reducing recursion in the case of time pressure.
- Personal and social factors, including the student's concept of the task, his/her commitment to completing it, the relationship between student and lecturer, and the milieu of the academic subject obviously impacted on composing, but it was not clear how these should be reflected in the user's model.
- The key factor in success appeared to be the extent to which the students' knowledge construction was deemed to match the paradigm within which the lecturer was operating.
- Writing within different paradigms was not so much a matter of genre or discourse (i.e. subject-specific language), but more one of congruency with the beliefs and values underpinning that particular approach to an academic subject. Moreover, it was clear that technical subjects were not value-free: there was a

value placed on, for example, ingenuity in solving practical problems rather than on mere application of theory or use of advanced technology.
- In some cases the deciding factor in knowledge construction was discursive, and in others, non-discursive (e.g. a report on an electronic artefact which failed to work to specifications would not pass, no matter how well written). In the academic context of a Technikon (later a University of Technology) it was clear that non-discursive ways of constructing knowledge were important.

In spite of the last point, the mark of a true professional was considered to be expertise in written exposition on technical topics (i.e. discursive competence), and not mere technical skill, so that knowledge could be disseminated in journals and papers. Finally, it had become apparent by now that the type of knowledge construction set in place during academic assignments was a social issue, and that the process-based approach within which I had been working needed to be extended to include a consideration of social and other contextual issues (i.e. factors impinging on composing processes).

5.5 The Process Approach

To understand the problems encountered when testing out the first empirical model (i.e. the user's model), it is necessary to look at the approach to written composition on which it was largely based.

5.5.1 Origins and Focus of the Process Approach

This approach had its origins in the late 1960s/early 1970s, when second language researchers looked to first language composition research in the hope of finding a theoretical foundation for the teaching of ESL composition. Arapoff (1968, 1969) Lawrence (1973, 1975) and Zamel (1976, 1982) were amongst the first ESL teachers and researchers to emphasise the importance of composing processes in the teaching of written composition, drawing on first language research which revealed writing to be a complex recursive process. The description of writing built up from both L1 and L2 research provided the basis for an approach to the teaching of ESL composition which became known as the process approach. While certain teaching methods are associated with the process approach, as, for example, encouraging students to work from rough drafts to polished drafts, conferencing and freewriting, the approach has been described as a perspective based on the perception of writing as a process rather than as a prescribed set of methods (Liebman-Kleine 1986). Young (1978), and later, Hairston (1982) and Spack (1984) equated the process approach with a new *paradig m*[1] for the teaching of written composition, to emphasise that the new orientation

[1]It must be remembered that all of the process researchers were using the term paradigm in the sense of *disciplinary matrix* (Kuhn 1962:182) rather than *comprehensive world view* (1962:175),

was fundamentally different from that preceding it (i.e. current traditional rhetoric or the so-called product approach).

5.5.2 Relevance of the Process Approach to L1 and L2 Writers

While the process approach was formulated and is still described as a teaching approach to second language composition, its scope in both teaching and research has not been limited to L2 composing. This is possibly due to a general perception of its practitioners that composing is not viewed as a fundamentally different procedure for first and second language students (Silva 1990:15–16). Moreover the focus of the process approach is on the written interaction rather than the learning of linguistic forms (see Zamel 1985, 1987). While most process practitioners would agree that using typical process methods would help to develop fluency (if not accuracy) in a second language, Cumming's (1989) comprehensive study suggests that there is no direct relationship between second language proficiency and composing expertise. Over fifty video protocol analyses carried out over the last 20 years bear out Cumming's conclusions, and suggest that there is no such thing as a typical second language composing profile, or, for that matter, a typical second language writer. A continuum is apparent, rather, ranging from less proficient to more proficient composing behaviour, with first and second language composers represented at both ends. It is, however, clear that, below a certain level of proficiency in a second language, composing is not viable, and that composing in a second language, while not following a pattern significantly different from that of first language composing (yet see Raimes 1985), does impose certain constraints. For example, redrafting does not offer significant gains to writers who lack the linguistic skills needed to revise their texts, or who cannot interpret the cultural nuances which indicate what constitutes an acceptable text.

5.5.3 Research into Composing Processes

First- and, subsequently, second-language research into composing processes lent itself to case studies, usually involving small numbers of writers engaged in a

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the sense in which it tends to be used in the field of Education (notably by curriculum theorists such as Grundy 1987 and Schubert 1986). To suggest that there is a disciplinary matrix for the field of written composition is clearly unwise, as the field of written composition is characterised by diversity (see North 1987:iii) rather than by a shared set of values and beliefs about composition and how it should best be taught. Moreover, it is difficult to see why the process approach, while popular, should be given a position of prominence in a field which was then, and still is dominated by form-based approaches (e.g. current-traditional rhetoric in the 1980s and social constructionism in the 1990s, as well as the postmodern approaches based on the perception of discourse as text). Yet Young (1978), Hairston (1982) and Spack's (1984) claim that the advent of the process approach involved a paradigm shift was in fact justified, as the focus shifted (at least momentarily) towards a consideration of writing as interaction between participants, that is the *communicative* function of writing was being emphasised for the first time.

specific writing task or tasks. Such research often involved the use of think-aloud protocols to reconstruct the composing processes in which their writers engaged (Emig 1977, Flower & Hayes 1980, Perl 1980, Sommers 1980, Raimes 1985). In some cases video protocols were used to provide a more comprehensive picture of individual student's composing procedures (Jones 1982, Matsuhashi 1982, Pianko 1979). While the case studies used were usually limited to one or a few writing tasks, teacher observations in classrooms (Shaughnessy 1977) and ethnographic research carried out in actual communities (Heath 1983) involved long-term studies and provided detailed information on literacy in general and composing in particular.

5.5.4 The View of Writing Built Up from Process Research

The following view of writing was built up from L1 and L2 process research, that is research into the written interactions in which writers engage as they compose. Writing was viewed as a process which is not linear and logical, but "messy, recursive, convoluted, and uneven" (Hairston 1982:85). While the process was thought to be infinitely flexible, process researchers acknowledged that expressing ideas was important in the early stages, and that revision and editing should be left until the later stages. Writing was also viewed as a form of discourse, involving a process of interaction and negotiation (Taylor in Chick ms) with the projected reader. This process required frequent redrafting as writers continually reworked their messages in anticipation of the imagined reader's responses; it involved "producing a text that evolves over time" (Zamel 1985:79). In order to anticipate the prospective reader's responses to what they had written, writers were thought to switch rapidly to different reader roles during the composing process (Widdowson 1984:64) so as to dialogue by proxy with the imagined reader. Writing was seen as a form of thinking, as "the act of writing itself is capable of generating ideas" (Spack 1984:650–651). Composing was seen as involving not only formal expository writing but less formal modes, particularly, expressive writing, which writers used both as a discovery process and as a means of clarifying what they meant (Candlin 1981:184).

5.5.5 The Process Approach to Teaching Composition

Insights into the ways in which composing takes place meant that the processes involved in composing could be taught, demystifying composing and making it more accessible to students (Bloom 1992:3), whether they be first or second language writers. The teacher could model the processes involved in composing by demonstrating these directly to students (Pfingstag 1984) or by providing students with a schema of composing processes (Hedge 1988, Walshe 1980, White 1989). The process-oriented teacher adopted a collaborative rather than authoritarian role, intervening to show learner writers how to assume the necessary reader roles adopted by writers during the process (Spack 1984, Zamel 1985). Process

practitioners assisted students to revise by responding to writing as work in progress rather than assessing it as a finished product only (Sommers 1982, Zamel 1985). Methods such as conferencing (Graves 1978, Zamel 1985) and journal writing (Martin 1981) emphasised the interactive nature of writing as a process in which meaning was negotiated with an imagined reader: the focus was on the communication mode, that is fluency (Widdowson in Chick ms). The realisation that expressive writing could be a means of discovery was put to practical application in techniques such as freewriting (Elbow 1989, Raimes 1987).

5.5.6 Criticisms of the Process Approach

The main criticism of the process approach is that it omitted to set composing in its wider social context and did not deal satisfactorily with the issue of academic requirements. The interpersonal context of the process approach did not take cognizance of the wider social influences which might shape composing (see Section 5.5.7 below). The process approach was also criticised for representing composing as a universal process (Faigley 1986:534, Kostelnick 1989:278, Krapels 1990:53, Lynn 1987:908, Young 1978:40): process practitioners themselves cautioned that writing is too complex and too idiosyncratic for researchers to be able to identify one common writing procedure (Raimes 1985, Spack 1984).

5.5.7 The Interpersonal Context of the Process Approach

Although the process approach stresses the importance of re-drafting during composing in order to shape the message to its intended audience, the context in which composing is seen to occur does not extend beyond that of the interpersonal, that is the interaction between writer/intended reader, writer/teacher, and writer/student peer. This interpersonal focus gives the process classroom a supportive and caring atmosphere (Fishman & McCarthy 1992:656), in which students may well be encouraged to write about, and thus discover and resist any hidden curricula (Raimes 1993:308), but does not directly acknowledge the existence of wider, culture-specific social influences which might shape the kinds of written interactions in which students are engaged in the academic disciplines. This is because the process approach does not set writing in its wider social context, nor, in the case of academic writing, in its more immediate educational context. Furthermore, while a review of process literature reveals a wealth of information on composing procedures, the approach does not attempt to identify any of the wider social influences which might shape academic composing. This does not necessarily mean that a model based on observations of composing will not reflect the social context in which composing occurs or the social functions carried out in written mode. In Bhaskar's transformational model of social activity (Fig. 3.1, in Chapter 3) it is human agency which reproduces or transforms social structures. One would then expect close observation of individuals composing to reveal some, at least, of the systemic elements of

the social structures themselves. This turned out to be the case, in that the functions identified by educationists and researchers (i.e. the preparatory, expressive, enabling, corrective and evaluative functions) comprised a "proto-theory" (Bhaskar 1979:61–63). This could later be developed into a hypothesis explaining how the social and other communicative functions might operate in written mode, which is the depth-explanation as to why the user's model still proved to be effective in the teaching and coaching of academic writing.

5.6 Approaches Which Set Academic Writing in Its Social Context

The late 1980s/early 1990s saw the emergence of approaches which set academic writing, which was viewed almost exclusively as text, in its social and cultural context academic context, notably social constructionism and approaches based on critical language theory (Fairclough 1989, 1992). These approaches viewed academic writing as the specialised discourse of the academic discourse community. According to Chase, the shift to an emphasis on discourse communities occurred in order "to place writing in a larger context and to highlight it as a social activity" (1988:13). Social constructionism has been described as a version of social constructivism which focuses on "the collective generation of meaning as shaped by conventions of language and other social processes" (Schwandt 1994:127). Social constructionists such as Bartholomae (1985), Bizzell (1992), Bruffee (1984, 1986) and Coe (1986, 1987) emphasised the student's need to learn the discourse of the academic discourse community (Bizzell's constructionism, however, had critical overtones in that teaching academic discourse was initially intended to provide a "means to critical consciousness", 1992:27). In social constructionism the focus is on mastering academic conventions:

> Learning socially significant forms – and understanding how they function – how to use them appropriately – is a key to success (sometimes even to survival) in a discourse community. This is perhaps particularly so in schools, for schools serve in part to teach these forms, or at least to weed out those who do not know them (Coe 1987:21).

Constructionists argue that "reality, knowledge, thought, facts, texts, selves and so on are social constructs generated by communities of like-minded peers" (Bruffee 1986:774).

Bartholomae suggests that students have to re-invent the university every time they write, "by assembling and mimicking its language while finding some compromise between idiosyncrasy, a personal history, on the one hand, and the requirements of convention, the history of a discipline, on the other" (1985:135). From a constructionist viewpoint, students can be viewed as being disempowered, not empowered, by methods such as expressive writing, as writing in colloquial language does not necessarily help students to write in the academic disciplines. Moreover, as mastering academic discourse means learning new ways of thinking, Expressivists may be limiting the student's chance to develop academically valued ways of thinking (Fishman & McCarthy 1992:647–648).

However, as Faigley (1986:537) points out, discourse communities are often more concerned with exclusion than inclusion, and are likely to reject students who do not know the socially correct forms. From a critical perspective, then, discourse communities may be viewed as potentially exclusive, maintaining dominant hegemonies (see Fairclough 1989, 1992). This is because discourse communities are based on "the production and legitimation of particular forms of knowledge and social practices at the expense of others, and they are not ideologically innocent" (Chase 1988:13). According to Chase, academics need to question how conventions operate and their implications before we impose them on students (1988:13). The aim of critically-orientated researchers and teachers (Fairclough 1989, 1992, Clark 1992, Ivanic & Simpson 1992) is to expose the relations of power implicit in traditional academic conventions, and, ultimately, to show students how to contest those conventions which they might find outdated or irrelevant. Critical researchers and teachers also encourage students to develop their own culture- and gender-specific voice rather than mimicking the language of the university. From a critical viewpoint, the process orientation is both politically naive and ineffectual, and is more likely to disempower students than liberate them (Canagarajah 1993, Berlin 1988:492).

5.6.1 Writing as the Social Construction of Knowledge

Both social constructionism and critical approaches are potentially helpful in adding yet another dimension to the in-depth inquiry by representing academic writing as the social construction of knowledge, sanctioned as knowledge by the discourse (i.e. socially appropriate language) which reflects the dominant social and cultural practices current in specific time frames and contexts. In order for the learner writer to negotiate successfully the currents of culture and power coursing through academic institutions, the user's model would need to show how these influences impact on academic composing, not just generally, but in specific cases. The user's model described in the first section, however, identifies the commonalities in composing without showing how these can be applied in specific situations: this is left to the writer (or the writer together with the teacher) to fathom out. And because of the pervasive nature of ideology (Baëhr 1990, Grundy 1987), teachers are often not consciously aware of the underlying beliefs and values driving their academic writing practices, or the need to make these explicit for the student. To facilitate empowerment, a theoretical model of writing would need to explain the social and cultural influences on composing, and to reflect the fact that academic composing not only occurs in specific social contexts but is influenced by the values and beliefs inherent in these contexts.

5.6.2 The Textual Focus of Social Approaches to Writing

In both social constructionism and the critical orientation academic writing is referred to as the construction of knowledge (Canagarajah 1993:303, Kirscht, Levine, & Reiff 1994:369–370), and both approaches represent knowledge as being

situated in a discourse (Bartholomae 1985:145). However, "discourse", even when the meaning is represented as "interaction", as van Dijk suggests, tends to be represented as verbal text when actual examples or analysis comes into play. The actual process in which knowledge is constructed in various written interactions is not described. While informal writing is seen as a "tool for learning" (Kirscht *et al.* 1994:370, Laine & Schultz 1985:16–17), such writing is not viewed as an integral part of learning-to-write-in-the-disciplines, that is "real" academic writing. Using response papers to develop fluency in writing may in fact backfire and cause students to fare even worse in traditional assessments if no connection is made between students' informal responses and the formal academic writing used for assessment purposes. Students need a scaffolded approach to be shown how to develop from the former to the latter. Coe, it is true, goes into some detail as to how students can be taught to compose, and states: "A person who is having trouble writing or who wants to learn to write better should focus on the process" (1986:310). However, he later qualifies this with statements such as, "it is the written text that must communicate" (1986:310), and later, "Conventional forms, as they function in both creative and communicative processes, are a major part of what makes these processes social" (1987:19). The textual focus of social constructionism is summed up in a comment by Bartholomae:

> If writing is a process, it is also a product, and it is the product ? that locates a writer on the page, that locates him in a text and a style and the codes or conventions that make both of them readable (1985:142).

Social constructionism, then, represents the written product as reflecting the social element in writing, in the sense that this product is viewed as a social artefact (Schwandt 1994:127). Moreover, the written product is viewed as not merely reflecting, but as being prescribed by social factors: "The written product is considered a social act that can take place only within and for a specific context and audience" (Johns 1990:27). However, this may be true of academic writing, which is teacher-driven, but not necessarily of genres which are writer-driven, and may reach a very general, that is non-specific audience. For example, authors of novels may well hope to reach – and move – as wide an audience as possible: not only prepubescent girls read and enjoy J.K. Rowling's "Harry Potter" series.

The "conventional forms" described above are those which are sanctioned by the academic discourse community, and not necessarily those which are familiar to students. As Raimes points out, social constructionism "unduly favors form and the readers' world view at the expense of the writer and content" (1993:308). Zebroski suggests that the concept of writing as a social activity has the potential to become a means of oppression, or "one more instrument for the reproduction of existing social relations" (1989:149). This must be qualified as being a problem within constructivist (or constructionist) approaches, as Judd (2003) has shown how constructivist knowledge claims rest on agreement of the powerful. Finally, the concept of the academic discourse community itself has been criticised (see in particular Elbow 1991 and Harris 1989) for being an oversimplified representation of reality:

> The tendency to categorize academic discourse and the discourses of particular communities can lead to theoretical frameworks and instructional models that oversimplify our understanding of academic work and reduce it to a fixed idea that does not reflect reality (Zamel 1993:30).

Although researchers and teachers with a critical orientation attempt to expose the relations of power which set academic conventions in place, they too appear to focus primarily on textual conventions. A possible reason is that the focus of a critical orientation is emancipation rather than the composing process itself:

> By empowerment, I mean, then, the process by which students become aware of what the conventions are, where they come from what their likely effects are and how they feel about them. The second, important, step is to develop ways of challenging some of the discourse practices and of producing alternatives which allow the 'excluded' experiences to shape alternatives. This is a step towards *emancipation*, in other words using the power gained through awareness to act" (Clark 1992:118–119).

This de-emphasis on composing in critical approaches has been noted by Fulkerson, who, commenting on the critical goal of externalising false consciousness (Berlin 1988:490–492), remarks, somewhat tongue-in-cheek: "one would expect the goal of a writing course to at least refer to writing" (Fulkerson 1990:421). The critical orientation is diametrically opposed to that of social constructionism (although Bizzell's constructionism includes critical elements), as it aims to expose and challenge the ideology contained in academic discourse, which "must continually be challenged so as to reveal its economic and political consequences for individuals" (Berlin 1988:489).

Yet critical theorists, as with the constructionists, show emancipation in academic discourse as dependent on context, form, and the way in which the author is represented in the text (Clark 1992:124). Thus while both social constructionism and the critical approach represent academic writing as discourse-based and as the social construction of knowledge, they focus almost exclusively on textual issues. The term "discourse" itself is also used synonymously with text as if text itself were the interaction and not only a component of it. The postmodern influence appears to have displaced the concepts of human agency and social interaction for the notion of a fixed cultural text-world (Archer 1998, Jones 1996), which contradicts in spirit the inchoate, shifting nature of the reality posited by postmodernists themselves. There is no evidence (or line of reasoning) to support the position that an analysis of academic texts alone leads to the acquisition of academic composing expertise – although it may well prove useful at certain stages of composing when the writer is considering genre requirements at the Prewriting or later Editing stages. An analysis of text does not show the student writer what to do or say in an essay, unless the academic content has already been prescribed in advance or is being plagiarised from an unacknowledged source, in which case the mode of textual expression is usually "lifted" together with content, and the issue of style becomes academic in more ways than one. Even when the term "academic discourse" is used in a wider sense to describe academic beliefs, values and practices generally (MacKenna 2004), neither lecturers nor students are told how they can actually negotiate these issues successfully in academic composing.

The problem is that in current socially conscious approaches the focus is almost exclusively on text rather than on composing processes. Moreover, where composing is mentioned, it is as a means to an end, namely, the production of text, and not as a process in which knowledge is constructed. It is almost as if the conduit metaphor of language (Tomlin, Forrest, Pu, & Kim 1997) is applied to composing, which is viewed as the channel through which knowledge (equated with subject content) flows, rather than as the actual means of its construction. There are possible explanations for this almost exclusively textual focus.

Firstly, which is in effect a paradigm shift towards a more socially conscious position has moved attention away from the insights into composing processes contributed by process researchers, leaving this approach almost in the subject position of a methodology. This more socially-conscious position is associated with theories of discourse which represent discourse exclusively as text (or fall back on text analysis, even when discourse is given wider meanings). Next, the liberal humanism underpinning the process approach has tainted it ideologically in the eyes of both conservative academics and those who would have their students contest oppressive elements in the status quo. A focus on composing (by association) is possibly therefore seen as inappropriate by both social constructionists and critical theorists. A further point is that positivism remains the dominant orientation in education, which means that in many cases academic subject composing *is* merely a conduit for pre-digested ideas (except, one hopes, in the case of creative composition writing in English classes), and therefore academic content, as represented in text, is considered more important. Finally, the bulk of research into written composition has been (and still is) form-dominated (Raimes 1991:409), presumably because it is more economical and less time-consuming to analyse texts than composing procedures: it may also reflect the implicit view that writing *is* text instead of a proxy interaction negotiated by means of text. The preoccupation of academics with written texts could almost be seen as a "textual barrier" or block, where academics focus almost exclusively on textual conventions, which, in my experience, is a misplaced emphasis.

However, the construction of knowledge in formal academic circles clearly consists of more than a parcel of textual conventions: it involves the ability to argue a specific case for the validity of some premise, an argument which is usually based on empirical work and peer-validated literature in the field. These criteria are, of course, in themselves conventions, but conventions which govern the whole learning interaction and not just surface textual conventions. Even where knowledge is constructed discursively, it is the validity of the premises which is at stake, and not the verbal window-dressing. The word "thesis" in itself means "something put in place", a "proposition to be maintained or proved": surface conventions reflect (at least, one hopes that they do) the underlying process of proving a proposition which is argued in a written interaction – they do not substitute for or comprise the actual argument, any more than a bridal gown or a ring constitute the reality of marriage. It is possible that the processes of knowledge construction in their disciplines or professions have become so implicit to academics that they cannot (or overlook the need to) explain it to students: perhaps many academics have never examined the assumptions about

knowledge construction underpinning their disciplines or individual interpretations of learning in the disciplines.

Not only is this focus on text non-productive in producing good student work, and a potential block for student writers in introducing the social element too early during composing, but it has also drawn attention away from the single most inhibiting element in student composing: the fact that academic assignments are rarely set in any meaningful context for students, by which I mean a context which will motivate them to communicate clearly and correctly in written mode. For context, as will be explained later, appears to be the key motivating element in writing, and sets the social stage for the very conventions required (but later on in composing) to polish the end product (i.e. the finished text) to the satisfaction of the academic audience which will be judging it. In my own experience an immediate improvement in the quality of the written product can be effected by setting written assignments in a meaningful context, in which the intended readers (who should comprise a wider audience than the teacher-assessor) do not only not know what is going to be communicated in advance, but will very likely find the information interesting and useful. Most students write badly, not because they do not know how to apply academic conventions (which they arguably do not) but because they have not been given any reason to write well or any coaching as to how to do so. It is ironic that approaches allegedly focusing on writing as the "social construction of knowledge" have very little to offer on the social location of academic writing except as a de-contextualised exercise intended to satisfy a community of experts. Only a very small percentage of our students will become career academics, and a social setting comprised entirely of intelligentsia is not likely to provide the social stimulus necessary for most young adults to polish written work. Some of our more technically-gifted students do not even see writing itself as a desirable professional skill, or particularly useful in furthering a technical career.

5.6.3 The Paradigms Involved in Knowledge Construction

In spite of their textual focus, the value of the discourse-based approaches and the attendant literature is the focus they bring to bear on the social aspect of learning, and hence, writing which serves the ends of learning. The data from the 1993 projects showed what kinds of social influences shaped student composing: these were found to be paradigms of knowledge construction corresponding to those described in Habermas' comprehensive theory of knowledge (Habermas 1972, Hultgren 1982, Schubert 1986). The existence of these paradigms could not be inferred from the types of writing profile graphs drawn up in the last chapter, and were only discovered to be operating in actual composing by hindsight, after eliciting from the lecturers what type of subject learning was required in the case of each assignment and in their subjects in general. Evidence of these paradigms could then be found in the video- and audiotape transcripts, as well as the students' texts (it is important to note that while composing procedures cannot be reconstructed from written texts alone, teachers have on the whole become very skilful at

reconstructing learning interactions – but not composing interactions – from student texts, for obvious reasons).

The paradigms were not signalled by the actual wording of the essay topic rubrics, and while certain of the paradigms (namely empirical/analytic and critical) could be said to be signalled by discourse markers, and may be associated with certain genres, paradigms are not in fact genre-specific. For example, the formal expository style of text used in research reports may be associated with the empirical/analytic paradigm, but does not it itself signal a positivist approach (research reports in the "hard" sciences do not in fact follow many of the conventions once considered scientific, for example a detailed account of the methodology used). Top-down teaching of specific academic "discourses" does not work (Gee 1990:147), and is likely to result in the kinds of over-simplification which Zamel has warned against (see 1993:30 above). It also signals to students that elaborate texts are a substitute for real understanding of an academic subject, including the ability to internalise insights so as to "own" them, and the ability to argue a case clearly and logically using various kinds of evidence. The conclusions of this study offer an explanation as to why specialist discourse is not an advisable starting point if one wants students to master it eventually. Context and discourse in academic composing set in place and reflect the social (including academic) loading of written communication: however, the issue of discourse needs to be seen (and dealt with) in the perspective of other key communicative functions. Moreover, an omission to deal with the social aspects of context right at the outset of composing results in discoursal issues lacking the very meaning and force which would have clarified them and made them relevant for students in the first place: social pressure is a far more powerful motivator than merely pleasing the lecturer or even passing a subject.

5.7 Modifications Required to the Model

In order to design and produce a writing tutor program which could be used in both academic and non-formal composing, an empirical model is needed which clarifies what is common to composing in general and what is specific to academic composing. It needs to identify academic writing as a specialised type of composing associated with learning – so much so that it constitutes the standard method of assessing students' academic progress within the context of formal western education. Even in technical and vocational education, academic progress, particularly at higher degree levels, is equated with being able to engage successfully in academic writing, as the 1999 project on the writing of the Electronic Design Report illustrates. There were some technically-skilled students participating in this project who produced exemplary designs, resulting in artefacts so finely conceived and crafted that they could have come off a manufacturing line. One of the best such students had difficulty articulating the elements of his design formally in writing: failure to do so (and he managed admirably in the end) would have had the social effect of relegating him to the status of technician rather than that of degreed professional.

Knowledge is part of the social order, and formal learning is generally accepted to involve the social construction of knowledge, although different specialist groups may have differing opinions as to what constitutes a valid means of knowledge construction. For the schema of composing identified in the previous section to retain any validity in providing students with a conceptual framework for composing, its relationship with knowledge construction must be made clear, and it must be able to be made context-specific to suit different academic contexts, audiences and purposes. Moreover a distinction needs to be made between the construction of knowledge and the construction of meaning. This brings us to a consideration of the nature of not just academic writing, but writing itself as a mode of interaction. The phases and patterns observed in over 40 instances of video protocol analysis over an extended period of time and in different academic contexts, suggest that the user's model is more than an arbitrary rule-of-thumb rubric for composing, and is in fact the surface manifestation of a deep-level shared system of interactive functioning, a notion which will be developed further in this account.

The empirical model mentions audience and context (Stage 1) and orthographic correctness (Stage 4), both of which are social preoccupations (Palmer 1971), but does not make overt reference to learning or the construction of knowledge (Stage 3 also involves social issues such as genre structures, but these become more of an issue in advanced research writing, where failure to structure to the required genre is considered a serious flaw). Does this mean that the empirical model per se does not "fit" academic writing and is not relevant in facilitating the development of expertise in academic composing? Data from the 1993 project seemed to suggest that composing is in fact a means of constructing knowledge, and that students construct knowledge throughout all stages of composing: and yet there was a mismatch in some cases between "good" writing profiles and academic performance as judged by the lecturer. While it is obvious that writing expertise cannot be equated with academic subject expertise (which is why I abandoned the model for a short time after the 1993 project), the user's model continued to be of use in coaching students in a Writing Clinic facility which I ran for some years after 1993, to the extent that one Journalism student's marks rose from 17 to 80% after one intervention. This could have been because the 1993 project alerted me to the need to focus on Stages 1 and 4 when coaching, and, in particular, to find out whether students (1) knew what the academic requirements were and (2) knew how to carry them out. The former could be established very quickly by asking students what their lecturer wanted them to do in an academic assignment, that is what kind of learning was involved (the abovementioned student could then ask the lecturer, and thereafter knew that she was required to argue a case – she also established what the lecturer considered would constitute a convincing argument).

Why bother with the user's model then? Because the model acted as a referential diagnostic tool signalling where along the line the student was coming unstuck: this allowed me to home in on the real problem very quickly. It was relevant to facilitating academic composing expertise – but this did not answer the question of what in its inherent makeup rendered it so, or even what it really was. The answer to the last two questions was subsequently provided by the discovery that the empirical

model is underpinned by a theoretical model which identifies essential communicative functions, as will be shown in the next chapter. The model of communicative functions and the resulting second, more descriptive empirical model (the "analytical" empirical model) made it possible to see how academic requirements and other social contextual issues could be reflected as "input" into the system of composing functions.

5.8 The Developing View of the User's Model

Figure 5.9 shows the developing view of the first empirical model (i.e. the user's model) throughout the course of the research. In the masters study (1) it was referred to as a "schema", but its actual nature and how it related to actual instances of writing in the disciplines was not known. During the data collected after the masters, it appeared to be a means of constructing knowledge (2), but this could not be explained easily within its existing shape and structure. When the five "aspects of communication" underpinning the user's model had been arrived at by a process of induction, the model appeared to be in the nature of a "discourse (i.e. interaction) management strategy" (3) after reading Condon and Cech's (1999) account. However, while they represent discourse as "interaction", Condon and Cech then engage in a detailed analysis of electronic texts, which means that the issue of social production is, once more, omitted. It was only after the "aspects of communication"

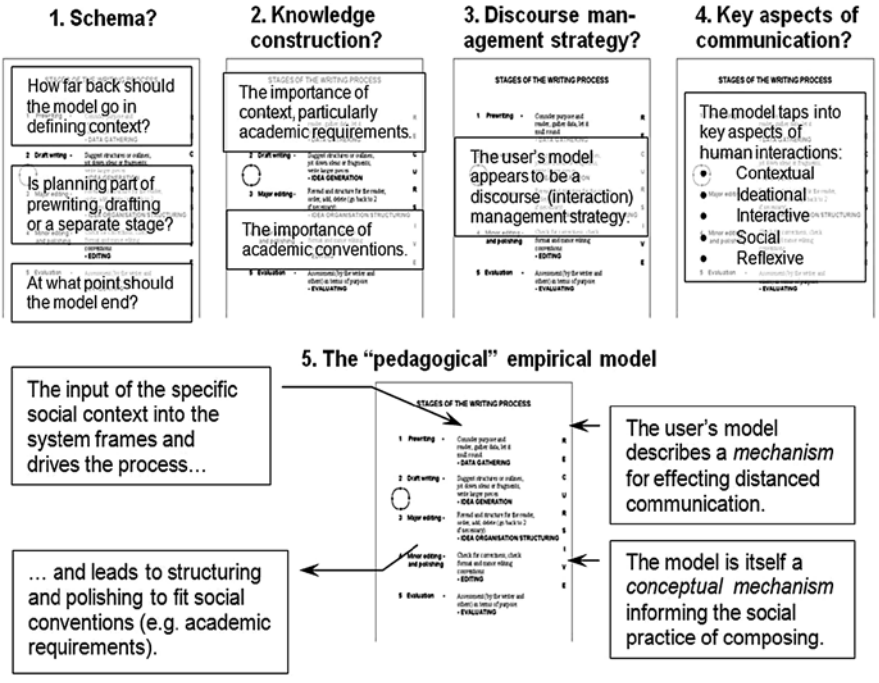

Fig. 5.9 The developing view of the user's model

(4) were identified as being a system of functions "without which" communication could not occur (i.e. a theoretical model), and after a second empirical model had been formulated, that (5) the user's model was found to describe a mechanism (i.e. the composing system) for effecting distanced communication. The user's model in itself constituted a conceptual mechanism informing the everyday social practice of composing. The social elements of the socio-cultural context in which specific instances of composing took place could then be represented as contingent factors (some of which might be mechanisms) forming input into the system of composing functions, as will be shown in the next chapter. There was also a social function which had to be effected as part of the composing system. The last two insights revealed that social aspects operated both extra- and intra-systemically in composing, which explained why it had been so difficult to categorise how academic requirements impacted on student composing in the VPAs carried out so far.

5.9 Conclusion

The development of my perception of composing as explored with the user's model occurred in shifting phases and stages in a dialogue which attempted to transcend the limitations of the "known" (in the literature) and personal experience and reach through to the reality at the core of the phenomenon. However, I was not able to ground my inquiry ontologically until I found an orientation (i.e. critical realism) which reconciled my almost Deweyan-type pragmatism with the need to conceptualise, so that my educational practices could become more effective. Moreover, until I had found an approach which combined experience-data with systemic features of the phenomenon (i.e. Franck's modelling process), I was unable to account satisfactorily for the givens and variables in composing, particularly with respect to the vexed issue of social influences in composing.

From 1989 to 1999 I underwent a number of shifts in my thinking, very much along the lines described by Kuhn (1969). Yet the shifts were not so much from one clearly defined position to another, but from a vaguely literal comprehension of reality, implicitly held, to a position where reality was shifting and inchoate, depending on the perspective from which one viewed it, then back to a position grounded in an external (but still very complex and dynamic) reality. At one stage I had genuinely thought that my orientation was social constructivist, as the 1993 data had suggested that composing involved very different types of knowledge construction: but to acknowledge that knowledge is a social construct does not imply a constructivist orientation per se (I still prefer to use a scaffolded constructivist learning approach in my courses, see Pratt & Gutteridge 2006, in spite of being a critical realist). In 1997, after 4 years of "mulling over" the 1993 data I was not so much a constructivist as a relative pluralist. Deep-seated beliefs about the nature of things are not surrendered so easily, and I found myself coming back time and time again to a more pragmatic position where there was a reality which was there as well as in the mind, and it was apparent that certain human constructions were more in tune with what was inarguably there than others. But this is to pre-empt a realisation which dawned much later.

Chapter 6
The Theoretical Model of Composing

6.1 Introduction

This chapter deals with the second cycle of modelling and the formulation of the theoretical model underpinning the empirical model of composing, namely, a model of communicative functions. A tentative explanation is suggested as to how/why the communicative functions are masked in written mode, as well as how different input into the system of communicative functions can be seen to result in the different modes and genres. The chapter goes on to show how the model of communicative functions made it possible to formulate a second empirical model of composing, illustrating in more detail (i.e. than in the user's model) the complex operation of the mechanism which results in infinitely variable instances of composing within a common systemic matrix. It will be suggested that the new empirical model, or "analytical" version, provides a description of composing which is more appropriate for investigative purposes, while the first empirical model, or "user's model" of composing, is more appropriate for use as a pedagogical tool, which supports its use as the basis for the design of a writing tutor program. As the second (i.e. analytical) model of composing is based on the theoretical model of composing, the theoretical model can be seen to be validated by Franck's first prerequisite, that it corresponds with the empirical model. It will be suggested that the second prerequisite, that it be tested out in actual situations, has already been partially met by the previous video protocol analyses, in showing that writers can be seen to focus on the various stages of composing (as in the model) as they compose, and that the writer's concept of composing can act as a conceptual mechanism in guiding composing practice. However, in order to demonstrate the operation of some of the factors which give rise to the infinite variations apparent in composing, as shown in the second empirical model, a final round of video protocol analyses was carried out, the results of which will be described in Chapter 7.

6.2 The Theoretical Model as Primary System

The deep-level explanation of the user's model of composing was found to be a system of communicative functions, which, however, needed to be described in terms of

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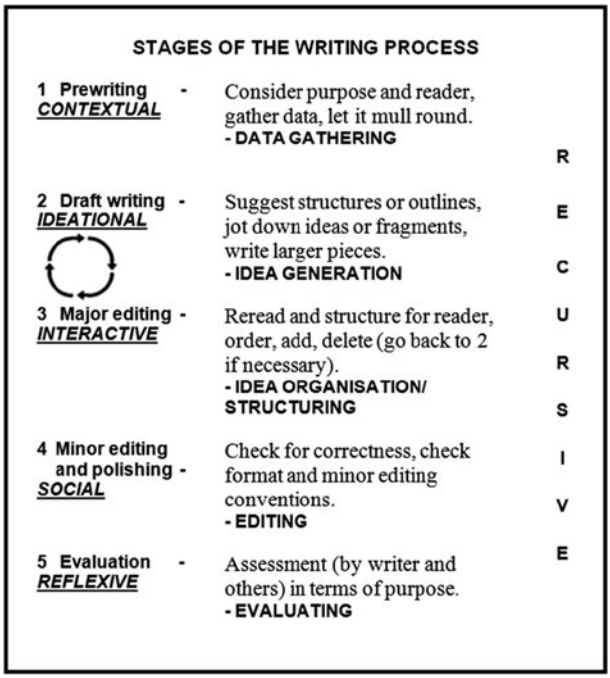


Fig. 6.1 The communicative functions underpinning the stages of the user's model

how they were adapted in composing. The contextual, ideational, interactive, social and reflexive communicative functions could be seen to underpin the five stages of the *Stages of the writing process* (see Fig. 6.1), and were arrived at by reflecting on the communicative function of the stages of user's model in the second cycle of modelling. This involved extending the composing functions found in the literature (i.e. data-gathering, idea generation, idea organising, editing and evaluating) so that their significance as communication in social settings became clear (i.e. as contextual, ideational, interactive, social and reflexive functions). This system of functions can be viewed as a "theoretical model of writing" (Pratt 2007b:168–173) because it explains the working of the user's model. However, it appears that the system of communicative functions is a primary system which is not limited to writing, and which takes different forms when it finds expression in the different modes ("primary" in that one cannot regress to a further level within the same social process, i.e. communication). Different input into the system of communicative functions can be seen to result in the different modes and genres, as will be explained later. Its nature as a primary system and the fact that some of the resulting modes (e.g. graphic, nonverbal communication) can be seen as falling into different fields (e.g. Fine Arts, Drama) supports the position that the model of communicative systems could provide a generalizable principle, as does its use since 1999 as an educational design principle for integrated Communication courses (Pratt 2005e).

In the case of written mode, the input of distancing, combined with the code and the nature of the template used (i.e. the means used to overcome the distance

constraint), is considered to result in modifications to both the functions and the intra-systemic relationships in composing. The discovery of the communicative functions meant that a more complex empirical model (i.e. the "analytical" empirical model) could be constructed. The new model shows the nature of the mechanism involved in composing in respect of its intra-systemic relationships and the putative effects of extra-systemic input. The second version of the empirical model also illustrates the complex ways in which social influences might impact on composing. This is important, because different input might negate or compromise fulfilling the prerequisites for effective communication. An advantage was that the new empirical model, unlike the user's model, could now be seen to apply to composing in non-felicitous conditions (e.g. examinations) or composing which does not follow the stepped pattern observed in the composing of "good" writers. It might even help to explain why certain stages are skimped or omitted during specific instances of composing, rather than suggesting that the stages do not exist. Of the two empirical models, the user's model could be retained for pedagogical purposes, while the analytical model was considered more suited for analysis of composing in research projects (in particular, to explain more clearly the data gathered in video protocol analyses).

6.3 Reformulation of the Property of the System

The fact that more than one level was involved initially caused difficulties in identifying (or rather, fixing on) the property of the system involved in composing. The realisation that it was communicative functions which appeared to underpin the stages of the user's model meant that an obvious reformulation of the property of the system involved in composing would be "communication in written mode". Composing itself clearly matches this definition (the property=the phenomenon). The term "mode" was included in view of the hypothesis (as will be shown later) that the various modes might be the results of different input into the system of communicative functions.

6.4 Factors Contributing to the Formulation of the Theoretical Model

The following factors combined to act as a catalyst in identifying the communicative functions:

- Renewed attempts to categorise in general terms the social issues impacting on composing (particularly Stages 1 and 4, and to some extent 3), as found in the data generated by the video protocols.
- Re-conceptualising the first empirical model (the user's model) in terms of how it would operate in a computer program, in preparation for drawing up the first storyboard for the writing tutor program.

- Condon and Cech's (1999) account of discourse (i.e. interaction) management strategies in synchronous and asynchronous communication.
- Stock institutional perceptions that focusing on transmission mode teaching of surface features of text would improve academic writing performance.

The series of video protocols leading up to this point had suggested that it was crucial for student writers to deal with social issues at the Prewriting stage, as students who were not aware of academic requirements at the outset (i.e. the relevant requirements in different instances of composing) had difficulty completing academic assignments successfully. Social considerations were also important in the Major editing stage and the Minor editing stage, in terms of structuring and editing the resulting texts to ensure that academic conventions were followed. However, until the functions had been identified, as well as the notion of social input (including academic conventions) impacting on the performance of these functions in actual composing, it was not possible to explain clearly the operation of social aspects in composing. Creating the storyboard for the writing tutor program meant that the user's model had to be reconsidered in terms such that the main menu of the program would be immediately accessible to learner writers: this involved reflecting on the nature of the stages in the user's model, as well as how (and where) to include customising options. The paper by Condon and Cech (1999) dealt with discourse management strategies in electronic communication. While the "discourse management strategies" turned out to be text-structuring strategies rather than composing strategies, they did set in train the notion that the user's model constituted a "strategy" for handling interactions in written mode. The paper also provided insights into how synchronous/asynchronous communication occurs with specific reference to electronic communication, and raised (but did not resolve) the issue of the differences between synchronous and asynchronous communication. Condon and Cech also touched on temporal and spatial sequencing, and these subsequently appeared to be key issues in determining communicative modes. The differences between synchronous and asynchronous communication, when applied retrospectively to print literacy and orality, triggered off a series of questions which came to be answered with the identification of the communicative functions, which can be seen to be performed very differently in each case. The infinite variations in specific instances of composing could now be seen to be the results of the complex interaction of intra- and extra-systemic forces.

Franck makes the point that the actual source of a theoretical model is irrelevant (2002:252): what is important is the fit between the two models. The source of the theoretical model really lies in the collective wisdom of the educationists and researchers who taught, observed and speculated on the nature of composing – a complex social process, much of which is unconscious – but also a real event which can be investigated and reconstructed (Fleetwood refers to this type of phenomenon as "socially real", 2005a:201). In this study the functions were derived both by working back from the functions implicit in the empirical model at the same time as reformulating the property of composing as "communication in written mode". "Communication in written mode", however, manifests as an interaction by proxy mediated by the written text. There are thus actually two levels (or layers)

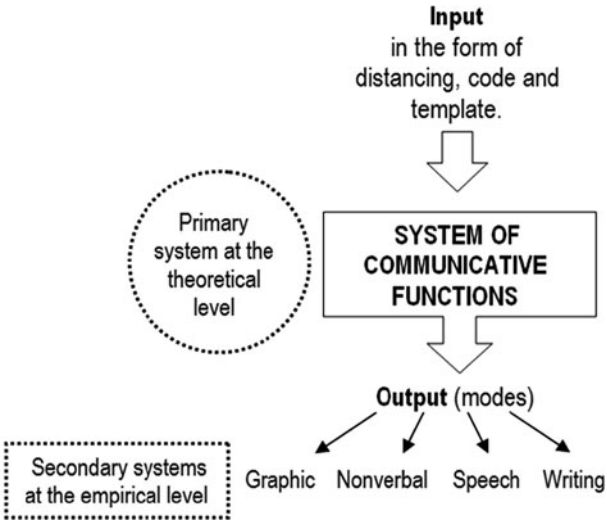


Fig. 6.2 The primary system formed by the communicative functions

of property involved, the property of communication in general, and the property of communication in a given mode, as suggested in Fig. 6.2.

While Franck points out that the actual source of the functions is in fact irrelevant, in the interests of establishing the originality of the formulation, it arose in the course of a conversation in the Department of Languages and Communication at the former Technikon Natal (now the Durban University of Technology). I had been working along the lines of investigation suggested above, when I was consulted by my HOD as to what response we should make to a proposal (from another institution) that the Department should adjust the Communication syllabus to focus on transmission teaching of grammatical rules. The user's model came to mind as we were in conversation, and I found myself referring to linguistic correctness as a social issue (following Palmer 1971) associated with Stage 4 of the model, and then heard myself saying: "but there are also ideational features in writing, as well as interactive ones" (i.e. with specific reference to Stages 2 and 3). Having realised as I was talking that the "ideational, interactive and social aspects of writing" corresponded with Stages 2, 3 and 4 of the user's model, after the conversation I focused on characterising the other two stages in the same way, coming up with the "contextual" aspect for Stage 1, and the "reflective" aspect (which I later changed to "reflexive") for Stage 5 (see Fig. 6.1, where the functions are represented as underpinning each stage). I considered using "social" for Stage 1 and "textual" for Stage 4, which would not have clarified the functions sufficiently, as "text" is not considered to be a communicative function, but a mechanism for recording distanced interactions-by-proxy, as will be discussed later (a mechanism which could be categorised as "artefactually real", Fleetwood 2005a:201).

Four of the communicative functions identified as "necessary" for communication to take place successfully were later found to correspond to some extent with three of Halliday's language functions (i.e. the textual – split here into contextual

and social, the ideational, and the interpersonal language functions, Halliday & Hasan 1989:44–49). It must be stressed, however, that the functions in the model are those which need to be carried out for effective communication to occur, while Halliday's functions are those functions which language itself carries out. It is suggested that language is best viewed as a *mechanism* which carries out some of the functions needed for effective communication to take place. The functions need not always be carried out by language, however, for as Bhaskar points out, "even our interactions with each other have many dimensions which are non-linguistic" (in Norris 1999). According to Halliday and Hasan, "the ideational is the learning or thinking function" performed by language (1989:44), and is usually identified with the propositional content of an utterance. Matthiessen and Halliday explain the ideational "metafunction" thus:

> (ii) The **ideational** metafunction is concerned with ′ideation′ ? grammatical resources for ***construing*** our experience of the world around us and inside us. One of its major grammatical systems is TRANSITIVITY, the resource for construing our experience the flux of ′goings-on′, as structural configurations; each consisting of a process, the participants involved in the process, and circumstances attendant on it. For example: [Location:] *in the open glade* [Actor:] *the wild rabbits* [Process:] *danced* [Accompaniment:] *with their shadows* (1997:10).

The identification of Halliday's ideational function (i.e. of language) with experience and transitivity is interesting in terms of the connections suggested with Bhaskar's domain of empirical: this is the domain of ideas, it is *transitive* (i.e. the object of thought), and constitutes "experiences" (see Table 2.1 in Chapter 2). It suggests that it is the ideational function of language (as used in communication) which actually gives rise to the domain of empirical. There is actually no need for a separate "semiotic domain" or "domain of discourse", as semiosis (and the role of discourse in this) can be viewed as one of the key generative mechanisms creating the domain of empirical, and not necessarily as a domain in itself.

In this study, the term "ideational", while it relates to a function which needs to be performed for *communication* to take place, as with Halliday's language function, also refers to "propositional content" or "message content" (this is not to be equated with "meaning", which is the outcome – or not – of the whole communicative process). The connection with the ideational function language *performs* (Matthiessen & Halliday 1997) must be clear, and supports the contention that, in the context of communication, language is a *mechanism* carrying out the ideational function (not the only mechanism, however, nor is language always cast in the role of mechanism). The ideational function may be performed by codes other than verbal language (e.g. nonverbal or graphic code), and by other factors, such as events, objects, juxtapositions, or bricolages. For example, the context itself often communicates propositional content (e.g. a woman alone in a bar), as do certain aspects of interaction (e.g. avoidance of actual interaction with car guards). Before moving on to Halliday's next function, it must be noted that the fulfilling of the ideational function in communication is not represented in this account as being limited to generating propositional content in the form of abstract ideas or information, but can refer to social message content as well (i.e. while Halliday & Hasan connect the

ideational with "learning or thinking", "ideational" as used here is not intended to refer to abstract thought alone).

Kern and Warschauer suggest that by "interpersonal" Halliday means the "use of language to maintain social relations" (2000:5). In this study the term "interactive" is used rather than "interpersonal", and is seen as having generative power in producing ideational content, and not as just signalling interpersonal relationships. This is supported by Halliday's contention that language used to encode "interpersonal meaning" fulfils an interactive function: "The sentence [i.e. the one just discussed] is not only a representation of reality; it is also a piece of *interaction* between speaker and listener" (Halliday & Hasan 1989:20, my emphasis).

Halliday's "textual" function, according to Kern and Warschauer, refers to the production of "situationally relevant discourse" (2000:5). Halliday and Hasan explain this as follows: "All use of language has a context. The 'textual' features enable the discourse to cohere not only with itself but also with its context of situation" (1989:44). They continue: "The context of situation, as defined in these terms, is the immediate environment in which a text is actually functioning" (1989:45–46). Now "situationally relevant discourse" suggests social appropriateness, usually signalled by use of socially appropriate language forms or rhetorical genres, but also indicated by choice of content. It appears that Halliday has conflated the two notions into one function, possibly because social appropriateness is usually defined with reference to a specific social context, and possibly because it would be near-impossible to separate the two functions by considering the language of written verbal texts, where context is habitually "textually" rendered. In this account the two notions inherent in Halliday's "textual" function (i.e. of language) are viewed as being separate, resulting in a contextual function and a social function (this does not exclude the notion of social aspects of context). The term "social" is preferred to "textual" as text is considered to be a *mechanism* for effecting distanced communication, and not a function per se.

However, the social *function* in composing must not be confused with aspects of social *input* into the composing system (which then form part of the context, helping to perform the contextual function). The social function is effected mainly through various aspects of the text (as in Halliday & Hasan 1989:45); social input permeates all aspects of written communication. For example, there are social elements in the context, a social loading in the ideational content, social elements in the interaction, and the reflexive function is prompted in part by the need to be socially appropriate. The social loading of message content is thought to reflect the systemic operation of the social function, with yet further social aspects being the result of input into the system in specific instances of communication. It is suggested that Halliday's conflation of the two notions occurs because no distinction has been made between the intra-systemic and extra-systemic social aspects of communication. This study makes this distinction by reflecting Halliday's "context of situation" separately in the "contextual" function. This is because it is considered a prerequisite that communication has to be contextualised, which gave rise to the notion of a separate contextual function. Once the notion of input into the system had been worked through, it was evident that the "social" could operate intra- and extra-systemically.

Halliday's insistence on the inherent functionality of language (1989:17) supports the position that language is one of the *mechanisms* involved in carrying out the five communicative functions identified in this study as prerequisites for communication. This is not to limit the role of language to that of mechanism, or to diminish its vast, protean, subtle, complex and layered functioning, exemplified by the complex role of language in even the short excerpt given by Halliday (1989:17–23). This is also not to suggest that language is the only mechanism involved in communication, nor that mechanisms fit neatly into a fixed, static, limited "taxonomy" as in a grammar or lexicon. The fact that Halliday is discussing systemic relations of language must also not be taken to indicate that the contextual, ideational, interactive, social and reflexive communicative functions are limited to their expression in language or syntactic relations. Critical realism depicts reality as complex, dynamic and layered. Anything – text, utterance, code, discourse, non-discursive event, belief, person or natural/social phenomenon – can act as one of the causal factors effecting (or affecting) communication. Even absence – the fact that someone does not answer your email, or the fact that the server security system obliterates your email message before you have a chance to send it – can constitute a causal influence. The vast area covered by human communication in turn can be telescoped when viewing it as one of the mechanisms for reproducing/transforming social relations or structures (see Nellhaus 1998:15).

While there is a clear connection between Halliday's language functions and the carrying out of those of the communicative functions which can be effected by means of language, the fact that Halliday is referring mainly to written texts (i.e. records of verbal language) means that the functions have become somewhat obscured by their role in textual encoding rather than in displaying a functionality typical of language per se, as Halliday would have us think, when he identifies "function" itself as "a fundamental property of language" (1989:17). Many of the details of the functional features Halliday identifies tend to be those demanded by the need to encode verbal language in written texts, and those dealing with textual relations in distanced interactions, rather than any main functions integral to language. This means that, in Halliday's account, it is difficult to separate the functions played by language in communication from the functions it plays in dealing with the *distanced aspect* of communication in terms of all of the communicative functions needing to be encoded in text. Halliday has, however, provided enough correspondences with the communicative functions to suggest that language is a key mechanism in carrying out some of the functions which are prerequisites for *communication* to occur. It must be borne in mind that language is not the only mechanism, however, and that its functional role is exaggerated out of all proportion when written verbal texts only are considered (see Table 6.1).

The recognition of the importance of social aspects of composing revealed in the long-term collection and reflection on composing data, viewing the model from the new angle of computer program design, Condon and Cech's paper, which led me to think that the model could be in the nature of a strategy for handling written mode, and the absurdity of the directive for simplistic top-down teaching of academic discourse (see Gee 1990) all combined to force three of the communicative functions underpinning the user's model in composing into my conscious mind. What appears

to have happened was that working at the problem of the exact nature of the user's model from a number of different angles had crystallised the communicative functions underpinning the empirical model and had brought them to the surface of my mind where they could be consciously articulated, although the experience was curiously dreamlike, as if someone else were articulating them. These elements were initially referred to as "aspects" of communication (Pratt 2005c). It was only when Franck's account of the modelling process was worked through step by step that it became clear that the "aspects" constituted a system of communicative functions, that the property of the system in composing was in fact communication in written mode, and that the modes themselves operated systemically at a lower level: a "property of the system" in communication is then its manifestation in the various modes. Initially the aspects of communication identified took the form of a sequential list, as the internal relations of the functions in the "system of functions" had not yet been worked out. Subsequently an attempt was made to model the internal relations in the system of communicative functions, as will be described below.

6.5 The System of Communicative Functions

The system of functions "without which" communication cannot occur comprises the contextual, ideational, interactive, social and reflexive functions. It must be noted that these are the functions which must be performed for communication *to take place,* (i.e. they are prerequisites) and not the functions which communication itself *performs*. For communication to take place (successfully, that is):

- The communicative interaction has to be *contextualised*, that is set in a context. The context will be influenced by elements such as past history, the social setting, the physical setting, the people communicating, their relationship, their purpose in communicating, and so on.
- Some kind of *ideational* content must be generated for communication to take place, even in phatic communication. The term "ideational" refers to message content (which may be entirely social) and not thought per se, although presumably some thought goes into message content, no matter how ephemeral or at what level (subconscious, even).
- As meaning is negotiated in the interaction, there must be an *interactive* element in communication (even in intra-personal communication): this involves turn-taking in face-to-face communication, and (usually) structuring in distanced communication (even in intra-personal communication "turns" are taken by imagined proxy respondents or different personae).
- All communication has a *social* loading (impersonal or mass communication signals a type of social relation, and not the lack of it). The social element is considered so important in communication that it can override semantic considerations.
- For communication to occur successfully, the *reflexive* function needs to be carried out. This regulates the interaction in the manner of a feedback loop.

In general terms, some of the factors or activities performing the communicative functions can be suggested without specific reference to the communicative modes. For example, the actual setting can perform the contextual function; message content, the ideational function; actual interaction, the interactive function; discourse, the social function; and feedback, the reflexive function (an example of what Küppers terms "circular causality", 2004:3–5). Other processes and entities can – and do – combine to perform these functions, and some of these may constitute mechanisms in their own right (e.g. language, or texts). However, in specific terms it appears that the functions in the system of functions are carried out in different ways depending on the mode of production, on the extent to which the interaction is immediate or distanced, as well as on the kind of distancing involved. As this is germane to the issue of how the functions are thought to become modified in composing, the posited effects of these variables will be explained in some detail below. While carrying out the functions is thought to be a prerequisite for successful communication, doing so does not guarantee success: the system constitutes something in the nature of a generative algorithm with stochastic force (Pratt 2005a).

The theoretical model is difficult to represent diagrammatically because the functions are fulfilled differently in different modes. It would perhaps best be represented mathematically, which might be helpful in establishing its possible generalizability beyond the field of social science, but that is beyond the scope of this study. The representation in Fig. 6.3 attempts to show the ways in which the functions are thought to inter-relate in effecting the process of communication. It must be borne in mind that the diagram attempts to show the main relations in an extremely complex and convoluted system. The carrying out of the contextual function is represented as both framing and driving the communicative interaction in which meaning is generated. The carrying out of the reflexive function operates as a feedback loop in the

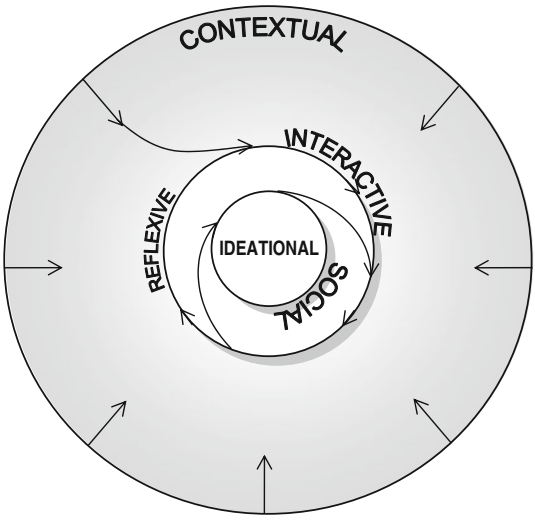


Fig. 6.3 The inter-relationship between the communicative functions

interactive process, thus regulating the interactive function. The interaction in turn has impact on the ideational function in the generation of ideational content, but this is not the only mechanism driving the ideational function (e.g. data and human creativity contribute to generate ideational content) and ideational content, in turn, can also constitute a mechanism driving the interaction.

Initially I hypothesised that the social function could be seen to impact on all of the other functions. I later realised that I had been confusing the intra-systemic operation of the social *function* with the extra-systemic operation of other social *causal factors* in terms of features of the specific socio-cultural setting which might impact on the whole system. It is in this sense, rather, that social features (in the form of contingent factors, as input into the system) impact on all of the other functions. For example, the socio-cultural setting in which communication takes place will impact on the contextual function in terms of how the interaction is contextualised; it will affect the production of ideational content; it will influence the kinds of interactions which will take place; and it will affect the nature of the feedback offered. It must be borne in mind that systems are complex and layered, and that there is no one-to-one correspondence between the functions and the causal agents which perform them. The same causal agent can perform different functions, and the same function can be performed by different causal agents. What can be confusing is that aspects of the contextual, ideational, interactive, social and reflexive – which are functions – can also act as causal agents. For example, context can be a causal agent performing the ideational function, as it can contribute to message content. Ideational content can be a causal agent performing the contextual function by making the context clearer.

The working out of the interrelationship of the functions in the system of functions as shown in Fig. 6.3 should go some way to explaining the focus in this study on the interaction in writing, and should help to clarify the role of discourse (i.e. socially differentiated sets of language) in academic writing. Even in written communication, where the functions are predominantly coded in the verbal text (as will be suggested below), a very small percentage of the social elements in communication, including the social construction of knowledge, revolves around discoursal features per se, that is, is related to the social conventions of *language*, because so much more has to be "explained" in writing (which makes the social aspect tedious – apart from dangerous – to negotiate in writing, and people are generally more comfortable conveying complex social nuances obliquely, i.e. as in conversation). The fact that the social aspect of composing cannot be restricted to discoursal features explains how, while no stock genres or "dominant discourse" were specified in the Social Science assignment mentioned earlier in Chapter 5, the successful students were still observing the social requirements set by the lecturer, working within the beliefs and values of Rogerian humanism within the hermeneutic paradigm.

Thus while learning interactions may be paradigm-specific, they are not necessarily discourse-specific in terms of surface features of text, which I had realised in 1991 when attempting to "teach" journalism students how to produce more scholarly texts by looking at the language features of academic journal articles (Gee 1990 points out just how futile this kind of exercise is, although it is of course helpful to consult examples of subject-specific genres at certain stages of composing, the

principle on which software such as *Easy Writer* is predicated). There is no easy equation between discourse and knowledge, and Zamel's criticism that the concept of the academic discourse community could lead to simplistic views of academic composing (1993:30) is justified in terms of the complexity of the social aspects of communication as both a function of a system and input into the same system. In fact the static concept of "academic discourse" violates the very principles of a diverse situated practice (Cazden, Cope, Fairclough, Gee, Kalantzis, Kress, Luke A., Luke C., Michaels & Nakata 1996). The models produced here support the concept of situated practice, which they explain by making the context of composing part of the variables in a systemic social process.

6.6 The Theoretical Model as Generalizable Principle

It is suggested tentatively that the system of functions provides a generalizable principle governing all modes of communication, and which can possibly be extended to fields such as educational design, computer program design, fine art and music. While it is acknowledged that four of these functions are pre-empted by Halliday's ideational, interpersonal, and textual (i.e. the discourse aspect of text) functions of language, this principle was arrived at independently in the course of this inquiry. It must also be remembered that Halliday is referring to the functions which language *performs*, and the fact that they dovetail to some extent with some of the functions which *need to be performed* for effective communication to occur strengthens the case for the theoretical model. I must also emphasise that, while in retrospect the system of communicative functions underpinning writing seems obvious, it was not at all so initially. The current emphasis in composition research on discourse-as-text obscures the way in which social factors operate in composing: at Stages 1 and 4 in particular, at the same time shaping the whole process by virtual of its operation in the Stage 1 in contextualising writing socially. Discourse (i.e. socially differentiated sets of language) can now be more properly identified as one of the *mechanisms* which carry out the social *function* of communication. The language of the written text, incidentally, is also more properly defined as a mechanism, which not only functions within the process but also has causal influence on the whole process, as will be explained below.

The discovery that written composition appears to be underpinned by a generalizable communicative principle goes some way towards vindicating an approach towards writing which focuses on writing-as-composing: it must also be stressed that this is *not* the result of a product/process dichotomy, and that text is an essential component of composing, and a key mechanism for negotiating a temporally distanced interaction. The language coded in the written text could in fact be viewed as the chief mechanism for producing ideational content in distanced interactions: it also becomes the mechanism for carrying out many of the other functions, which also need to be encoded in text by virtue of temporal and spatial distancing. To sum up: while discourse (i.e. socially differentiated language) is not the only mechanism which carries out the social function in composing, paradoxically, it is made to carry

out all of the other functions. However, the models developed in this study suggest that referring to academic writing as "academic discourse", whether this means language, interaction or belief (which is regularly not clarified sufficiently – if at all – in the literature) obscures the way the social and other functions are actually carried out in composing.

6.7 The Formulation of a Second Empirical Model of Composing

The first empirical model (the user's model) proved effective as a pedagogical tool, and its formulation in my masters research was a prerequisite for deriving both the communicative functions and the theoretical model of composing. After the model of communicative functions had been derived, however, a second, more analytical empirical model was formulated as a tool for analysing further real-life instances of composing (i.e. in video protocol analyses) and for the purpose of further validating the theoretical model. The new model (shown in Fig. 6.4) is more generalized than the pedagogical version in that the systemic features of composing are emphasised.

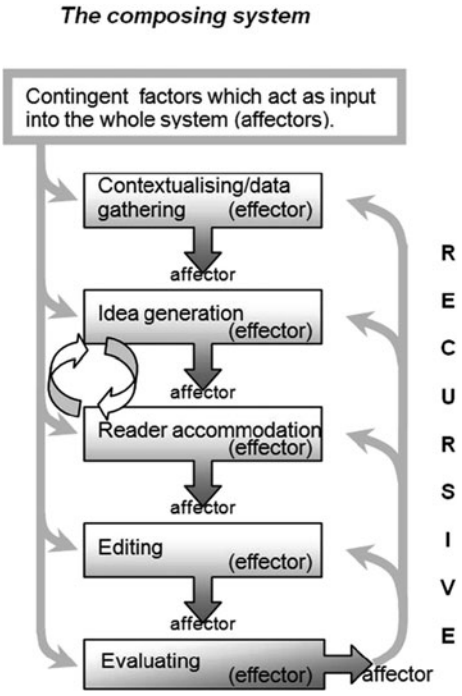


Fig. 6.4 The "analytical" empirical model of composing

The stages of *The composing system* represent the processes whereby the communicative functions are effected in written mode. These are effectively the same stages as contained in the user's model, very slightly adapted. For example, in view of the insight that Stage 1 involves the contextual function (see Fig. 6.1), "data-gathering" was amended to contextualising/data-gathering (the subsuming of data-collection into Stage 1 will be explained later). As the interactive function is not achieved only by "idea organising" – or "structuring" – the latter terms were replaced by the more general "reader accommodation".

A new feature of this model is that each stage of composing is represented as operating with both intentional and contingent causality. This is indicated by block arrows and shading for each stage, to indicate that each stage not only effects the function involved in that stage (i.e. as an "effector"), but impacts on the next (as an "affector"). Another new feature is the inclusion of input which impacts on the system and affects output (i.e. the form composing takes in specific instances). Input takes the form of the contingent circumstances attending specific instances of composing, as well as the concepts (accurate or otherwise) which might inform the social practice of composing. The curved arrows on the right-hand side of the diagram indicate that contingent factors can impact on each stage of composing collectively or separately. The curved arrows on the left show that the evaluating process can feed back into any previous stage of composing. This does not include the possibility that the writer can go back at any time to any previous stage of composing, which is still represented by the term "recursive" on the right hand side to avoid a proliferation of crossing arrows. It must be emphasised that Fig. 6.4 attempts to show only the main relations of an extremely complex system. The general trend must be clear, however, and sufficient to explain how composing can be both idiosyncratic and open-ended within the constraints of the system of functions hypothesised.

The inclusion in the second empirical model of the contingent factors which constitute input into the composing system constitutes an advance over the user's model in accounting for the variations in composing procedure over and above the recursion of the stages, and might even account for the degree of recursion apparent in various instances. For example, when time constraints are part of the input, recursion is not likely to feature strongly in the resulting composing profile, and stages are more likely to be carried out concurrently (see the projected examination writing profile in Fig. 6.5). This relates back to a problem experienced when the user's model was first formulated as to how to represent the model interfacing with the social situation in which instances of composing might occur. In the initial formulation, and yet another stage before Prewriting, "motivation" (1987:34) was considered, but rejected: fortunately, as "motivation" is more properly a contingent factor, part of input into the composing system. Representing the social context as input into the system (i.e. a mechanism) solves the problem of how to handle factors which might impact on composing in specific instances, including random contingencies such as a student writer being without source materials for an assignment because the photocopier is out of order or the library is closed (or s/he forgot to bring them along for a video protocol session).

Another issue which might impact on composing profiles is that of writers using oral strategies for composing (Gee 1990:54). Large numbers of students in South

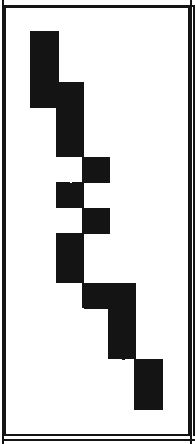
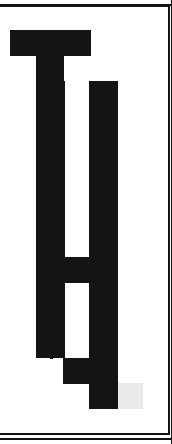
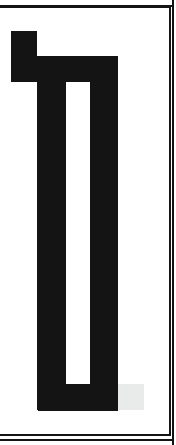
Felicity conditions with open topic	**News report**	**Examination essay with strict time limit**	**Essay with pre-specified content and structure**
			
The stepped profile identified as that of "good" writers would continue with regular recursion until the piece is considered finished.	A reporter writing a news report has a pre-specified structure, and would seek data to fill that structure. However, the News Editor would evaluate and edit further, which might lead to further redrafting.	Writers tend to spend very little time on preparation, do very little structuring, and write a once-off draft, focusing on correctness and neatness, often with no time left to evaluate/ correct answers.	Once an approved source is identified, there is little left for the writer to do but copy out the information neatly. Structuring is limited to introduction and conclusion, and there is little attempt at evaluation.

Fig. 6.5 Profiles arising from different input into the composing system

Africa are from newly literate (or illiterate) communities, and writers using oral strategies in composing are unlikely to follow the composing pattern described in the user's model. In this case, both contingent factors and conceptual mechanisms can be seen to be involved, the fact that the writer is newly-literate being the contingent factor, and the writer's concept of composing (i.e. probably one not based on the prerequisites for effective *composing*) being the conceptual mechanism. Taking cognisance of this input in the second empirical model solves the problem inherent in the first, that not all writers can be seen to compose as in the user's model, which describes the prerequisites for successful communication, but does not suggest that/how the fulfilling of these might be affected by contingent factors.

It is beyond my graphic skills to depict the empirical model so that the effect of different input on the actual shape of composing is shown (e.g. possible compression

of stages), but this can be demonstrated by means of separate composing profile graphs, as shown in Fig. 6.5. While news reports are routinely produced successfully using a "formula" (predetermined structure, see Daiute 1983), the exam example and transmission type essay suggest "non-felicitous" conditions, in that the writers would probably block idea production by trying to focus on two stages at once, and would be able to pay little attention to reader accommodation, as major restructuring is not an option in examinations. Journalists rely on sensational content to make a news report interesting, and newspaper readers adapt quickly to the fact that the very banality of the structure allows them to access the "juicy bits" more quickly (televised news reports are structured along the same lines, to the extent that we now even have *News in 60 Seconds*). In the case of an essay or examination composing, however, some individual effort and skill need to be applied to structuring for the reader, or the result may turn out to be insipid and/or confusing.

6.8 Validating the Models

Validation of the models is dealt with in Stages 5 and 6 of Franck's modelling process, where the empirical model needs to be tested out in a real-life situation or against data, and the theoretical model needs to be tested against the empirical model, to see whether the latter needs adjustment to fit real-life functioning of the social system. The first empirical model (the user's model) had already been tested out with respect to the existence of stages and the use of the model itself as a conceptual mechanism (Pratt 1987). This led (in the second cycle of modelling) to the development of the theoretical model of communicative functions. Once possible reasons for the transformation of the communicative functions in written mode had been established (as dealt with below), it was possible to arrive at a more detailed empirical model of composing which could be seen to apply to all specific instances of composing, and not just those carried out under felicity conditions (i.e. favourable contingent circumstances). Franck's Stage 5 (i.e. that the empirical models be tested out in actual situations), has already been met by the previous video protocol analyses, in terms of showing that writers can be seen to focus on the various stages of composing (as in the model) as they compose, and that the writer's concept of composing can act as a conceptual mechanism in guiding composing practice (Pratt 1987). However, in order to look for examples of how contingent factors might operate in specific instances to produce the infinite variations apparent in composing, as shown in the second empirical model, a final round of video protocol analyses was carried out. The testing out of the reformulated empirical model in these protocols will be dealt with in the next chapter. This will complete the validation of the "analytical" empirical model.

Franck's Stage 6 involves the validation of the theoretical model against the empirical model (or model*s*, in this case). The match between the model of communicative functions and the first empirical model of composing has already been established by virtue of the fact that the former was derived by induction from the latter (see Fig. 6.1). The match between the model of communicative functions and the second empirical model of composing can be established by the fact that

the latter was formulated with specific reference to the carrying out of the communicative functions. As mentioned above, the second empirical model is very close to the first in basic structure. The earlier user's model has "data gathering" for "contextualising/data gathering", and "idea organisation/structuring" for "reader accommodation", but the omissions are catered for in the advice given in both cases (e.g. "Consider purpose and reader," and "Reread and structure for reader.") This means that the theoretical model of communicative functions can be validated by its correspondences with both empirical models of composing. The slight mismatch between the functions and the stages will be explained (below) in terms of "slippage" of part of the ideational function (i.e. data-gathering) to the contextualising stage, firstly, because of the exigencies of communicating by proxy, and, secondly, because of the opportunities offered – and social demand – for crafting when communicating in written mode.

For the rest, the correspondences between the communicative functions and the stages of composing are clear. Stage 2 of composing is clearly linked to the ideational function in that the focus is on idea generation, and in Stage 3 the focus is clearly on accommodating the reader by taking place in an "enabling" dialogue by proxy, which makes it the most "interactive" stage of writing (although inner dialogues operate at all stages of composing). It is a familiar concept in Linguistics that a focus on orthographic correctness (or precision of speech) is a social, and not semantic, preoccupation (Palmer 1971), which led to the categorising of Stage 4 – Minor Editing and polishing – as fulfilling a social function. The preoccupation of student writers with genre and discourse conventions in Stage 4 of composing, as revealed in the video protocols, confirms this, as well as Halliday's identification of the "textual" function of language with discourse (i.e. social aspects of language use, in Kern & Warschauer 2000:5). Finally, while academic institutions tend to focus on formal evaluation in writing, the research into composing identifies this stage with "judging", and not necessarily formal assessment, which means that Stage 5 is more properly involved with reflection on performance by self or others. The idea of monitoring performance by means of reflection is best known from Schön's work (1983, 1987), and is associated in language learning with Krashen's Monitor Theory (1988), although Krashen has been criticised for representing monitoring as a reaction to error rather than as an integral part of language learning (Naiman, Frohlich, Stern, & Todesco 1978, Rubin 1975).

In terms of close correspondences between theoretical and empirical models, then, Franck's first prerequisite for validation has been met. There are, however, some discrepancies in the correspondences noted above which need to be explained, such as why data-gathering, which has been identified as a mechanism for generating ideas (Shaughnessy 1977:245) has been absorbed back into the contextual area in composing to such an extent that it dominates the Prewriting phase (particularly so in actual instances of academic composing, as will be shown in data contained in the next chapter). This discrepancy will be dealt with presently, as it relates to input impacting on the system of functions, and is thought to explain the eventual forms the different communication modes take. It also remains to show why the communicative functions have become adapted so that their communicative force has become masked in written mode.

6.9 Composing as a Special Case of Communication

Composing at first appeared to be a special case of communication, where, as I mentioned previously, the functions are partly masked because of the distanced nature of the interaction, which causes it to be an interaction-by-proxy only (with its reciprocal interaction-by-proxy in reading). Paradoxically, because the execution of the functions becomes stretched out in a series of distinct (yet recursive) phases, the functions, though masked, are delineated more clearly than in, for example, a face-to-face conversation, and thus more easily identified. But why is composing contorted into an etiolated shape in the first place? Tackling anomalies and inconsistencies head-on is the best way to uncover the true regularities in a system. Moreover, if the supposedly "special case" of composing is viewed as the result of specific input into the system of communicative functions rather than as an exception to the rule, an interesting hypothesis emerges about the formation of the various modes and genres. It also means that the typical features of composing – the complex series of recursive stages, and the tendency for the finished product to be crafted – can now be explained with reference to certain *variables* which impact on the system of communicative functions. But this requires a consideration of the effects of distancing on the communicative functions.

6.9.1 The Effects of Distancing on the Communicative Functions

Considering the effects of distancing on the communicative functions resolves the issue of why data collection – more properly a mechanism effecting the generation of ideas – is represented in the composing models as part of a dual function (contextualising/data-collection) and at an earlier stage (i.e. Prewriting). Rather than invalidating the theoretical model, this problem led to a consideration of the variables introduced into the system by the effects of distancing on communication, and to an example of how the theoretical model can be used to explain the form the various communication modes assume by considering variable input (i.e. contingent determinants) into the system.

It became clear from the data in the 1993 project and later that setting writing in its social context, particularly in terms of academic requirements, is crucial. In fact, the context could be seen to drive the whole process from start to finish in much the same way that reflexivity regulates it by hindsight. The fact that undergraduate assignments are on the whole not properly contextualised is thought to be the main reason why many of the resulting texts are so insipid, and not necessarily only the deficiencies (arguably, real) of beginner writers. The advice, "Consider purpose and reader" clearly relates to contextualising one's composing, yet data-gathering, too, is an essential part of prewriting activities. The issue which had to be dealt with early on in the modelling process was: should yet another stage intervene between Prewriting and Draft writing, or should data-gathering be conflated with the latter stage? I did not think so. What appears to have happened in the composing mechanism is a kind of slippage, or leakage, connected with the ideational function.

The causal factors operating here appear to relate to the issue of distancing in communication, and not synchronicity vs. asynchronicity per se. The latter terms, rather than being helpful in categorising speech and writing, are, in the light of the theoretical model, thought to set in place a misleading dichotomy between speech and writing (see Tannen 1984:21). Speech can be distanced and/or asynchronous, and writing can be immediate and synchronous – or distanced and synchronous, none of these instances being a "special case". The effects of the degree of distancing as illustrated in Table 6.1 (an estimated projection) show that asynchronicity leads

Table 6.1 The extent of coding in the verbal text caused by distancing

Synchronous immediate communication

	implicit in the context	negotiated by Interactants	coded in peripherals	coded in the verbal text
Contextual				
Ideational			60 – 90%	30 – 40%
Interactive				
Social				
Reflexive				

Synchronous distance communication

	implicit in the context	negotiated by interactants	coded in peripherals	coded in the verbal text
Contextual				
Ideational			30 – 40%	60 – 90%
Interactive				
Social				
Reflexive				

Asynchronous communication

	implicit in the context	negotiated by interactants	coded in peripherals	coded in the verbal text
Contextual				
Ideational		(by proxy only)		
Interactive		(by proxy only)		
Social				
Reflexive				

to massive coding of communicative functions in the text (predominantly in verbal form) but does not tell the whole story. Moreover, when one tries to include other modes, such as graphic, in the equation, the variables become too complicated to represent in tabular form.

6.9.2 Types of Distancing Occurring in Communication

An application of the system of functions to various instances of communication such as those just mentioned suggests that it is the degree and type of separation which is involved which affects the operation of the functions rather than mere synchronicity or asynchronicity. This may account for the anomalies caused by very formal speech or very casual writing, which cannot be fitted into stock generalizations about orality and literacy and contribute to the difficulty of establishing an oral/literate continuum (cf. Tannen 1982, 1984). Three – at least – types of distancing appear to have impact on the way in which the communicative functions are carried out: temporal, spatial and valence distancing. The term "valence" is used in theories of motivation (in Vroom's expectancy model, in Fielding 1993:39–40) to signify the expected value of work outcomes, and the extent to which they are attractive or unattractive. It is used here for the value-loading of communicative outcomes, for example, on religious or formal occasions, or situations which are considered crucial turning points in life, such as marriage proposals or job interviews. This is because, where much hangs on the success of a communicative interaction, people tend to rehearse – which involves repeated interactions-by-proxy in advance of the "actual" interaction and – sometimes obsessive – mental re-plays of the interactions afterwards, with, "I should I have said this when he said ?" and, "If only I'd thought of ?" The tendency to interaction-by-proxy is not then a typical feature of written communication alone, but a common effect of distancing in communication across the spectrum (the point is that most writing involves *only* interaction by proxy).

Figure 6.6 shows a model illustrating the effects of distancing on communicative functions, which was formulated after attempts to represent the same phenomenon in tabular form (as in Table 6.1) proved to be unmanageable in showing the variables

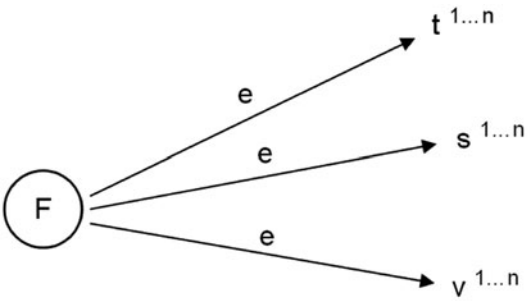


Fig. 6.6 Model illustrating effects of distancing on the communicative functions

(a computer simulation might be a feasible option, though). The following values apply:

F: communicative *functions* (i.e. contextual, ideational, interactive, social, reflexive)
t : *temporal* distancing
s: *spatial* distancing
v: distance created by *valence*, that is, the social value given to communication
e: the *extent* to which the communicative functions become encoded in the text

In synchronous immediate (i.e. face-to-face) communication, a large proportion of the communicative functions are carried out by being implicit in the situation or directly negotiated by participants (see Table 6.1 for an estimate of the proportions). With distancing, the communicative functions tend to become progressively more encoded in the text (represented by$^{1 \cdots n}$ in each case). This can be seen to happen regardless of mode: for example, in temporal distancing both a written note and a recorded phone message need to have the functions encoded verbally, depending on how much time will have elapsed before decoding. With spatial distancing, even when participants can see each other on a screen, more of the functions have to be encoded in the text – when voice alone is used, even more coding in the text is necessary, although paralinguistic features such as volume, timbre, tone, pitch and pause still have immediate force.

In academic writing, temporal, spatial and valence distancing operate simultaneously, which means that student writers are under great pressure, exacerbated by the fact that the majority of students are not even aware of the need to encode the interaction in the text, merely the need to identify and record the "right answers". Encoding the functions in the text requires some degree of interaction-by-proxy, which is why many people do not leave a recorded message on the answer-phone the first time around, because they need time to rehearse the – now temporally as well as spatially – distanced message. But there is a significant effect which comes into play with temporally distanced messages, which has impact on the form which composing ultimately takes. While interaction-by-proxy is a perfectly normal phenomenon before (and after) face-to-face conversations, or formal speeches, or interactions where the outcome is of crucial importance, there is usually a stage at which actual interaction occurs, barring mishaps.

However, temporal distancing causes the whole interaction to become split sequentially into two interactions by proxy *only* (for the most part: there are exceptions, such as when I have occasionally jotted down on a portable whiteboard utterances my hard-of-hearing mother could not pick up from my speech). This requires the capturing of the interaction on some form of material template which allows display. While the long-term memory of a human messenger could in fact be seen as the first "template" for temporally-distanced verbal communication, written text eventually emerged as a more reliable and economical template – or rather, the two-dimensional surface provided by materials such as paper (clay, stone, papyrus, wax tablets and parchment were not all that handy and/or economical). Handwritten

(or printed) texts are currently the most accessible, easily produced and cheap form of template universally available, given that people are literate to start with (electronic displays are fast overhauling printed text, and mobile phones are accessible to people who cannot afford computers, so the situation is dynamic rather than static, but a hard copy still has some advantages over a screen display). Temporal distancing necessitates a split interaction by proxy: it also requires a permanent material means of recording. Because the interaction is split, the writer has to generate all of the ideational content of the message in advance, and to project mentally where and how the interaction will go in a proxy dialogue, recorded on an external template rather than held in memory as the "conversation" unfolds. It possibly *could* be held in memory (as inexperienced writers attempt to do) if the writer were at the same time not trying to encode all five of the communicative functions in the verbal text (as inexperienced writers are unaware of the need to do so, they often fail to communicate successfully in writing).

Encoding the message is consequently much more complicated in writing than in casual speech, and requires some serious crafting: besides, its now more-or-less permanent recording on a material template means that can be judged critically in its entirety, unlike intermittent bursts of conversation, the actual form of which usually does not attract too much attention, and is soon forgotten (unless recorded: TV interviews are regularly rehearsed in advance). Because the social aspect of communication is considered so important by interlocutors, however, people generally do not want to risk leaving a socially inappropriate message on permanent record. There are obvious exceptions: I corresponded for some time via email with a delightful academic who used the salutation "yo" and typed in lower case throughout, but then he was obviously making the point that he was making a distinction between academic and interpersonal communication, which is in itself a social message. Crafting on a template with a spatial dimension (i.e. a two-dimensional template) allows much more scope, than, for example, crafting on a sequentially recorded medium (a messenger or tape recorder). This, in spite of the fact that writing is sequentially linear in space, reflecting the way speech is sequentially linear in time. With a two-dimensional template, text can be grouped, ordered and re-ordered spatially until the desired effect is achieved (see Condon & Cech on spatial use of the screen for turn-taking, 1999:20). Temporal turn-taking is reflected in spatial groupings of text on a page, which is why the interactive function of communication is achieved mainly (but not solely) by structuring and ordering in Stage 3. This is why use of a word processor facilitates major editing to the extent that it transforms composing by facilitating the carrying out of the interactive function (as well as the social function, in terms of correctness) – it also means that ideas can be generated fast in any order, and re-ordered with minimum physical effort later.

6.10 Effects of Crafting on Communication in Written Mode

Researchers into composing, notably Lindfors (1986), have commented on the crafting aspect of composing, and it is very likely that in the earlier historical stages of orthography, the physical act of writing became strongly associated with the process

of crafting artefacts because of the strong graphic element in early scripts (*vide* the historical development of the letters of the alphabet from pictograms). Hand crafting of artefacts can be seen to follow a series of stages which show resonances with the stages of composing:

- The need (including aesthetic) is perceived for an artefact. This is related to the *contextual* function, and material is gathered for the artefact's construction (corresponding with *data gathering* in composing).
- The artefact is produced/crafted and, in the process, the concept or idea underpinning it is made manifest. This is related to the *ideational* function in composing: production of artefact – transforming a concept into concrete form – corresponds with generation of ideas (into concrete form, as written text) from subconscious memory.
- During the production process, the artefact is rough-shaped/structured to fit its purpose. (Shaping corresponds with *structuring* in composing, but whereas the artefact shaping is functional in terms of practical use (and/or aesthetics), structuring in composing performs an *interactive* function).
- The artefact is polished and finished. As in composing, this performs a *social* function.
- The final effect is appraised by the crafter and others. This performs a *reflexive* function.

There will be variations according the materials used, and sometimes the material itself – a curiously shaped tusk, a weathered piece of driftwood – will spark off the concept and create the need, so that the first two stages blend, which is why "Material gathering" in crafting is included in the contextual stage. Moreover, if no suitable materials are available (a contextual contingent factor), no artefact can be planned.

The significance for writing is as follows. Firstly, the stages of crafting can be seen to be informed by very similar system of functions to that which underpins writing. However, obtaining materials in crafting relates to *practical use*, and obtaining data for composing relates to a *communicative need*, and the interactive function is replaced by the practical need to block out, shape or give broad structure to an artefact before final polishing: that is the functional – and/or aesthetic – need for form and structure. In composing, the interactive function has somehow become identified with the rough shaping or structuring of an artefact, and the interactive element is signalled by spatial sequencing and ordering on the two-dimensional template which lends itself to this strategy. In both crafting and writing, if the raw materials (ideational content, in the case of writing) are not available, the process cannot begin. This explains to some extent why data gathering – loosely corresponding with materials gathering – has moved back one stage, into a stage underpinned by the contextual function. In speech this is not usually a problem, as the interactive process itself – perhaps even the interactive *potential*, following Bhaskar's concept of causality – has the power to generate ideas. It is temporal distancing, and the consequent need to craft the interaction in advance, which moves data gathering back one step into the contextual area and produces the staggered, recursive performance

of the functions in writing: writers cannot (easily) craft and polish ideas which are not made manifest as text, ideas cannot (easily) be generated until the audience and purpose have been carefully considered in advance. Because the onus is on the writer to generate the ideational context of the message in advance, this means that some research may need to be done by the writer as to what ideas might arise in the context of the (proxy) interaction. While idea generation is the least socially- and most cognitively-directed process of all in composing, the fact that the intended audience in an actual context will not be there to regulate the social exigencies of the interaction means that the social context must be considered *before* the message is generated: it must be borne in mind, too, that social considerations regularly outweigh semantic ones in communication.

The focus in Stage 1 is strongly influenced by social input: on situating writing in its social context, and considering the social purpose of the message. Data gathering then becomes a feature of Stage 1, as data must be gathered with the social context strongly in mind to compensate for the absence of the respondent to regulate this in an *actual* (i.e. immediate) context. Hence the "slippage" of the data gathering to Stage 1. Writers, labouring away with social preoccupations, only get to have their say in Stage 2. There is another twist: the pre-empting of the interaction by gathering as much germane information as possible for the interaction in advance actually stimulates the generation of ideas, which are "spawned in data", so that even in Stages 1 and 2, inner dialogues – generative interactions by proxy – are acting as mechanisms to compensate for the absence of an interlocutor (as suggested by Table 4.2, the "Reader roles" diagram in Chapter 4). The "vortex" between Stages 2 and 3, which is thought to be a powerful mechanism for generating ideas, signals a compensatory strategy for the "other" who is not there to contribute. But because the writer is in complete control of idea generation – even though this is bounded by social considerations – writing becomes individual and creative in ways which are not possible in a spoken conversation, which, in spite of the fact that it is considered more flexible, can actually be seen to curb the imagination. It is like the difference between a trapeze act and solo flight in a glider. Paradoxically it is the need to gather data in advance – a tedious reader consideration – which ultimately sets the imagination free to soar.

To sum up: temporal distancing of verbal communication causes the whole interaction to become split sequentially into two interactions by proxy, this requires capturing of the interaction in some form of template, a two-dimensional surface for recording verbal script is the most accessible form of template cheaply available, and the spatial dimensions of the recording template offers a potential for crafting hitherto not available. The complexity of encoding all five communicative functions, as well as the fact that the text-on-template assumes the nature of a social artefact, now *demands* considerably more attention, so that composing actually takes on the aspect of crafting, which predates writing by thousands of years, and is carried out in stages because the concrete, material nature of hand-crafted artefacts requires such an approach. There are five stages in the models of composing because each of the five communicative functions corresponds roughly with a different stage of crafting. It must be stressed that both empirical models, while they

are intended to reflect key aspects of the reality of composing, are simplifications – models – which focus on key aspects of composing for the sake of clear explication. The interactive function, for example, takes place throughout composing in the dialogues-by-proxy which occur at every stage (see Table 4.2 in Chapter 4): however, the learner writer will find it helpful to focus on the spatial structuring which replaces the function of "turn taking" within a written utterance around Stage 3 of composing.

6.11 The Property of the System of Functions Underpinning Communication

I would now like to return to the issue of how written mode is the "property" (i.e. output) of the system of functions – the theoretical model – and how other communicative modes can be accounted for. This relates to the issue of input into the system of functions, determining the form taken by output, that is, the property of the system (the phenomenon of communication in the modes itself). The term "template" refers to an external, material template, but short-term and long-term memory could also be said to be "templates" enabling a conversation (as well as cue cards, in the case of a formal speech). Table 6.2 suggests that input in terms of the degree of distancing (if any), the code and the template could be seen as determining the resulting communication mode. Thus writing is the property of the system of functions which are necessary for communication to take place *if* the input to the system is *temporal* distancing, with the use of *verbal script* for code, recorded on a two-dimensional template. This is thought to be what gives composing its distinctive character, as the property of a system with this specific input.

If "medium" is added to the input variables, not only the communication modes, but the various genres operating within these modes become apparent. Inputs with regard to distancing, code, external template and medium could be seen to form a hierarchy, comprising the sequence of causal factors which determine the genre options available (see Table 6.3). Input into the system of functions are considered to be factors with contingent determination, as it is local circumstances – often beyond the interlocutors' control – which determine distancing, code and the necessity for a

Table 6.2 How input determines output in terms of mode

Input			**Output**
Distancing	**Code**	**Template**	**Mode**
(Immediate)	Spoken language	(memory)	Speech
Temporal	Verbal script	Two-dimensional	Writing
(Immediate)	Body language	(the human body)	Nonverbal communication
Temporal	Graphic signs	Two-dimensional	Graphic communication

Table 6.3 How input determines output in terms of genre

Input				**Output**
Distancing	**Code**	**Template**	**Medium**	**Genre**
(Immediate)	Spoken language	(none)	Face-to-face	Conversation
Valence	Spoken language	(none)	Face-to-face	Formal speech
Spatial	Spoken language	(none)	Mobile or telephone	Phone conversation
Spatial	Spoken language	(none)	Computer+modem	Internet conference
Spatial	Verbal script	(none)	Computer+modem	Chat room conversation
Temporal/spatial	Verbal script	Electronic lattice	Computer+modem	Email correspondence
Temporal	Verbal script	Two-dimensional template	Pen and paper	Handwritten script
Temporal	Graphics	Two-dimensional template	Pencil and paper	Sketch
Temporal/valence	Graphics	Two-dimensional template	Oils and brushes	Painting
Temporal	Spoken language	Temporal sequential template	Tape (or digital) recorder	Sound recording
Temporal	Spoken language, movement, sound, NVC, graphics	Temporal sequential template	Video recorder	Video recording
Temporal/valence	Spoken language, movement, sound, NVC, graphics	Temporal sequential template	Video camera/film camera	Film

template. However, people who are geographically close to their intended audience may of course deliberately choose a certain mode (or genre) to introduce – artificially – an element of distancing: a classic example is the "Dear John" letter. In this case, intentional determination could be said to be operating, although contingent determination might influence the actual medium (e.g. a hard copy letter sent by the postal service when one does not possess email facilities).

The kinds of ordering suggested here – and in the whole of this chapter – do not follow the ad hoc labelling imposed by arbitrary classification of surface-features, but an ordering following the socially – and physically – determined nature of communicative systems. Moreover, the ordering is informed by an architecture

of functions which can be related to real-life functioning in more than one communicative mode, and which is perhaps a generalizable principle for not only communication but other fields. The effects of distancing, code, external template and medium in for example, different forms of electronic communication should make it easier to distinguish between the effects caused by mode and medium in electronic distance education. A consideration as to how the effects of a two-dimensional monitor screen template differs from that of paper, and the reduction of temporal distancing in electronic communication could go some way to clarifying the issues Condon and Cech (1999) admitted that they were unable to clarify in their study, because they could not distinguish between the effects of the electronic medium and the mode involved (i.e. writing).

6.12 The Picture of Composing Emerging from the Modelling Process

To sum up the picture of composing which has emerged so far:

Composing is essentially a socially-embedded and socially-permeated process, the social element operating both intra- and extra-systemically in terms of internal and external factors. A distinction can now be made between the operation of a generalized social function in composing and social features which form input in specific instances of composing.

Composing is underpinned by a system of communicative functions, which, however, have become adapted in written mode in response to specific input (i.e. distancing and choice of recording template) into the communicative system. Variables occur in the form of the input into the system of functions, which is thought to determine the mode, and there are further variables which are thought to determine the eventual genres used.

As a result of composing being a distanced interaction, adaptations can be seen to have occurred in the communicative functions when translated into composing. The main adaptations are as follows:

- *the separation of the communicative functions into distinct phases,*
- *the absorption of part of the ideational phase into the contextual phase, and*
- *the modification of the generally-applicable communicative functions into the specialised composing processes noted by teachers and researchers.*

The form taken by communication in written mode is a temporally distanced interaction by proxy mediated by verbal text and usually occurring in a complex series of stages. During these stages the crafting of the verbal text takes place, the degree of crafting being determined by the extent of temporal and (if any) valence distancing.

The distinctive shape composing takes is summarised in both empirical models, the one being more suitable for pedagogical use, the other more suitable for

analysis. Neither model is a literal interpretation of composing: each is an abstraction of key elements based on the systemic functioning of communication in written mode.

Some of the variables in composing occur in the form of the input into the composing system, as shown in the analytical empirical model. The empirical models also show the internal variation in composing, in that stages of composing are recursive, and in that these generate open-ended outcomes which are, however, interdependent. Each of the stages can be seen to involve both contingent and intentional causality, the former, in external influences, or influences generated by the output of a previous stage, the latter, in effecting the communicative functions.

The commonalties in composing which the empirical models identify are the stages themselves, and, underpinning these, the functions essential for successful communication in written mode. Although the pedagogical model offers learners specific advice, in the analytical model the means whereby the functions are fulfilled can be categorised only, as they are infinitely variable. It is the underlying functions which give the composing mechanism its formal structure, and not specific composing activities per se.

Both empirical models describe the algorithm involved in composing. The pedagogical model in itself constitutes a conceptual mechanism informing the social practice of composing: it could also be termed a "social algorithm" in providing guidance for young people as to how to engage effectively in a social process.

6.13 Rationale for Current Approaches to the Teaching of Written Composition

The theoretical model of communicative functions to some extent provides a rationale for current teaching approaches to written composition, if one considers that certain approaches focus more on some of the communicative functions at the expense of others. The ideational and interactive functions are emphasised in the process approach to written composition, the former by the so-called expressive and cognitive schools (see Reid 1993:4–8), and the latter by practitioners who emphasise interactive methods of responding to students' texts, such as conferencing (Graves 1978, Zamel 1985): as well as emphasising that composing is part of an interaction, conferencing could also be seen as a mechanism for fulfilling (and modelling) the reflexive function. The contextual and social functions are the focus of genre-based approaches (Cope & Kalantzis 1993, Cazden *et al.* 1996, Swales 1990), social constructionism (Bartholomae 1985, Bizzell 1992, Bruffee 1984, 1986, Coe 1986, 1987) and critical approaches (Berlin 1988, Clark 1992, Faigley 1986, Ivanic & Simpson 1992), although the last-named also include reflective studies where considerations of the writer's voice are handled with individual student writers in retrospective, reflective fashion. The complex interplay of the extra- and intra-systemic functioning of the social element in composing also goes some way towards explaining the focus on situated practice of the New Literacy approach (Cazden *et al.* 1996:85–86, Street 2003, Paltridge 2004). Cazden *et al.*

are, however, aware of the limitations of immersion in any given social practice, which can obscure the systemic aspects of literacy (Cazden *et al.* 1996:85, see also Street 2003:3–4). It is regrettable that political and ideological schisms, as well as the current tendency (1) to focus exclusively on discourse and (2) to identify discourse primarily with text appear to have prevented a useful theoretical synthesis of the various aspects of writing focused on in the approaches mentioned.

6.14 Conclusion

The second cycle of modelling started off with reflection on the mass of data collected from the video protocols over a 9-year period, which led to the intuition that "aspects of communication" underpinned the first empirical model, accounting for its effectiveness (particularly in diagnosis) as a pedagogical tool. Reconstructing the formulation of the first empirical model using Franck's modelling process, and continuing with a second cycle of modelling led to the realisation that the "aspects of communication" were in fact a system of communicative functions, that is a theoretical model. This led to a consideration of how the communicative functions might have become adapted in written mode. Finally, a refined empirical model was formulated, which was applied in a further set of video protocols (described in the next chapter) for final validation of the models. In seeking to find the rationale for a practical pedagogical model of composing, far more ground has been covered and more insights (into both composing and communication) have been revealed than were intended at the outset of this study, which could have taken the routine Educational Technology stance of refining an artefact by trying it out in successive instances after interim modification. The modelling process has in fact been productive in explaining more than that which it set out to explain (Judd 2003:29), namely, the design of a computer artefact. The conclusions drawn from the last set of video protocols testing out the more "analytical" empirical model will be discussed in Chapter 7.

Chapter 7
The Explanatory Force of the Models

7.1 Introduction

The formulation of a theoretical model of communicative functions, as well as a consideration of the effects of distancing on communication, went some way towards explaining why composing manifests in five consecutive stages, as shown in the first empirical model. However, while evidence supporting the existence of these stages could be found in 35 instances of real life student composing (as well as in literature), the testing out of the first empirical model against real-life composing revealed anomalies and problematic issues (Pratt 2007b:308). In particular, it could not account for the fact that the graph profiles of some of the underachieving students resembled the graph profiles of successful students, nor could it accommodate contingent factors which clearly impacted on composing (e.g. paradigmatic congruency – or otherwise – with their assessor's criteria). To address these issues, a second more analytical empirical model was formulated which included an input option feeding into the composing system.

The second empirical model was used to analyse student composing in 13 further video protocol analyses. The revised model provided a far more cogent explanation of actual instances of student composing, without the anomalies or exceptions resulting from analysis with the first empirical model. In particular, it explained how internal variation within the composing system could be triggered by external contingent factors, as well as by the results of internal processing. Most importantly, the model helped to explain the degree of success (i.e. in terms of scores given by an independent assessor) achieved by each student writer, and made it possible to diagnose areas for learner development with specific reference to the observed composing procedure of that learner. According to Franck's terms of reference, this constitutes validation of the second empirical model in terms of the purpose of the modelling, which was to inform composing software which would offer students insight into their composing performance and specific areas for development. Admittedly, it is validated only in the sense that 13 instances of composing were analysed, but then it also makes sense of hitherto unexplained factors in the previous 41 instances.

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7.2 The Meaning of "Validation" in This Study

It was mentioned earlier that there is no one method of validating human performance models, that different types of models require very different validation techniques, and that the validity of a model needs to be assessed in terms of its purpose. It is important to emphasise that it is not the position of this study that the theoretical model can be validated in the Humean empiricist sense of its being able to generate law-like empirical regularities (Franck 2002:297, see also 232–234). While close studies were made of 54 students composing in video protocol analyses over a period of 20 years, the empirical models produced in this research were not tested out statistically in large data samples in an attempt to show them to be reliably predictive. This is because the outcomes of open-ended social processes cannot be "reliably predicted". Franck (2002), citing Bunge's inventory of determinations, points out that not all determination is causal, and Bunge (in Franck 2002:234) lists "interaction" as a form of determination as distinct from causal. It would be inadvisable then, to ascribe a contingent type of causality to an interactive process, or to claim that reliable predictions could be made on the outcome (prognosis is possible in a diagnostic sense, but not in a causal-predictive sense). There are, of course, causal elements in an interactive process in the form of contingent factors impacting on the process, and intentional determination (i.e. causality) in the fact that human beings are carrying out the process. Even so, one cannot predict exactly how causal factors will impinge any more than one can predict exactly how human beings will react in any given situation.

The focus in this study is rather on identifying the general nature of the constants and variables which give rise to the infinitely varied outcomes of an interactive social process, *thereby explaining the outcomes and giving participants the option of having more control over that social process.* Empirical models are validated according to the principles set forth by Franck (2002), in terms of their explanatory force, in this case, the power of both empirical models to explain instances of real life composing. This speaks directly to their proposed pedagogical use in informing educational composition software. The emphasis, then, is on the diagnostic value of the empirical models and the software based on them, and the practical guidance which they offer to learners. To sum up: the empirical models should be evaluated only in terms of their intended practical application (not that their use – or validity – is necessarily limited to this). The frame of reference, then, is the models' suitability for informing courseware: the fact that the modelling process appears to have revealed far more about communication in general and writing in particular than was initially envisaged does not require a demonstration of the models' applicability to all facets of communication, or even all facets of written communication. The theoretical model, according to Franck (2002:295), is confirmed by its correspondence with the empirical model, and this correspondence has already been shown in Chapter 6. What remains is to show the explanatory power of the second, more analytical empirical model which was formulated to resolve some of the anomalies left unexplained by the first (i.e. pedagogical) empirical model of composing.

Before doing so, I need to add that, while one cannot reliably predict the outcome of open-ended social processes, generalizations can be made about the likelihood of certain outcomes in certain cases. For example, if the five communicative functions are viewed as the prerequisites for communication in written mode, the omission to carry out one or more of the functions (effectively, that is) will suggest – strongly – that composing will not be completely successful (or will fail) in that instance. Furthermore, if earlier stages of composing are seen as necessary precursors to subsequent stages, omitting or dealing perfunctorily with earlier stages will suggest either that recursion to an earlier stage will be necessary to repair the omission, or that, once more, the outcome will not be entirely – if at all – successful. There is no guarantee, however, that dealing with all composing functions in any given order will in fact result in success. This is because there are too many variables impacting on the process in the form of contingent factors for prediction of success to be an option. The composing mechanism, as has been suggested in various advance publications, is in the nature of a social algorithm with stochastic causality (Pratt 2005a). It is the contention of this study that making learners aware of the algorithm will give them more control over the social process involved (cf. Judd 2003:51). While this can be done in various ways, including modelling by the example of the instructor (Pfingstag 1984), the option proposed in this study is to develop composition software which will model the process.

7.3 Issues Explored in the Video Protocols

The property of the system, as explained previously, is the actual phenomenon of composing itself, or communication in written mode. The test of the empirical model is what relation, if any, it bears to real-life instances of composing and, most importantly, what insights viewing composing in this way might offer teachers and learners. It has already been demonstrated in some detail with reference to the literature on composing and data from earlier research projects that the complex recursive process involved in composing can be partly explained in terms of the stages described in the earlier empirical model (i.e. the user's model). The systemic nature of composing is further explored in this chapter with reference to the data gathered in 2005, namely the video protocols of 13 first year Town and Regional Planning students composing a revision assignment. I commented in Chapter 6 that the round of video protocol analyses described here was carried out "in order to demonstrate the operation of some of the factors which give rise to the infinite variations apparent in composing, as shown in the second empirical model". Clarifying the interaction of intra- and extra-systemic factors in composing was seen as a possible way to explain individual variations in composing. It was also mentioned earlier (in Chapter 3) that models can have "a *prognostic* quality regarding possible outcomes of a particular phenomenon" (Judd 2003:54, my emphasis). It was hoped that the explanation provided by the model might further assist in diagnosing problems experienced by the various writers, and suggest ways in which these could be pre-empted and avoided or solved.

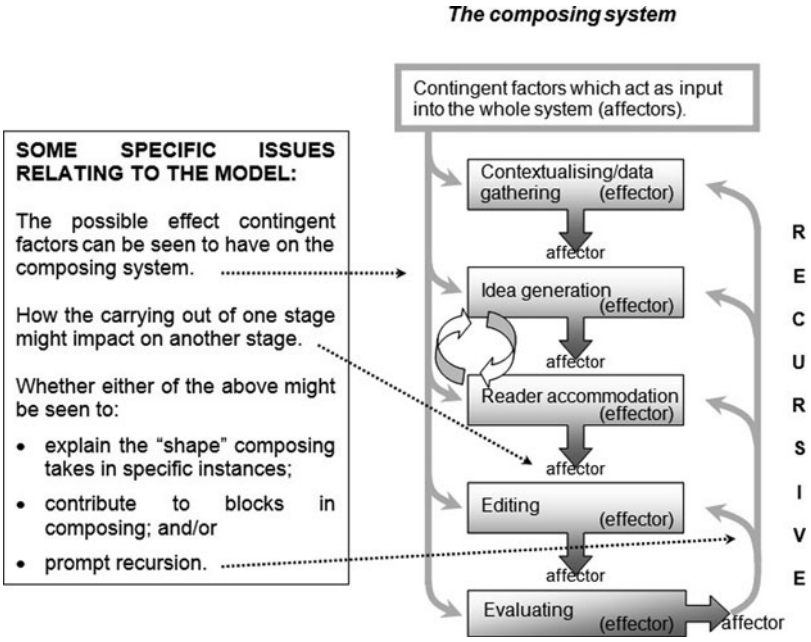


Fig. 7.1 Issues explored in the video protocols

While it was hoped that the second empirical would provide more insights in explaining composing behaviour in general, there were specific issues relating to the new model which were germane to the new round of video protocols. These issues hinged around the two main developments in the model, the inclusion of contingent factors as input into the composing system, and the notion that the carrying out of each stage might not just pre-empt but actually affect the carrying out of subsequent stages. Thus the specific issues to be explored in the model (see Fig. 7.1) were:

- the possible effect(s) contingent factors could be seen to have on the composing system; and
- how the carrying out of one stage might affect that of a later stage.

It was hoped that exploring these issues might show how either of the above phenomena might:

- explain the "shape" composing takes in specific instances;
- contribute to blocks in composing; and/or
- prompt recursion.

It is, then, the impact of extra-systemic factors on the composing system and the operation of elements within the system which is the focus of this chapter.

7.4 Interpreting Composing Using the Model

The real test of the empirical model is not just whether it can be applied to actual composing, but whether it makes better sense of it in helping to clarify the complex processes taking place when writers engage in written communication. It must be emphasized that the whole process of drawing up a writing profile, whether in graph or narrative form, is interpretative, and not measurable in quantifiable terms, although linked to measurable data, namely, recorded activities per minute of composing. The researcher attempts to arrive at the most accurate interpretation of events, guided by the models and the data available. He or she may in fact not always be sure of the best interpretation, and may consider more than one explanation as the possible emergent "truth". The reader must decide not whether the end result is "correct", but whether it is supported by the evidence of the data as matched against the postulated models. Finally, the issue is not so much one of: "Do events match the model?" but of: "Does the model make sense of events?" The more it does so, the better the fit. What the model is doing then, is making better sense of events by revealing the complex system of forces underpinning events. Models of this kind assist the investigator to see things which were not clear before, as the models reveal events more clearly by giving insight into the mechanisms driving them. There is then the potential for the researcher's experience of reality to be transformed from a surface view of events – in Bhaskar's Domain of actual – to an in-depth view which approximates more closely the Domain of real (see Table 7.1).

Table 7.1 The model as represented in Bhaskar's three domains (1978:56)

	Domain of real	**Domain of actual**	**Domain of empirical**
Mechanisms	composing algorithm		
Events	instances of composing	instances of composing	
Experiences	concept of composing	concept of composing	concept of composing

It must be stressed that there is not necessarily a one-on-one relation between writer activities and composing processes, although certain activities have come to be recognized as markers or indicators (e.g. drawing usually signals some form of creativity). A student ostensibly writing in ballpoint on foolscap may be doing any of the following:

- taking notes (Stage 1)
- generating new ideas (Stage 2)
- structuring for the reader (Stage 3)
- preparing the piece of writing for final submission (Stage 4)
- reflecting (i.e. by jotting down thoughts) on progress (Stage 5).

Moreover, in the case of Stage 4 activity the graph profile would represent this activity as "Editing", as the social function includes preparing texts for submission. In

the case of the composing sessions, this involves writing out ideas neatly in orthographically correct sentences and paragraphs (and heading this with what one of my student volunteers called the "normal, formal things"). The prior identification of the underlying social function should, however, help to clarify that actual editing is not the only form of rendering text socially acceptable.

7.5 Analysis of Data from the Video Protocols

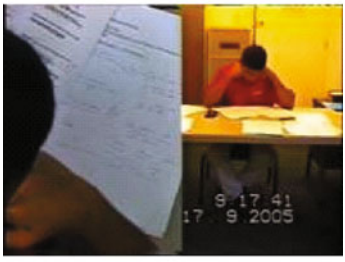
The data from the 2005 video protocols were analysed according to the following subsections:

- A summary of the student's composing procedure.
- The student's results (as assessed by his/her lecturer).
- The model as applied to real life instances of composing (i.e. in this case)
- Systemic issues revealed by the model
- Extra-systemic issues revealed by the model
- Diagnostic and developmental use of the model

Table 7.2 gives an excerpt from a series of frames taken from a digital video recording and matched with transcripts from the subsequent video reconstruction. Composing profile graphs were constructed from the videotape texts, the interview transcripts and the various text drafts produced by the student writers to provide a graphic representation of the writer's focus, throughout composing, on the composing functions contained in the empirical model (see Figs. 7.3 and 7.4). It must be emphasised, however, that, while favourable contingent circumstances together with good systemic control on the part of the writer generally (but not always) resulted in a stepped, recursive graph profile, *the shape of the graph* per se *is not an indicator of success at written communication*. The graph profile merely indicates on what stage(s) of composing a writer focused at any given time during composing: it does not indicate whether the *function* of that stage was performed successfully (if at all). The graphs do, however, help to indicate when a writer was attempting to carry out too many stages at once, or when there was interference of one stage with another. They also indicate when important stages were left out, or when the writer focused on social correctness (or structuring) too early on in the composing process (the latter often resulting in a block to idea generation). Finally, they are of key importance in alerting the researcher to extra- and intra-systemic variation in specific instances of composing: these can then be followed up with reference to the interview texts, the video texts, the hard print texts, and the assessment figures (both the assessor and the students could also be called in for further clarification).

The purpose of this study is not to suggest that there might be an ideal "good writing profile", but to show how the revised empirical model explains variations in composing in ways which the original user's model did not. It is the "explanatory force" of the model which is the focus of this chapter. As even the summaries of the analysis of the 2005 video protocols came to over 80 pages, they are not included

Table 7.2 Excerpt illustrating reconstruction of composing

Video Frames	Activities	Taped discussion/commentary
  	**(mind map contd)** 9:18:21	And, as you said, at the end you add your own bits as well. They might be something you've remembered – they didn't come directly from the note – or something you did in class? Here we go. [*The videotape is fast forwarded.*] **[9:17:00]** Now, you're on point b3 or something – 3 at the top **[9:17:12]** – you're just writing down another note – what's it say, here? It says "Red-" … **Redistribution and Tenure Reform.** Ok: you got that. Here we go. Now let's see, taking your pen, looking at the – video [*laughter*]. **[9:17:25]** Ok. **I was just thinking of any other points I can put in.** *He looks up, then looks at his note.* **[9:17:31]** You see how it [i.e. playback] helps recall? Now – you're reading your class note? **[9:17:41] Yes.** That one with all the writing on it? **No, that was my additional information that's in at the bottom.** Ok. Now you've turned your class note over, you're still reading it, at 9:18:03. **I don't think there was anything on that page. See, I just looked from the top to the bottom – you can see? And then I just put it away.** Uhuh. [*The videotape plays on.*] There we go. **So that's it: the next note which I'm looking for.** So you're processing your notes? **Ja.**
	9:18:22 **jots down rough points**	**[9:18:22]** *He takes a blank rough page and puts it over the topic page so that the topic just shows under the top edge.* **So now I take another scrap page, and then …** All right, so, 9:18:25. **There's this one** [*indicates the rough draft page*] **here…** right **…just on Restitution it starts off.** Now, tell me what you're actually doing on these pages. **This is my draft copy, so it was, like, serious points: these are just the headings for the – for this.**

here, but can be accessed in Appendix C of my thesis (Pratt 2007b:309–393). This chapter contains the main conclusions only of that analysis.

7.6 The Explanatory Force of the Empirical Model

In this section conclusions will be drawn about the enhancements offered by the second empirical model in terms of explaining the variations found in the individual composing of the students involved in the 2005 video protocol analyses. Figure 7.2 illustrates these enhancements graphically by showing how the later empirical model represents both extra- and intra-systemic influences in composing. It must be stressed that extra-systemic factors are so intertwined with the systemic operation in actual instances of composing that it is a highly complex task to extricate them in analysis, and extremely difficult to discuss them separately. In spite of this, it can be shown that the second empirical model goes some way towards clarifying why knowledge of (and ability to fulfil) academic requirements *and* expertise at exploiting the composing system are both important for success in academic writing. Most importantly, it offers insights into how extra- and intra-systemic factors can work together – or against – each other in actual composing practice.

As I suggested at the outset, I shall attempt to draw together some examples which show how the model accounts for the effect of extra-systemic influences on composing (i.e. the possible effect contingent factors could be seen to have on the composing system). I shall also give some examples showing how the model

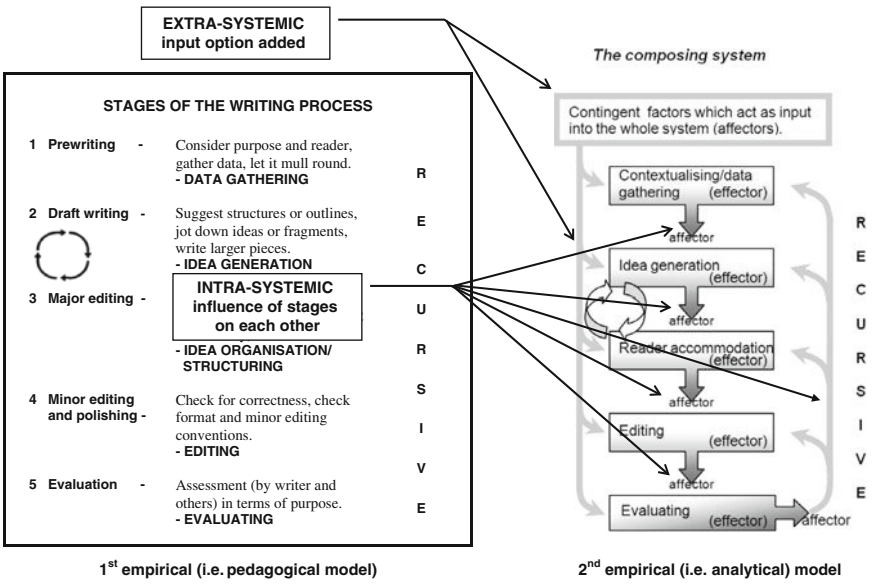


Fig. 7.2 Enhancements in the second empirical model

accounts for intra-systemic variation in composing (i.e. how the carrying out of one stage might affect that of a later stage). Examples will also be given, which, it is hoped, will show how either of the above phenomena might explain the "shape" composing takes in specific instances, contribute to blocks in composing, and/or prompt recursion. Both extra- and intra-systemic factors will be explained in terms of their impact on performance, as assessed by the formal evaluation of their scripts by an independent assessor. But before doing so, I shall look at the general configuration of the second empirical model, which is also confirmed by the latest data, and suggest what problems are solved by the enhancements to this model.

7.6.1 The General Configuration of the Model Confirmed

The 38 previous video protocol analyses had already confirmed the basic premises underpinning the second empirical model as reflected in the literature on composing. There is thus already sufficient evidence from the literature and actual instances of composing to support the position that composing comprises a series of complex recursive stages, that both creative and logical faculties are involved, that best composing practice involves focusing on one stage a time, that revision and editing are best left until later on in the process, and that judging the overall effect is best done at the end (although monitoring of progress can – and does – take place throughout composing). The data gathered up until 2000 support the contention that there is a match between the model and real life instances of composing as experienced by participants. The 2005 data as shown in the 13 writing profile graphs confirm this view: there is evidence of all five stages in the composing behaviour of all of the student writers (see Figs. 7.3 and 7.4). Not all writers necessarily managed (or, perhaps, needed) to effect a complete cycle of redrafting in the time available (the latter, of course being an input factor affecting the composing system). The writing profile graphs suggest that the most successful writers (as judged independently of the researcher) followed the stepped, recursive graph indicative of felicity conditions impacting on the stages represented in the second empirical (i.e. analytical) model. Two writers (i.e. Busiswa and Mthobisi) provided evidence of the inner dialogues thought to facilitate composing by declaiming or reading their essays out aloud ("judging" – or Stage 5 – dialogues, in this case). One writer (Zafika) was observed using self-talk to resolve a block: "I always do that – talk – when I'm stuck" (a Stage 2 dialogue in this case, as the block in question interfered with idea generation).

While the top scorers tended to follow the stepped, recursive pattern (see column 1 in Fig. 7.3) which appears to be the result of optimum conditions impacting on the composing system, the data indicated that more than a profile indicating felicity conditions is needed to account for performance. Figures 7.3 and 7.4 may help to illustrate this. While they show that, of the nine students who obtained above average to excellent scores (i.e. 60% and over), only two profiles (Earl, Rochelle) are notably divergent from the pattern indicating felicity conditions, they also show that, of the four less successful students (50% and under), one (Thandeka) has a

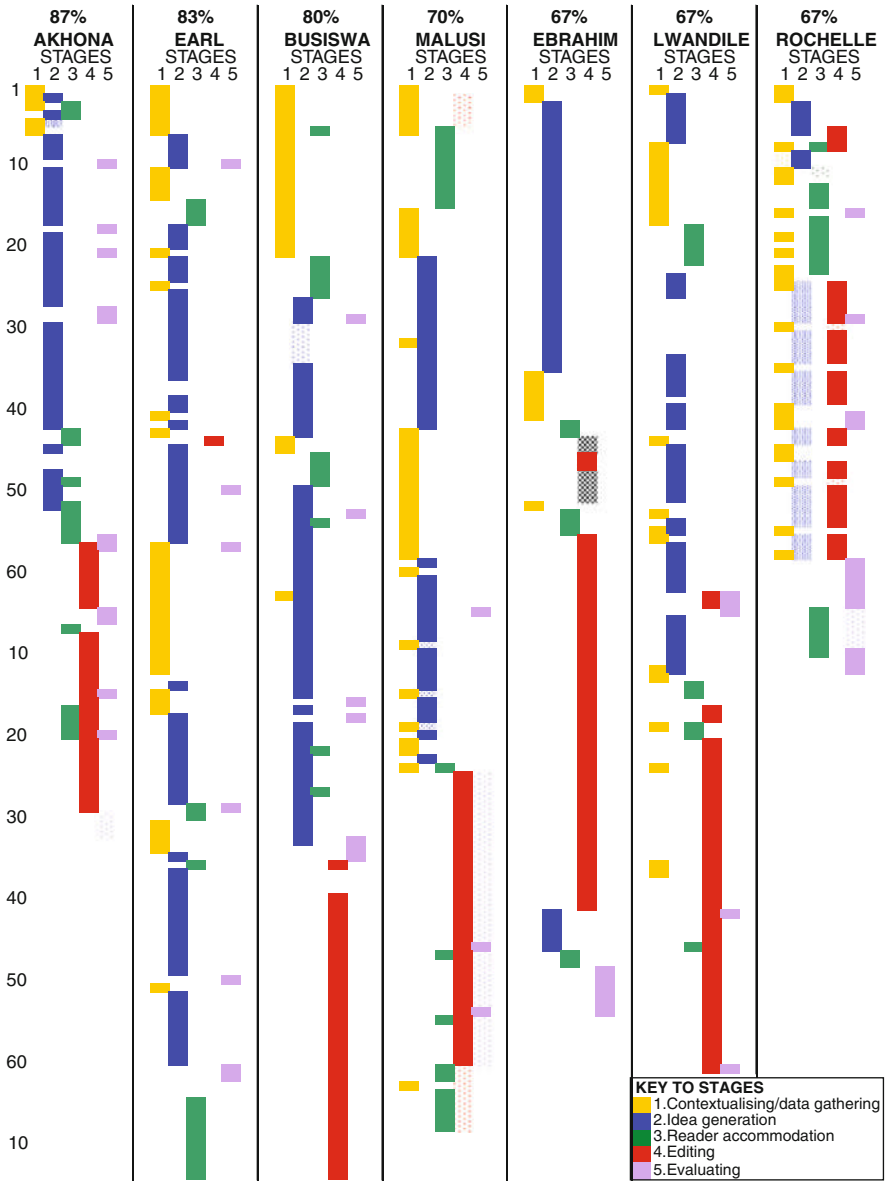


Fig. 7.3 Composite 1 of composing graph profiles

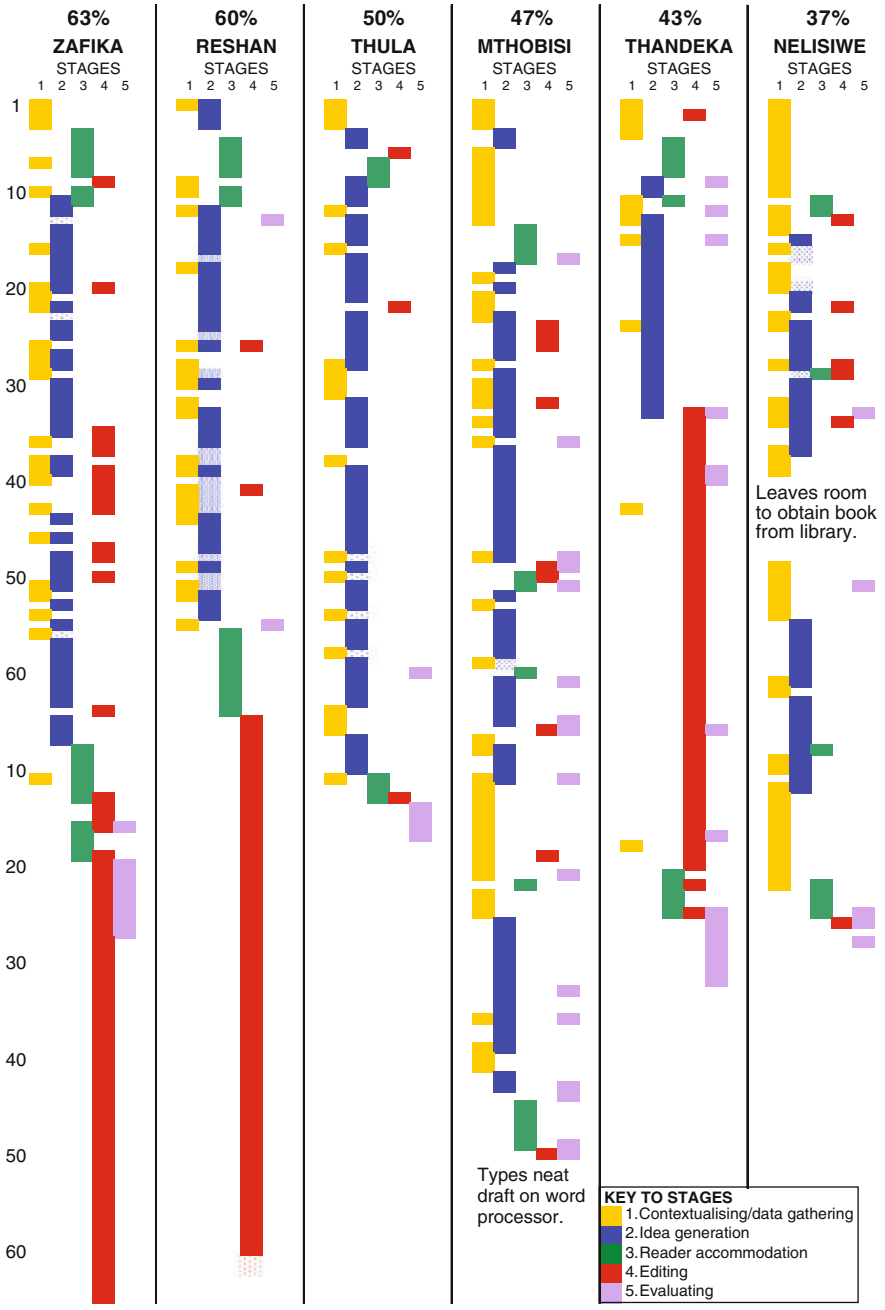


Fig. 7.4 Composite 2 of composing graph profiles

profile – supposedly – indicating felicity conditions. Moreover, the least successful student (Nelisiwe) has a graph profile which is very similar to that of the second highest scorer (Earl). This can be explained by the fact that the profile graphs merely show when a writer was focusing on a specific stage, not whether the function of this stage was performed successfully or not. It must also be remembered that the amount of time spent on a given stage can give a misleading picture, as some functions (e.g. integration of subject content) may have occurred before composing commenced, and that speed can be attributed as much to skimping as to expertise. This is why a profile based on the inter views, texts produced and the assessor comments is needed when analysing composing, in order to establish what was actually accomplished at each stage, and in particular, how extra-systemic factors could be seen to have impacted on the composing system. It needs to be established whether composing is geared towards achieving the desired outcome, and in fact whether it is successful in doing so, as judged by the intended audience (e.g. teacher, examiner, publisher, public). It is not surprising, then, that dominant approaches to the teaching of academic writing focus almost exclusively on academic requirements with scant regard for systemic issues. This study suggests that, as with all forms of communication, while local contextual issues may materially affect the outcome, it is the core systemic functions which play a critical part in satisfying the demands and/or overcoming the constraints of any given context.

7.6.2 Previous Exceptions Accommodated by the New Model

The second empirical model can account for the exceptions arising from the data gathered prior to this study, in that some students who were clearly creative – or at least competent – in their composing approach did not achieve an entirely felicitous result, even though they could be observed to have followed the pattern suggested in the first model (the user's model). Conversely, some of the students who were successful did not seem to be following this pattern. The problem with using the first empirical model for analysis was that exceptions had to be dealt with on an ad hoc basis, and situations such as examination composing (where felicity conditions are invariably compromised) had to be excluded. The formulation of the second empirical model meant that not just the exceptions, but also a wide variety of idiosyncratic composing behaviours could now be accommodated within the model. This was because of the addition of the input option which indicated how extra-systemic factors might impact on the composing system (see Fig. 7.2). The theoretical model of composing (i.e. the system of communicative functions) could then be confirmed more strongly, because what had previously constituted exceptions could now be largely accounted for in terms of input affecting the operation of the system. Even the situational constraints of having to write an essay in the lecturer's office with video cameras recording the session could now be accommodated within the category of "contingent factors", with any noticeable effects on the composing system included in the analysis.

7.6.3 The Influence of Extra-Systemic Factors on Composing

Table 7.3 shows some of the extra-systemic factors which could be expected to impact on the composing of all student writers, but not necessarily in the same way or to the same extent. The personalities of the participants, even their mood and state of mind at the time, were also significant factors, but it must be borne in mind that participants volunteered for a composing project, not psychoanalysis, so that any personal factors influencing composing needed to be treated sensitively. This applies, too, to the lecturer who gave up her time to assist with formulating a suitable topic and assessing the assignment. The extra-systemic elements provided in this respect were therefore treated as givens, and not analysed or critiqued except

Table 7.3 Extra-systemic factors common to all sessions

Extra-systemic factors common to all sessions	Anticipated effects on the composing system	Stages most likely to be affected
a. The setting of composing session in the context of a Land Reform revision assignment in the 1st year of the town & regional planning diploma	Less time needed for students to orient themselves to the situation or to gather materials (Students were informed about the general topic and told to bring materials).	Stage 1: Contextualising and Data collection
b. A town & regional planning control test written during the project	Less time spent on topic analysis. Less time spent looking for data (possibly more reliance on memory as a data source).	Stage 1: Contextualising and Data collection
c. The politically and emotionally fraught nature of the subject matter (i.e. land reform)	Content and tone inappropriate to the required academic genre dependent on participant's background and experience.	Stage 2: Idea generation, and Stage 4: Editing
d. The "three mechanisms" involved in the South African government land reform programme	Stilted structuring of essay content based on the three mechanisms, more time spent on "knowledge-telling" than argument.	Stage 3: Reader accommodation, Stage 2: Idea generation
e. Time and length constraints	Less recursion and fewer drafts overall, less time spent on assessing progress.	The composing system itself, and Stage 4: Evaluation
f. The composing venue (i.e. the researcher's office) and use of video cameras to record composing	Additional constraints or inhibiting effects depending on individual response.	Potentially all stages or the system as a whole

inasmuch as the researcher contributed (i.e. by not providing assessment criteria or not properly contextualising the composing task: these shortcomings, although fairly typical of academic essays on the whole, must be attributed entirely to the researcher, and not the academic staff or Department concerned).

(a) *Composing in the context of a Land Reform revision assignment*
The composing profiles reveal that the student writers did not necessarily react in the same way to the same contingent factors contextualising the assignment. With reference to the setting of the composing session in the context of a Land Reform revision assignment, Akhona and Ebrahim spent very little time orienting themselves to the composing task, although Ebrahim did come back later to study the new notes (the Government handout). It must be emphasised that the brief time spent did not necessarily imply successful completion of the contextualising function, as Ebrahim did not address the issue of academic requirements early on, but chose to interpret the topic as inviting a personal response (misled by another contingent factor, an earlier assignment which *had* required a personal response).

(b) *The Town & Regional Planning Control Test*
In Akhona's case the proximity of the Control Test on Land Reform meant that she had excellent control of her essay subject matter and did not spend much time accessing new material. Earl, on the other hand, although he had written the test that morning, spent some time looking for specific points to support his answer. Busiswa had learned only key points for the test, and had to make much more use of her notes during the composing session (the first time she had really studied them, according to her). Ebrahim did not spend much time scanning his notes, but he did process them thoroughly and efficiently, and went back later to review the "new notes" (i.e. the government handout). Of the rest, Thandeka alone did not spend too much time reviewing her notes: all of the others tended to refer back to their notes well into the later stages of composing (Thandeka scored only 3/12 for content, however, suggesting that she perhaps *should* have taken more time to review her notes). It appears from the above that individual response to the composing task in hand was a more significant contingent factor than the occurrence of the Control Test per se.

(c) *The politically and emotionally fraught nature of the topic*
The politically and emotionally fraught nature of the subject matter (i.e. Land Reform in South Africa) was handled with restraint on the whole, but both Ebrahim and Thula responded with a content and style which was inappropriate in terms of academic requirements. In Ebrahim's case, his profile graph (see Fig. 7.3) suggests a good control of the composing system (apart from the block). This is an example of how input into the system in the form of a strong emotional response to the subject matter can work against apparent composing expertise. Reshan's language bordered on the emotive at times, but he edited his text later. It must also be borne in mind that, while the subject of Land Reform is particularly fraught for 75% of our student population (i.e. those whose families were affected by Apartheid land laws), it may have in fact helped to "level the playing fields" in this case, as the isiZulu

and isiXhosa-speaking students were more likely to have a passionate rather than merely academic interest in the topic.

(d) *The "three mechanisms" of Land Reform*
The "three mechanisms" or "pillars" of the South African Government's Land Reform programme tended to dominate the essay structure of most students, and in fact the assessment criteria demanded some knowledge of the Land Reform programme, including the three mechanisms. Earl was particularly successful in reducing the amount of space these mechanisms took in proportion to his whole essay, and spending more time on his actual argument. Busiswa took a different tack: she realised that an essay based around these mechanisms might be "boring", and came up with a more original argument structure (but left out some key content as a result).

(e) *Time and length constraints*
Time and length constraints on the whole meant less recursion in the sense of complete cycles repeated, but appear to have triggered more recursion to Stage 1 activities, in that many students rushed their data-collection early on and had to go back repeatedly throughout composing to access data as they wrote (e.g. Lwandile, Rochelle, Zafika, Reshan, Thula, Mthobisi and Nelisiwe). It must be stressed that the writer's *perception* of time appeared to have more effect than actual time constraints. For example, Mthobisi, who took nearly 4 h, was determined to polish his essay by retyping it on word processor, but produced very little more than a first draft. By contrast, Rochelle at the outset decided to work economically and polish as she drafted (with frequent recursion to Stage 1 to access data) because she could not spare the time. She also had influenza on the day of composing and this may well have contributed to her desire to finish quickly. Zafika appeared to be unnerved by time pressure (and the cameras, although she said that she later "forgot" these), while Busiswa, who had to put off an appointment because she took longer than anticipated to finish, handled the time issue quite calmly. Malusi was so used to writing under time pressure that he had developed strategies to help him cope, but these could be seen to diffuse his composing focus at times. While he achieved a good result, in fact better than two out of three of the mother-tongue speakers of English, he did not evaluate his essay at the end. There was a touch of pessimism here which revealed the frustration of a good student who knows his chances of polishing and refining his essay are minimal when writing under time pressure: "Ah, it's like when you've finished, and you've got that 10 min, and you go over it and, like, you find so many mistakes." Writing under time pressure also causes fatigue, and while some students took conscious breaks to refresh themselves (notably Lwandile), others, such as Akhona, focused on the task to the extent that they became too fatigued to assess their essays at the end. Some students (e.g. Ebrahim) ignored the length constraints, and others (e.g. Akhona), kept to them at the risk of sacrificing necessary content and losing marks. Length constraints could also be seen to prompt some quick restructuring to compress passages while on the neat draft (e.g. Akhona), but this kind of revision is not unusual in the later stages of composing even when time and length constraints do not demand it.

(f) *The composing venue and use of video cameras*
Finally, the office venue and cameras appeared to bother students far less than might have been expected, with several students taking it in the spirit of co-researcher and occasionally checking that their scripts did not move out of camera range without necessarily losing focus on what they were doing. Zafika was nervous of the cameras at first, but settled in, although she occasionally seemed to be using her pages as a screening mechanism. Nelisiwe seemed acutely conscious of the camera at times, but then the playback revealed that she was attempting to conceal a transcript taken from library sources off-camera. Most students said that they would have composed over a longer period of time and would have redrafted more when composing at home. Some students appeared to achieve better results than they would have done off-camera. Busiswa was quite surprised at her excellent result, and said that the recording session had obliged her to study her notes carefully, which she had not done before. Malusi said that he had tried his very best because he was getting a research assistant's fee for participating in the project. Lwandile said that he had actually liked having the cameras there, because it supplied some pressure to encourage him to do "something which is good".

(g) *The effects of lecturer emphasis on Introductions*
The 2005 protocols confirmed a tendency noted in the 1993 protocols, that the lecturer's emphasis on Introductions can lead to a systemic variation where a focus on reader accommodation appears in the earlier stages of academic composing. Academics appear to emphasise the importance of the Introduction to their students (an extra-systemic factor) to such an extent that the graph profiles often show a focus on structure pre-empting a focus on essay content, to the extent of creating a built-in block (i.e. it compromises the effective systemic operation of composing). This can result in an impasse early on, as jotting down putative content first would resolve the very problem of how to introduce one's treatment of the essay topic (the "brief" with which the Town & Regional Planning students all struggled). As a result, many of the profiles of the successful academic writers show a too-early focus on structure (e.g. Akhona, Earl, Busiswa, Malusi, Lwandile and Rochelle). The rule-of-thumb "solution" which many of the students reported as "good teacher advice" is of course to leave the Introduction out until one has finished the Body, or to write a pro tem Introduction. This rule-of-thumb would make better sense to students if it were explained to them that Introductions can perform a focal as well as an enabling function: the pro tem Introduction focuses the student on the topic, and is then re-written later as an enabling device performing the reader-accommodating function of explaining the treatment the topic is to receive. The most successful students realised that their Introduction helped them to focus on the topic, but found it difficult to come back and rework it into an enabling device. Earl was the only student who came close to writing an enabling Introduction, but wrote it before generating his essay content. This is perhaps why it is generalized and banal, and not because he has not yet developed a specialist academic discourse (i.e. language repertoire) for composing Town and Regional Planning essays.

(h) *Other extra-systemic factors affecting composing*
Extra-systemic factors such as fatigue/hunger, cell phone calls, self concept, previous assignments, and enthusiasm for the task all obviously had some effect on composing, but were not dealt with unless they could be seen to impact significantly on the composing system, and hence on the result. For example, the alternative topic ("Is land reform heading for success? Discuss, with reference to land ownership.") appears to have elicited a less rigorous approach than the stock topic ("Discuss the effectiveness – or not – of the land reform programme with specific reference to the land claims process.") The alternative topic was not intended as a manipulation, but was used occasionally so that students would not know which topic they were being set (i.e. from chatting about it privately). This is because if the exact topic were known in advance, it was thought that it would result in some of the Stage 1 activities not being captured on camera, and therefore not being available for analysis. Since the wording of a topic can be seen to contain very little of the actual academic requirements, this has not been explored except in the case where it appears to have elicited a personal rather than objective response (e.g. as in the case of Ebrahim's essay).

(i) *Extra-systemic factors contributing to success*
The two most significant extra systemic factors contributing to success emerged as being the student writer's concept of composing and knowledge of the specific academic requirements operating at the given time (as well being able to fulfil these, of course). These concepts are not always articulated clearly or even – necessarily – accessible to conscious recall, but observable as the kind of reflection-in-action identified by Schön (1983). Clear structuring and expression of argument are what contribute to the intellectual quality of Akhona's essay: to achieve this, she needed to know both the nature and putative content of the type of argument she was required to present, to be familiar with stock academic structures, and to set about the task of constructing her argument in a gradual systematic procedure which crafted the whole. She also needed to have some command of her subject matter over and above that which could be gleaned piecemeal while constructing her case, and Akhona clearly had a better conceptual organisation of her subject matter than most of the other participants in this study. This perhaps accounts for the continual returning of the less successful students to their sources: they did not in fact have clear "conceptual maps" of their subject matter. A common contingent factor triggering recursion to Stage 1, then, would be lack of subject knowledge and the mental schemata which come from properly internalising specialist data. However, it must be stressed that, when the composing system is used effectively, it obliges learners to deconstruct and reformulate familiar data structures in new configurations. The clear unfolding of Akhona's argument in her essay text, while it lacks the studied connecting devices of more experienced writers, did not come from her notes or other sources, but was her own construct. This could be established from observing her composing procedure, which her graph composing profile shows as the complex series of stages mirrored in the empirical model.

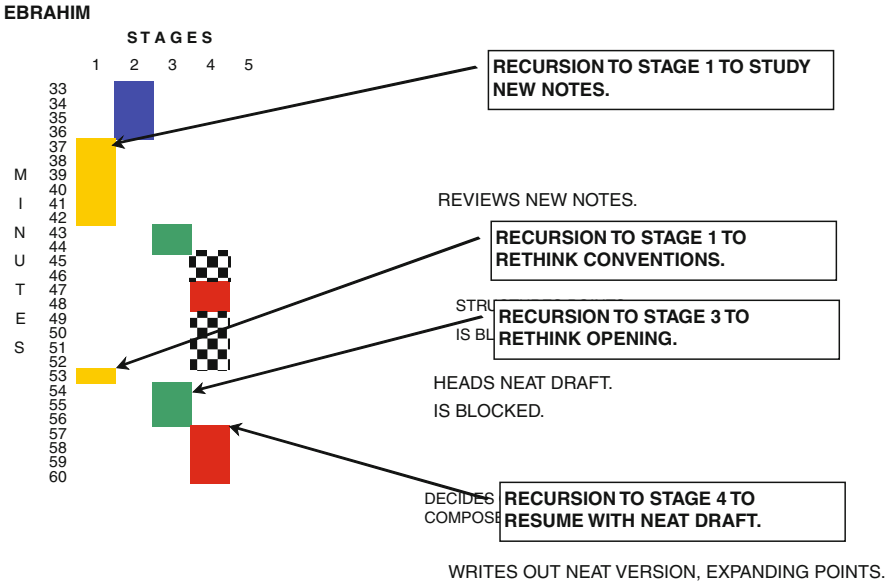


Fig. 7.5 Example of recursion during writer's block

Ebrahim had an advantage over Akhona in being a mother tongue speaker of English, and the protocol analysis revealed a creative flair for composing. He was also highly organised in terms of scanning and processing his resources. Temperamentally he was more volatile than Akhona and something of a rebel, and showed a somewhat cavalier attitude towards academic requirements:

> Here they give you a box, and you have to think inside the box, you can't go out of the box. Arrgh! So you have no time for yourself: it's just whatever they want, you have to give them . . .. If it's in the beginning of the year, or something like that, or if you're just starting off, or something, I'll just write whatever I think, I won't worry about what the lecturers – well, maybe along the lines of whatever the lecturer said, but not, like, 100%.

This contrasted with, for example, Busiswa, who was aware in some detail of her lecturer's requirements:

> She expects it [the final draft] to be neat and readable, and, always, especially Mrs [lecturer's name], must have, like print properly, your "a" – your letters must be readable (laughter) . . . You mustn't have fancy little figures or stuff. She's not that fussy with English, cause, like, seeing that we're in a tertiary institution not everyone comes like from the same background: she's interested in the content. She doesn't want you to say, like – criticise, like, a certain area or a certain person, she just wants you to, um, say a broad view – to state, like – she doesn't want personality and emotion to get in the way.

Yet while Ebrahim did not exactly identify with the logical approach and precision required by his lecturer, the video reconstruction of his composing established that he was making an effort to produce an answer which was "correct" in fulfilling the specific academic requirements for the revision assignment. It must be noted

that Ebrahim had the perception to realise that there was no "right answer" to the topic question, but was not sure which convention applied in that instance (e.g. a balanced response, as opposed to taking a stand and defending it). Ebrahim's is an interesting case, in that it showed how an extra-systemic factor not only impacted on the composing system in causing a block, but set off a domino effect of intra-systemic variation leading up to the actual block and afterwards (see Fig. 7.6). Thus it illustrates the issues being investigated, namely:

- the possible effect contingent factors could be seen to have on the composing system, and
- how the carrying out of one stage might affect that of a later stage.

7.6.4 Intra-systemic Variation in Composing

While it is very likely that most – if not all – intra-systemic variation can be attributed to extra-systemic causal factors, this section focuses on the resulting concatenations set off within the composing system. To continue with the case of Ebrahim, there are (at least) four key contingent factors which could be seen to affect the shape the composing profile takes in his case:

- Incomplete knowledge of academic requirements (i.e. not knowing whether he could hedge in his answer).
- Unfamiliar resources introduced at the last minute by his lecturer (i.e. the Government handout on Land Reform).
- The fact that his composing was being recorded (i.e. he later said that he had felt "pushed" by the cameras into making a quick decision).
- Time constraints.

These factors were interconnected, in that the cameras forced a quick decision to resolve the issue of academic requirements, and the new notes, which might well have been set aside permanently, were studied just as finding the "right answer" started to become critical. Time constraints meant lack of time to repair the breakdown in composing, in particular, to start a complete new cycle.

However, while the effects of the contingent factors were felt at various stages, their operation in composing was in fact systemic: they were all ripple effects set off by the writer's omission to complete the Stage 1 composing functions at the outset, exacerbated at a later stage by time pressure and the embarrassment of being recorded while blocked (see Fig. 7.6). The time factor and the cameras may well have contributed unobtrusively throughout, the former, by possibly hurrying the writer unnecessarily, and the latter, by being interpreted as a challenge to perform well (this was the student's interpretation, not the researcher's, whose requirement was merely that students should try to compose as far as possible as they usually did, "warts and all"). As the composing function required at each stage was left

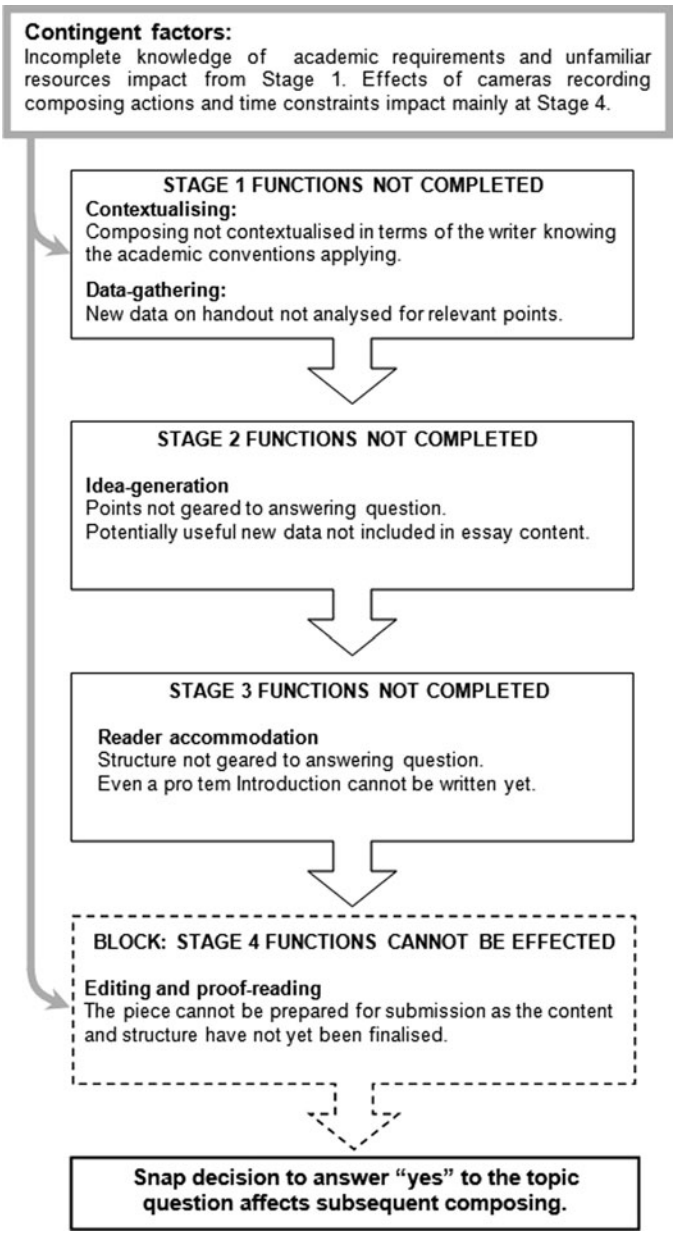


Fig. 7.6 The concatenation of events leading to writer's block

incomplete, Ebrahim's composing eventually broke down. This type of breakdown is a normal occurrence during composing, and could easily have been repaired by his salvaging whatever he could and starting all over again. However, in this case the cameras and time pressure prevented this from happening

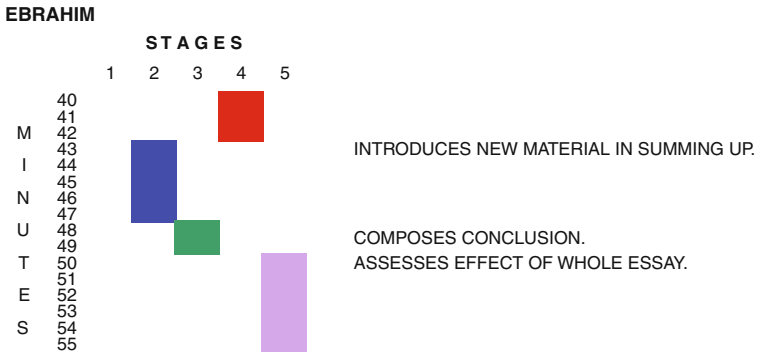


Fig. 7.7 Example of systemic recursion

Recursion, as mentioned earlier, should not be seen as an aberration or backsliding, but is a normal feature of the composing system. It is in fact what gives writing its signal advantage over speech, the opportunity to go back again and again to craft content, add interactive features and polish before the message reaches the recipient. Figure 7.7 shows recursion which was not ostensibly triggered off by contingent factors and in fact contributed to the completion of Ebrahim's composing. The problem was that the new material involved Ebrahim's own opinions about Land Reform, and his summing up was emotional rather than logical, meaning that the inclusion actually cost him some marks. This illustrates the point that the good performance of a composing function depends on the social parameters framing the interaction: these in turn must be acknowledged in Stage 1 when the writer is contextualising the interaction. Composing is then primarily systemic, with contextual factors impinging in various ways on the system. Other systemic variations where the performance of an earlier stage impacts on the performance of later stage are as follows:

(a) *Results of focusing on the Introduction (Stage 3) too early*
The profiles of Akhona, Earl and Busiswa all show a too-early focus on the Introduction (Stage 3), but the effects on the composing system are all slightly different. Akhona returned to reviewing her data (Stage 1) to "jump start" her idea generation (Stage 2). Earl had to adjust his Introduction later, after most of his content was generated (Stage 2), when he realised that his argument was not as clear cut as he had initially thought. Busiswa did likewise, but she had written her first Introduction in rough, giving her more flexibility for later adaptation. Although Rochelle's opening profile suggests that felicity conditions applied, her mind map had not generated enough content (Stage 2) for the essay, and her Introduction (Stage 3), was compromised by her starting the neat draft (Stage 4) too early. This locked her into a position she was obliged to defend and resulted in continued recursion to Stage 1 to search for facts to support her (predetermined) answer throughout.

(b) *Recursion caused by dealing separately with old and new knowledge*
Earl's decision to deal with "old knowledge" and "new knowledge" separately resulted in recursion to Stage 1 half way through composing. The overall result was to generate excellent essay content (Stage 2), but the fact that he dealt so thoroughly with sources for his argument meant that he did not have the time (or energy) to produce a polished fair copy (Stage 4).

(c) *Effects of assessing progress (Stage 4) throughout composing*
Akhona, Earl and Busiswa appeared to be "serial" rather than "cumulative" assessors, and these regular self-assessments (Stage 4) appeared to work well in helping them to complete one composing function and move on to the next. Rochelle, Mthobisi, Thandeka, and, to some extent, Nelisiwe, also assessed their progress regularly, but without the same success, which suggests that it is the quality of the assessment which is crucial to success and not the act of self-assessment per se. In fact, over-critical assessment can trigger off blocks to composing. Recursion can also be triggered by self-assessment, as shown regularly in Earl and Rochelle's profiles, occasionally in Akhona's and Busiswa's profiles, and also in those of Malusi, Lwandile, Zafika, Reshan, Mthobisi and Thandeka. So far recursion caused by self-assessment appears to be the only truly inter-systemic variation found in composing, although obviously assessment itself is dependent on external criteria. This would fit in with the underlying communicative function of assessment as being the "feedback loop" (i.e. part of the system).

(d) *Unhelpful composing patterns*
There were instances of systemic interference where writers had adopted patterns or routines which were not just unhelpful, but actively interfered with the composing functions. Zafika's division of the time available into generating regular chunks of text, and her resultant preoccupation with counting lines and producing paragraphs of equal length (Stage 4) regularly interrupted her idea generation (Stage 1). Her frequent recourse to the dictionary (Stage 4) also regularly interrupted idea production (Stage 2) with an inappropriate focus. Thandeka was also a "line counter", but at least restricted this (as well as her incessant use of correcting fluid) to Stage 4 operations, so that her focus was not inappropriate. Both Rochelle and Mthobisi diffused their focus to such an extent that the composing functions could not be performed effectively. But while Rochelle deliberately adopted this approach to save time, and managed to make it work after a fashion, Mthobisi did not realise the extent to which his diffused focus on composing functions was affecting the quality of his content, and focused on neat presentation on word processor rather than refining his content, structure and style. However, Mthobisi redeemed his lacklustre performance later by very cleverly using the writing tutor program as a diagnostic tool, as will be shown in Chapter 8.

7.6.5 Diagnosis of Problems Experienced by Writers

I suggested at the beginning of the chapter that the explanation provided by the model might assist diagnosis of writing problems, and suggest ways in which these

Table 7.4 Specific areas for development suggested by the empirical model

Student writer	Areas for development
Akhona	Creative idea generating techniques/reader accommodation
Earl	Confidence in systemic control/developing specialist subject discourse
Busiswa	Creative idea generating techniques
Malusi	Generating ideas before structuring to construct a more focused argument/master the conventions of the Introduction as essay "brief"
Ebrahim	Checking the conventions and academic criteria at the outset
Lwandile	Gathering most of the data before starting to compose/learning to expand points into clear prose
Rochelle	Learning to make the creative aspects of the system work for her instead of using rigid structures
Zafika	Concentrating on ideas before focusing on surface issues
Reshan	Gathering data in more depth and learning how to present it in a convincing argument
Thula	Acquiring more insight into academic (as opposed to personal) treatment of a topic
Mthobisi	Ensuring that academic requirements are made explicit before starting an assignment
Thandeka	Selecting data relevant to the topic, and more exposure to academic genres
Nelisiwe	Development of fluency in English

could be pre-empted and avoided or solved. A long-term follow up of the participants' progress in terms of gauging the success of diagnosis using the second empirical model does not fall within the scope of this study. However, it can be said that analysis using the model did assist in pinpointing specific areas for development (see Table 7.4 for a summary of these). Moreover, it often appeared to be congruent with the students' own insights into their areas for development, as prompted by reflection on their performance on video. The main advantage offered by the improved empirical model of composing was that it made it possible to distinguish the extra-systemic from the intra-systemic issues which might have affected student performance. In particular, it assisted with identifying contingent circumstances which might have affected composing expertise, as well as the particular way in which these factors impacted on composing, and thus the outcome in terms of assessment of the written product. The results were not always different from the diagnosis suggested by the assessment comments.

In general, however, the teacher's assessment of texts tends to identify symptoms only, and not necessarily the underlying causes of poor academic performance, although exemplary practitioners are often able to infer these from their greater knowledge of the student's general academic functioning. Yet it is often the students with the weakest performance whose specific problems remain undiagnosed, as these may be masked by a plethora of surface irregularities, and these are precisely the students whose need for remediation is most urgent. Mthobisi's problem was diagnosed by the lecturer as "Needs English lessons," when his most urgent need (as acknowledged by himself) was to clarify the nature of academic requirements at the

outset. Nelisiwe's problem was diagnosed as "No clear structure of thoughts/ideas," when her behaviour during composing suggested that she lacked sufficient English proficiency to be able to access academic sources and produce a structured argument. This is no reflection on their assessor's ability, as she is acknowledged to be an exemplary practitioner in her own right, but a general problem with diagnosing student problems from the completed text alone. In fact it is not clear from assignment texts what the systemic issues in composing might be, let alone how extra-systemic factors might have impinged on student composing. A disadvantage of the video protocols, however, is that they document one performance only and may thus give only a partial view, which is why they were accompanied by questions framed to establish habitual performance.

7.7 Conclusion

An analysis of the data obtained in the 13 video protocols suggests that the revised empirical model goes some way towards explaining the effect contingent factors have on the composing system, as well as how the carrying out of one stage might affect that of a later stage. The analysis also offers insights into how either factor might affect the shape composing takes in specific instances, contribute to blocks in composing, and/or prompt recursion. This is a significant advance on the first empirical model, which could not explain how ostensibly "good" profiles could result in poor performance. The input option goes some way towards explaining whether/why the function of each stage is performed effectively, which is clearly more significant than how often redrafting might occur, or even, necessarily, the exact order in which stages might occur. Recursion can now be seen as being triggered by contingent factors, and not just the result of the previous stage not having been performed satisfactorily. This means that much of the intra-systemic variation can be seen as the result of input into the system, with contingent factors contributing to the internal concatenation of events. The only true internal variation apparent at this stage is that which is triggered by self-assessment of progress, with assessment being a common recurring systemic function. This is presumably because the feedback loop is an integral part of the system in terms of regulating and adjusting performance. Finally, in spite of the importance of extra-systemic factors, it appears that composing should be viewed primarily as a systemic process, with key local requirements and constraints needing to be processed at the contextualising stage (Stage 1). The data-analysis suggests that failure to do so means that composing expertise cannot be marshalled effectively to fulfil the requirements of the given task.

Chapter 8
The Writing Tutor Program

8.1 Introduction

Chapter 8 describes the production of a prototype process-based tutor program, based on the pedagogical version of the empirical model, but including the input option of the later empirical model. While two prototypes were produced, the first, an HTML version, was considered too cumbersome to set up and did not carry out certain key design specifications. The final writing tutor program prototype took the form of a process-based writing tutor program which could be used by learners on a home computer or in a computer laboratory while composing on word processor. The algorithm provided by the recursive stages of the pedagogical model formed the "core" of the program, and the design principles of the program were found to be consistent with the educational design principle inherent in the system of communicative functions. The rest of the chapter shows how the insights provided by the modelling process were translated into a working prototype, which could be used flexibly as desired: either as part of composition programs, as an adjunct, or for individual coaching and/or advice. The chapter concludes with a brief account of initial user responses, obtained by means of video protocol analysis with the students who had taken part in the last set of composition protocols, and which suggested further enhancements to the prototype.

8.2 The Aim of Developing the Writing Tutor Program

The aim of developing a working prototype of the writing tutor program was to translate the advice and guidance given in the "pedagogical" version of the empirical model into a computer program which learner writers could use as a resource mainly while composing on computer. The pedagogical model contained a composing algorithm on which a computer program could be based, and in itself constituted a "social algorithm" (Blunt Bugental 2000, i.e. a type of conceptual mechanism informing social practice). Teaching and coaching with the empirical model over a period of 18 years had suggested that application of the model was extremely flexible, and that users (both teachers and students) tended to take from it what they needed. While it was used in several secondary and tertiary learning

D. Pratt, *Modelling Written Communication*, Methodos Series 8,
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programmes – applications ranged from the lecturer simply telling students about it to implementing it in very structured teaching programmes (e.g. for multicultural adult part-time students writing reports) – there is no "right way" to use the empirical model of writing. Although it was initially intended to act as a framework for conferencing sessions, once it became apparent that student users could adapt it to suit their own specific purposes, the most effective teaching strategy appeared to be simply to give it to students and to help them when and as requested. Learners who had been introduced to the model could generally be much more specific about the kind of help or feedback they required from the teacher. Because the model is framed in terms of the learner writer's naïve view of composing, it is ideally designed for the user to decide how to use it: it is after all, a "user's model" of composing.

The development of the second empirical model, however, contributed to an additional feature of the writing tutor program which the pedagogical model did not have: it suggested that the program should make provision for the social and context-specific nature of writing by having facilities for the input of local requirements. Analysing student composing with the second empirical model had suggested that contingent factors might impact on all stages of composing. For this reason, an input option was envisaged which would enable users to input local academic requirements (which could then be displayed onscreen) into any of the stages of composing listed on the main menu.

8.3 The Process-Based Writing Tutor Program Developed in This Study

From the outset the writing tutor was envisaged as being based on the pedagogical version of the empirical model, and was not derived from other process-based tutor programs. The focus was therefore on how the model could be enhanced electronically, and not on what computers – or other process-based writing tutor programs, for that matter – could do. The *Readings database* and *Working notes* (start a new MSWord file) features were added only in order to facilitate the carrying out of the functions contained in the model, and not because computers "can do" databases and word processors. The main use of a review of current writing tutor programs in Chapter 1 was to throw the prototype into relief and clarify more precisely what it is intended to do. The prototype is not a teaching programme, although it provides the user with a tutorial on the program, as well as providing other text sections which could be considered "lessons": the program offers more of a learning experience. Although it is not a simulation in the sense of a simulation model (Burch 2002), the program is actually very much like the kind of simulation users experiences in Flight Simulator, Age of Empires or SimCity, where expertise is developed as result of the user's working through self-selected routines at various levels. It is in a sense a type of procedural simulation (Alessi & Trollip 1991:126), but much more open-ended than most.

As a dedicated computer games "junkie", I am very much aware of how various competences can be honed in this way. I would suggest, however, that the complex processes involved in composing do not lend themselves to instructional

design rubrics based on discrete skills training, which is why the prototype is underpinned instead by the theoretical modelling process described in the first part of this account. The program can be used for developing composing expertise by individual students, by the teacher as an enhancement for classes of students, or could form the basis for a composition teaching programme. It is because this study has identified a putative common "deep structure" of writing, and has also revealed the context-specific nature of composing and the importance of considering local requirements, that the resultant writing tutor program is so flexible in its use. Whatever its use, it has a common intention and purpose: to develop the user's composing expertise, and make the user aware of the importance of local requirements and how they shape composing processes. It must be emphasised that this is not an example of abstract theory dictating teaching practice, but of an electronic artefact being informed by theory derived from extensive observation and analysis of good teaching and writing practice.

The prototype writing tutor program produced in this study fits into the category of process-based tutor. It has conferencing-type elements (see the way the *Writer's block* section works in particular), but the core of the program – the five stages – constitutes an algorithm rather than a heuristic (Pratt 2005a). However, the program contains text directions for heuristic and invention strategies, for which – unfortunately – funding was lacking to develop actual computer applications. It also contains revision strategies and checklists, and acts partly as an organiser in prompting students to take notes and to save references in a database. These features were, however, the result of the theory underpinning the writing tutor program, and not derived from the example of other process-based tutor programs.

8.4 The Production of the Writing Tutor Program

Two prototype models of the writing tutor program were produced from the storyboard created in 2000, *CourseMaker* (Pratt 2003), an HTML application running off a local browser, and *NEWT* (i.e. the writing tutor program prototype), a standalone Visual Basic program which is microcomputer-based (Wyatt 1984:5), and can be loaded into the user's hard drive from an executive file on a CDROM disk and can also be installed in networked computer laboratories. The HTML version was rejected because of (1) operating difficulties, (2) requiring too much time and effort to set up by the teacher to be of practical use, and (3) because certain key design specifications were not fulfilled (in particular, portability). It was infinitely flexible in allowing teachers to decide on their own stages of composing and program content, but the whole point of the proposed CML application was that it would be based on the "essence" of composing which I had laboured to establish in the theoretical modelling. It did, however, provide a cheap and relatively easy short lesson- or course-maker, provided that the operating difficulties – installation, and the tendency to hang when materials were being saved – could be sorted out. The final version of the writing tutor prototype is not materially different from the initial storyboard: the time spent on it was mainly to ensure that it was programmed to run as designed.

8.5 Design Principles and Specifications

According to Pellone, "the heart of instructional computing rests on a foundation of effective teaching and instructional design principles" (1995:10). A key issue in computer mediated learning, then, is making design principles explicit from the start, particularly in uncovering implicit assumptions about both learning and design. In the case of the prototype, the following assumptions were made about the learning of written composition:

- Composing is an infinitely flexible and idiosyncratic process, and learners need to be able to adopt procedures and strategies which suit their own level and preferred learning style.
- There are commonalities in composing which can provide the basis for an effective tutoring system.
- Instances of composing, even with "school" writing, are context-specific to fit different social settings and purposes, and composing needs to be contextualized to make its social nature explicit for learner writers.
- Learners should be given as much control over their own learning processes as they are ready (or willing) to assume.
- The user's model of composing should be the basis for the writing tutor program prototype, as it gives learners a meta-view of composing which takes into account both its commonalities and infinite flexibility, at the same time providing practical guidance and advice through composing.
- The empirical model needs to be complemented by the model of reader roles and writer's blocks.
- Composing on computer (and not just using it as a advanced typewriter) is desirable, as it can enhance or facilitate many composing procedures, but not necessarily throughout composing or for all composing procedures.

The following specifications applied to program design:

- The writing tutor program should be based as far as possible on the empirical model and complementary models: the "core" of the program is the five stages of composing identified in the empirical model.
- It is intended for use primarily by learners who are able to use a word processor.
- It should be able to be accessed by learner writers when and as needed, and be able to be displayed unobtrusively on computer at the same time that the writer is composing on computer.
- The writing tutor would run off a menu very much like a typical help facility, and must also be able to be reduced or collapsed when not in use.
- The writing tutor and its various sections must be able to remain running and visible on the screen while the learner is typing in text on the word processor screen or using other word processor facilities.
- It should make provision for the social and context-specific nature of writing by having facilities for input of local requirements relating to all stages of composing.

- It should make provision for learner input as the learner is guided through certain composing procedures.
- It should be able to be used by the learner writer on his or her own computer at home as well as in institutional laboratories (Ahmad, Corbett, Rogers, & Sussex 1985:25–26).
- It should be able to be used not only before and after composing, but while the learner writer is composing, and in fact should be able to lead him/her through composing in a structured way.
- The program, while not interactive in a spontaneous human sense, should have features which make it seem interactive.
- One standard version should be able to be used to encompass a fairly wide range of "school" type composing for learner writers, but should not be limited to school type composing alone.
- It should be able to be marketed cheaply for learners and should be easy to install.
- The program should be self-explanatory as far as possible, and should not require much – if any – prior training or reference to detailed manuals.
- While the program can be used in conjunction with conventional classroom teaching, learners should be able to use it as a self-contained learning object (apart from the option of local customising).
- Customising must be easy and within the user's capabilities to accomplish.

In view of the monopoly enjoyed by Microsoft, it appeared very likely that the tutor would need to run within a Microsoft operating system, although it might not necessarily be used only with Microsoft Word.

8.6 Basic Programming Specifications

Basic specifications for use were (1) that the tutor program must be accessible to individual learners (i.e. be able to be installed on home or institutional computers), (2) that the program display remain on the screen while the user was working on a word processor, (3) that the program could easily be customised to suit local academic (or other) requirements and (4) that user input could be saved, retrieved and displayed on-screen. The type of programming or programming platform used was immaterial, but obviously linked to cost because of the limited funding available for actual programming. Because I work at a University of Technology, I had anticipated more access to low-cost computer programming by collaborating with fellow academics or Information Technology students in something like the team approach described by Wyatt (1986:8), but this turned out not to be the case: amateur programming is not only less satisfactory in terms of results, but in the long term more expensive and time-consuming than professional programming. I was extremely fortunate to be put in touch with an excellent freelance programmer who agreed to complete a prototype at minimum cost: in spite of this constraint, and the fact that we were collaborating mainly over the phone and by email, he did an extremely creative job.

8.7 The Theoretical Model and Educational Program Design

While the storyboard for the writing tutor program was based on the user's model of composing (the empirical model of writing), the theoretical model, besides underpinning the user's model, impacted in another way on Educational program design. This is because the five functions "without which" effective communication cannot take place also can be seen to have bearing on course design. Learning needs to be contextualised, and some kind of ideational content needs to be provided (not necessarily only by the teachers or in teaching materials). Learning occurs as part of an interaction, so that the nature of the learning interaction(s) needs to be anticipated and provided for in course design. The social aspects (or conditions) of learning need to be acknowledged, for example, in the form of required academic conventions. Finally reflexivity – in the form of assessment of learning and overall course feedback – needs to be included in program design.

8.7.1 Contextualising Learning in Course Design

Providing a writing tutor program which can remain on-screen while a word processor is being used contextualises it generally as a resource a learner writer can consult when composing on computer. The NEWT acronym and logo suggest that the tutor is user-friendly and versatile, and from the start the user can control its position on the screen, suggesting that it is at the command of the user. The "help menu" look of the program contextualises it as potentially helpful, a resource to be consulted as (and if) required: it can also be tucked away when not needed – it is not an obtrusive presence. The *Program overview* menu item further contextualises the tutor program by situating it in research into written composition, giving the program more force than rule-of-thumb advice. Moreover, the simplified description of the user's model of composing explains why the program is designed the way it is, which means that domain knowledge (i.e. how/why the program works) and not just instructional information is shared with the user (O'Brien 1993). Ad hoc contextualising is provided by the *Teacher's advice* sections, where the users themselves contextualise the various stages of writing as needed by consulting their teacher and inputting local requirements or preferences.

8.7.2 Ideational Content in Course Design

Any learning materials included in a course, whether generated by the teacher or the students, could be seen to constitute ideational content in course design, as could instructions, plans, rubrics and so on. In the prototype writing tutor program ideational content ranges from the menu items and instructions to actual lesson content and examples. The tension in designing the writing tutor prototype was between sharing my own teaching materials and leaving the user's actual teacher room for input. An opportunity for more teacher text input could have been built into the program, and this was in fact the case with the first HTML version, *CourseMaker*. This turned out to be impractical for actual use, however. With *CourseMaker,* it took

a user familiar with program operation over 24 h working fast, cutting and pasting, to put in the bare minimum of the program content required for assistance with composing: this is just not a feasible option for most language teachers. Moreover, the "stages of composing" had already been established in the empirical model, which had a body of teaching materials associated with it, geared to each stage: they needed only to be collated, "sized" to fit the tutor menu, and adapted to suit general use for learners from 12 to 18 years of age. As a result, the writing tutor prototype program is a virtual extension of myself and my experience of teaching written composition. It is, however, based on a theoretical model of written composition which establishes the commonalities in composing and shows how local variables may impact in specific instances of composing. User input makes an important (though small) contribution to the ideational content of the writing tutor program when in use, and also makes the program more interactive.

8.7.3 Interactive Aspects of Course Design

Initially the writing tutor was envisaged as being much more interactive in the sense of having a number of routines in which the user could join, as in an actual lesson. However, a help menu is actually the most interactive option of all, and, even better, one which is controlled by the user according to any given need at any time (Pellone 1995:8). A real tutor, apart from giving general advice and help, which the tutor program does, would assist only when needed. A computerised tutor may be less versatile than a human tutor, but is always there on call for individual learners as required, no matter what time of day and night. There are a few interactive routines and prompts, such as the *Assess your writing expertise* and *Work through preparing to write*, and the prompts which appear as help of each stage is accessed. The "blocks" and "inner dialogues" hyperlinks also give the program an interactive feel. The user is in fact dialoguing by proxy with elements of the writing tutor program throughout, even the "flat" text inputs. When I realised this, I decided to keep screen prompts to a minimum (a few more were planned), to prevent the screen from becoming too busy. While customising itself is considered to be a social aspect of course design, the fact that the user has the option of inputting local requirements makes the program more interactive and collaborative: user input then appears on the screen as part of the program. Some animated interactive idea-generating applications are planned for subsequent versions of the tutor program: lack of funding to cover the cost of programming prevented this in the prototype.

8.7.4 Social Aspects of Course Design

Local requirements are part of the customising sections, that is the *Teacher's advice* input and display sections. In programs for academic writing at higher education levels a more scholarly tone might be taken in the machined texts, but not in the menu headings, which were kept as consultative (i.e. adult conversational) as possible in tone. In a junior version the tone of both the menu headings and machined texts would be more suited to younger children, with more animation, sound and

Fig. 8.1 The *NEWT* "friendly lizard" logo

colour. The prototype has a "teacher-y" flavour, as composing is usually taught in a school context. This is offset by the "friendly lizard" *NEWT* logo (Fig. 8.1) and the collapse or send-to-the-start-bar options. Unlike human teachers, *NEWT* can be accessed at all hours of day and night and closed down when not required.

8.7.5 Reflexive Aspects of Course Design

The tutor advice encourages the user to reflect on both progress and emerging texts, and the user is prompted to start a habit of reflection in the "Working notes" menu option. "Assess your writing expertise" can be used as a basis for a reflection. There is not much opportunity for user feedback on the program itself, although students are encouraged to communicate suggestions to a *NEWT* website, which is still being set up. Feedback on most courseware is obtained from actual use, and is not usually included in the program for logistical reasons.

8.8 Computer Human Interface Aspects of the Writing Tutor Program

Computer applications are most accessible to users when they mimic or reflect familiar human routines or social behaviour in their operation, appearance and nomenclature. The webpage designer persuades users to see the index page of a web as the starting and return point by calling it a "homepage". A list of options from which to choose is called a "menu", and so on. The user's model works because learner writers can see how it follows human composing behaviour in actual real-life progression: even better, it confirms repeated back-tracking as not only inevitable, but a necessary part of getting it right, rather than a human failing to be machined out of the system. It provides a "better description" of writing than one provided by an analysis of the text, and is more useful, because the description includes advice as to how to arrive at a text which encodes the interaction effectively and potentially leads to better communication. According to Franck (2002), this is what justifies the existence of a model and explains its general acceptance: it provides a better explanation of a social phenomenon or process.

Because composing involves the recursive interplay of the stages involved in carrying out the five essential communicative functions, and because these functions

are carried out in temporal sequence with variations, the type of application which will most obviously fulfil a tutoring function is a menu-driven help system – in fact, tutors already exist in the form of help menus, and I was influenced by an earlier version of *Research Toolbox* which actually interfaced with the Microsoft Office menu system (later versions apparently did not). My first storyboard, which did not change significantly in the course of program production, showed the writing tutor running off a menu which appeared alongside other Microsoft items, which meant that it could be accessed while the word processor was open and being used. Copyright constraints and possible operating complications led to the decision to program an application which floated on top of the word processor screen without actually interfacing with the word processor program. An advantage is that the resulting prototype writing tutor program can be used with any word processor running on a Microsoft system: it also models a type of tutor which can be used with other applications running off Microsoft, including web applications.

The writing tutor program help items can be displayed even when the user is using the word processor. Help menus regularly disappear from view so that the user cannot refer to them when using the very application they wanted help with, which is frustrating and generally unhelpful. The learner writer can compose on a word processor while referring to help offered in the writing tutor, which stays open unless closed or sent to the Start bar. However, this help menu is not for the application the learner is using, but to help with the process the application is being used for, that is the social process of communicating effectively in written mode. In this sense it resembles applications like *Research Toolbox* more than a typical word processor help menu, although the latter also has spelling and style checkers which are not application help per se. The help menu is structured around a hierarchy based on a human process, the composing process, and not an abstract computer systems hierarchy, or a procedure based on the way application functions need to be carried out. This means that it is potentially much more user-friendly than, for example, an unfamiliar email program.

8.9 The Prototype Writing Tutor Program

While the prototype writing tutor program is based on the "pedagogical" empirical model of written composition (the user's model), the aspects of communication which were later found to constitute the theoretical model had been established before starting on program design. The storyboard on which the program is based was drawn up in 2000, and the menu system based around the five stages of composing has not changed, but there has been room for slight alterations and modifications, such as the addition of the *Readings database* and *Working notes* items (a later addition was an *Ideas database*). It is not a question of theory prescribing practice in positivist vein, but of theory and practice feeding into each other, and each authenticating the other, and while the program is limited in scope to what my research budget could reasonably afford in terms of prototype development, it is my contention that it is based on a more complete perspective of writing than currently

available computer/Internet applications intended to develop composing expertise. It must also be remembered that the prototype writing tutor designed and produced as part of the research project is not necessarily suitable for all ages, contexts and purposes.

The prototype, while intended to provide a "standard" version, was geared towards developing composing expertise in a school situation from Grade 10 to first-year at tertiary level, and is still being tested out for usability and user feedback on whether (and how, if at all) it facilitates composing. Thereafter, further anticipated projects involve more creative versions – in terms of graphics, sounds and animation – for both younger writers and adult freelance writers, and a more academic version (with more specialist sections and larger input options) for the writing of dissertations and theses. A highly contextualised and more formulaic business correspondence version is also envisaged for commercial office use in South Africa, specifically geared towards second-language middle management. The form the writing tutor finally took – a floating menu bar with standard advice and options for local input – is not limited to the teaching of writing: it could provide the basis for tutoring any formal or informal course, including, for example, how to use computers or the Internet. The tutor structure itself models a whole genre of applications for the learning of other subjects besides written composition.

The prototype writing tutor program, or standard version, is not limited to academic writing per se, although it acknowledges the fact that writing is learned mainly (but not entirely) in a formal educational context, facilitated by teachers. The fact that academic writing is teacher-driven and has specific academic requirements even at junior levels means that social requirements needed to be considered when developing the prototype. The writing tutor program is geared towards assisting individual users engaged in composing, which means that it presents to users (including the teacher) from the perspective of writing as an individual act. The program is based around the five recursive stages of composing represented in the empirical model, with the understanding that these have been found to constitute a type of mechanism reflecting the deep-level system of communicative functions which drive composing. The prototype writing tutor program itself then constitutes a type of generative stochastic mechanism.

The items *Writer's block* and *Inner dialogues* (both of which are complementary to the user's model) are dealt with both as sections in the five various stages and as separate menu entries which could be treated as lessons by the user as needed. Customising for different academic (and other) requirements is linked to each of the five stages, as context-specific social factors are considered to impact on the working out of each stage, and not just Stage 4. The need for specific customising fits in with the concept that academic writing is a highly contextualised (and, in the classroom, teacher-driven) form of communication. Features such as a simplified *Readings database* and *Working notes* were included to encourage learner writers to collate prewriting materials and to reflect on their progress throughout composing. To demystify composing and explain the functioning of the writing tutor program to the user, some composition theory is included in the form of preliminary lessons for the learner writer, but this does not go much beyond the level of research into

the process approach, apart from mentioning that writing is a delayed interaction – a writing tutor for more advanced levels might give more detail about the social aspects of writing to explain more complex academic requirements, as well as an account of the theoretical model.

8.10 Design Features of the Completed Prototype

8.10.1 General Operating Principles

From the outset of this project the writing tutor program was envisaged as a help menu based around the five recursive stages of composing, and which could not only be accessed but have various help texts (or routines) remain on the screen while the user was composing on word processor. The recursivity and open-endedness of help menus mirrors the dynamic, complex and layered nature of the process of writing itself. Initially it was intended that the menu be integrated into the Microsoft Word menu bar much in the way of earlier versions of *Research Workshop* (see also the operation of the *Vox Proxy* menu with PowerPoint), but this would have required expensive programming options and copyright negotiations with Microsoft – somewhat premature at this stage of development. The solution devised by the programmer was to have the program as a floating menu bar independent of Microsoft Word itself (see Fig. 8.2). This had the advantage of being able to be used with any word processor – in a Microsoft Windows environment, that is – extending the versatility of the program considerably. It also established the program as a prototype not only of a writing tutor, but also as a tutor in any other (formal or non-formal) subject in conjunction with any other Microsoft-based program.

Fig. 8.2 The floating menu bar containing the writing tutor program

8.10.2 Translating the Stages of Composing into Menu Items

Once I had decided on a standard prototype model ranging in scope from Grade 10 to tertiary first year, I had to consider how to represent the "Stages of composing" to the program user: terms such as "Prewriting", as well as the distinction between "Major editing" and "Minor editing", could prove confusing to students at lower levels, not to say some of our ESL tertiary students. The "five Cs"[1] version used as the simplified user's model in my masters research (1987:49) worked in juxtaposition with the explanations given on the diagram I had shown my students, but the

[1] Collect your thoughts, Create, Chop n' change, Correct and Criticise.

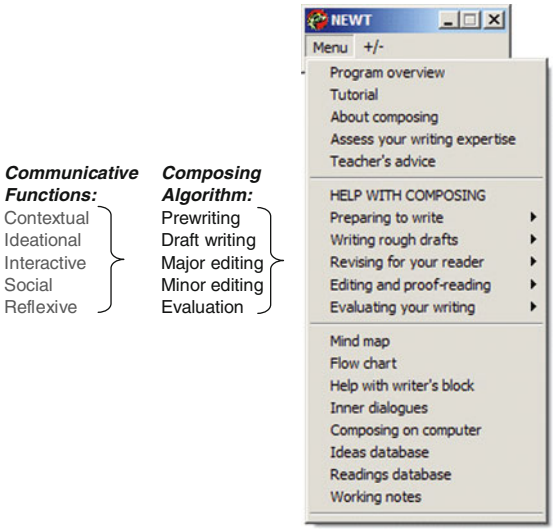

Fig. 8.3 The stages of composing translated into menu items

stage names were not considered to be self explanatory as discrete menu items in a computer program. I needed to consider not just the user's model on which the tutor program was based but also how the names of stages would fit with the program user's naïve perception of writing. The terms chosen should also be congruent with – if not actually identify – the communicative functions (contextual, ideational, and so on) underpinning each stage of composing. Finally, while the stage names had to be self-explanatory, they also had to be brief: menus do not allow for lengthy circumlocutions. The following items (shown in Fig. 8.3) were finally decided on: *Preparing to write*, *Writing rough drafts*, *Revising for your reader*, *Editing and proof-reading*, and *Evaluating your writing*.

These correspond with the stages in the user's model, but follow a (recursive) temporal progression in composing rather than categorising the stages according to either the composing function (e.g. "idea generation") or communicative function (e.g. "ideational"), they are thought to represent. The terms echo some of the nomenclature used in the model (e.g. "editing") but should be able to be understood by users without any previous briefing. This means that the menu is more likely to make sense to most young (or adult) writers unfamiliar with the empirical model, as no jargon or technical terms are used. Note also that, while I have emphasised that in this account "writing" is used to mean composing, in everyday general use "writing" more often than not refers to the text as well, and the ambiguity inherent in the phrase "evaluating your writing" does useful double duty as a menu item in suggesting that both the writer's texts and composing performance need to be evaluated. The terms chosen to represent the stages in the program menu are adult enough to be used in a program version for advanced academic writing: while advanced writers might need more detailed input and specialist features, they would still need the menu to be as clear and straightforward as possible – a prerequisite for users of computer programs no matter how mature.

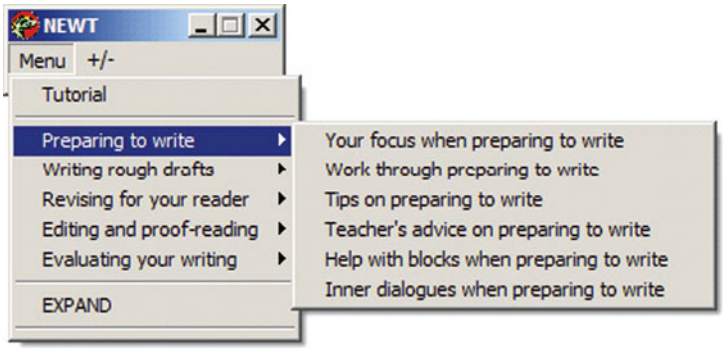

Fig. 8.4 Submenu items running off main menu "stage" items

In the initial storyboard, while the menu focused on the five stages of composing, the stages in turn led to fairly long texts with links embedded to other texts or sections. The first attempt at programming, which resulted in an HTML application called *CourseMaker*, showed that this was too cumbersome a structure: it slowed down navigation, as it called for the user to scan large areas of text before links to other sections could be accessed. While the writing tutor contains some fairly long text "lessons", it is not in fact a course but a help menu which includes instructional materials, a standard feature of most help menus. The chief advantage of the help menu structure is the way it "steps" information in series of recursive hyperlinked sections for the user. In the second attempt at programming which resulted in the prototype described here, the long texts associated with the stages were "chunked" for easy user access. Each stage was divided into first five and then six sub-stages, some standard, some different. The standard items are shown on the left-hand side of Fig. 8.4 (except for the second item), and include *Focus*, *Tips*, *Teacher's advice*, *Help with blocks* and *Inner dialogues*. *Blocks* and *Inner dialogues*, while linked to each stage, could also be accessed separately on the menu in the manner of a lesson, in case users required an overview of writer's block or inner dialogues. I have had feedback which suggests that the submenu items are over-long, but reducing these in length meant that it was not always clear in what stage (or process) the user was involved, so that they were left long for the sake of clarity, even though this might be contrary to the menu design principle of brevity.

Non-standard items related to each stage were as follows: *Work through preparing to write*, *Creative idea-generating strategies*, *Some structures you could use*, *Editing checklist* and *Evaluation checklist*. This was done because each stage of composing has specific needs related to its function. *Work through preparing to write* leads the writer through the process of considering audience, purpose and genre. *Creative idea-generating strategies* suggests a number of ways of generating ideas: I had in fact wished to include animated interactive devices here which would be fun to use, but lack of funding meant that this could not be achieved in the prototype. Moreover, mind maps and other programs for stimulating creativity are freely available on the Internet, and, in spite of my predilection for computers, I would be the first to admit that there is a good argument for using pencil and paper to block

out ideas quickly as they occur. Some structures you could use suggests some stock school composition structures, and the two checklists – for editing and evaluation – are meant to be helpful rather than exhaustive. Admittedly, there is a great deal of my own composition teaching lore in the texts of the tutor program prototype, but I have tried to keep to the general kind of advice (linked to the stages) which I would give for any type of writing, yet with school type composition in mind: this context, is after all, where most of us learn to write. An option was provided to collapse the main menu to a menu with just the five stages, so that users engaged in composing could focus on the five-stage menu and rapidly shuttle from stage to stage as required. It also meant that the menu became less obtrusive on the MSWord screen.

8.10.3 Prompts and Screen Displays

When any of the six sub-stages of the five-stage menu is accessed, a prompt appears at the bottom of the screen giving the focus for that stage (see Fig. 8.5). Users can remove the prompts easily by mouse-clicking on them. Initially I envisaged having other screen display options, such as the audience, purpose and genre which had been input by users in the *Work through preparing to write* section, as well as the inner dialogue relevant to any specific stage. I abandoned this idea as it would make the word processor screen too cluttered for the writer to compose easily. Moreover, even when I had thought of a way to fit in an *Inner dialogues* prompt unobtrusively at the top of the Microsoft screen bar, I hesitated to change the program, as use of the tutor program itself sets up an inner dialogue – the writer in a sense dialogues with the program in reading instructions and prompts. The fact that the writing tutor took the form of a floating menu bar made it possible for users to display the *Inner dialogue* section as and where needed, which would not have been possible with a help menu fixed on the Word menu bar, as originally planned.

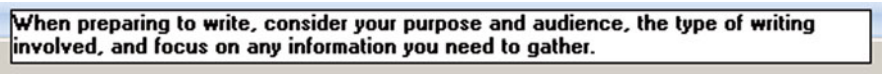

Fig. 8.5 The positioning of prompts for each stage of writing

8.10.4 Other Main Menu Items

The main menu contains a *Program overview*, which gives just that, a fairly long text section called *About composing*, which is really a lesson explaining the composing process in stages, providing the user with the rationale for the writing tutor program. *Assess your writing expertise* is a short quiz based on the behaviour of "good" and "poor" writers: initially it was embedded in *About composing*, but the programmer relocated it in the main menu for easier programming, and I decided to leave it there: it is really a preliminary measure intended to intrigue learner writers by dispelling

some myths about composing, and is not intended to be used regularly (although it might well be). *Help with writer's block* and *Inner dialogues* give users the option of an overview of these phenomena, although the relevant sections can also be accessed from within the "five stages" submenus. *Composing on computer* is a lesson text suggesting how composing on word processor can assist with each stage of writing. The *Readings database* allows users to keep a record of books they have used so that they can cite references or add bibliographies more easily – even though the prototype tutor is not intended for advanced academic writing, I considered it a good idea to inculcate orderly referencing habits early on in the writer's academic career. *Working notes* prompts the user to open an MSWord file to make notes in progress, to prompt exploratory writing, and to promote both ongoing reflection and assessment of progress.

8.10.5 Customising the Program to Suit Various Contexts

The *Teacher's advice* section in the main menu allows the user to input local and specific advice from the teacher on each stage of writing – the advice typed in and saved will then appear when *Teacher's advice* sections are accessed in the stages submenus (Fig. 8.6). It is up to teachers and their students as to how this facility is

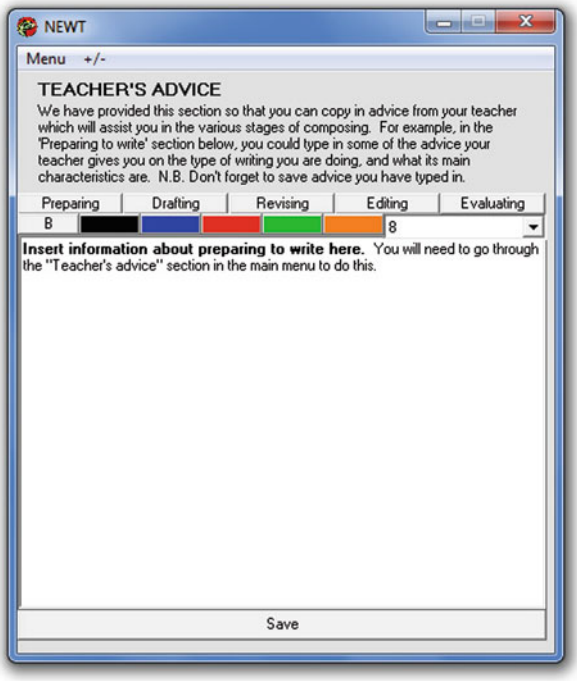

Fig. 8.6 *Teacher's advice* input option

used: teachers could offer general advice for their writing classes, or specific advice for each written assignment. They could even tailor advice to each student's individual progress and learning needs if they so chose. Students also have the option of asking for specific advice, according to their needs. Most importantly, teachers can offer students input on key assessment criteria and expectations for inclusion in the *Evaluating your writing* section. This facility emphasises the fact that school writing, no matter how flexible or creative, is teacher driven, in that the teacher ultimately defines what constitutes "good writing", or how learning is demonstrated in an academic assignment. At best, it will encourage students to persuade teachers to make their expectations explicit – and even if teachers disagree with the definition of "good" composing behaviour as represented in the writing tutor program, it might at least encourage them to make their own definition of good composing explicit, and to communicate their expectations in regard to this clearly to students.

8.11 Anticipated Program Enhancements

The writing tutor prototype was programmed on a shoe-string budget, mainly owing to the fact that the initial attempt, the HTML application, *CourseMaker*, took over a quarter of the funds remaining for programming. This meant that some features were omitted by mutual agreement with the programmer, and not necessarily through deficiencies in planning or programming. It also meant that some refinements which were not strictly necessary for smooth operation were not carried out, and that text revisions were restricted to corrections or instructions which changed to accommodate programming decisions. Moreover, it was not feasible to make large-scale adjustments until feedback from large numbers of actual users became available. I would like to have had more backwards navigation links from menu items, particularly for returning to the stage of writing the user is working on. The help menu initially disappeared when both the "Help with composing" and "Expand" functions were used, but this was rectified, as users might have found it off-putting for the menu to disappear when they had just asked for "help"! As mentioned earlier, sub-applications for the idea-generating strategies might be programmed and added later, if not to the core program, then at least as part of the application bundle on the install disk. My initial storyboard included more use of colour and use of music, as well as suggestions for cursor icons which would reflect the stage of writing the user was engaged in. I also had envisaged a prompt which could be filled in when the writer closed the program for input to say (1) what the writer was working on and (2) what he/she needed to do next when resuming composing: this input would then be displayed as a screen prompt when the writer next used the tutor program. Finally, while unnecessary screen clutter is to be avoided when learner writers are actually composing on computer, more options for user input (and display) could be explored in later versions to make the program more interactive and personalised for individual use, and the flat text "lessons" could be more animated and interactive.

8.12 User Response to the Writing Tutor Program

Near the end of the academic year, the 13 students who had participated in the 2005 video protocol analyses were given some time to explore the writing tutor program prototype on their own. The same students were invited to volunteer, as it was thought that the previous analysis of their composing might offer some additional insight into how they saw the writing tutor program assisting their diverse needs (it also established that the needs of the user group were diverse). After approximately 20 min of unsupervised use (recorded on DVD to assist recall), participants were given a loosely structured interview to establish whether they found the program to be (1) user friendly and (2) potentially useful for assisting them with composition (see Table 8.1). All participants reported that the program was easy to use, but two added that some knowledge of computers would be necessary, which is, of course a given (it was interesting that for the other students, knowledge of computers remained an implicit prerequisite). There were several comments on its "straightforward" structure and the "self-explanatory" nature of the menu system. All participants said that they would use the writing tutor program if given access to it, and all thought that others students would want to use it. They did not think that much tutoring would be needed for students to learn to use the program.

Table 8.1 User response in terms of the prototype being user-friendly and potentially useful

Questions	Yes	No
1. Was the program easy to use?	13	
2. Would they use the program now?	13	
3. Did they think other students would use the program?	13	
4. Would much tutoring be needed to learn to use the program?		13

8.12.1 Some Overall Impressions from Student Users

Some overall impressions of students as a first response to the writing tutor program were as a follows.

Akhona: It's quite interesting, what you have here. Why? Because, it's, like, true . . . you realise, you never really noticed, these things. Why? Because it just happens – it just happens – writing just – you get caught up in the moment, and you don't really realise what you're doing.

Earl: This (i.e. Help with writer's block), I think is a good idea . . . it gives you point by point. When you are writing, you like to basically see the breakdown of what you need and how to go about it.

Busiswa: It stays there while you type? It's beautiful! I'd love to use it!

Malusi: Ja, as it is, it is useful, especially that drafting part where, like, most of us don't go through it thoroughly. The drafting part, you don't do it thoroughly,

like, as it's explained here … ja, it explains the whole process, like when you get the ideas, you have to jot them down before you lose them.

Ebrahim: There'd be a lot of people trying to use this, because everyone – most of them do bad essays because they never have a solid grounding in this kind of thing, so – anything which would help their marks will do.

Rochelle: If we do have a project and an essay to write, I mean, mostly everyone would go for it, looking at it, I mean, and finding it interesting: then they will use it.

Lwandile: I think the idea might, sort of like cut down on the time and effort that you put into writing. You know normally what you do when you're writing something? Even if they're going to type it out on computer, they normally, like, write it out on paper – that's a waste of time. Basically, they tell you how to structure your writing, mind maps, and stuff like that … like I had to write everything out, on the page, but then you can just take one copy and put all of your ideas in that mind bubble, and you know exactly where to go from here.

Zafika: The tips, I found that very interesting … the fact that you have to think of yourself as the reader, who doesn't know anything about the points and topics you're talking about, you picture yourself as that reader. That almost helps you almost to get into it from the reader's point of view, when you've got a checklist, and somewhere there's a tip about reader roles, when you're looking at your own work.

Thula: A comment I wanted to state is there's a lot of detail, like, uh, how to draft, how to put out drafts before actually writing, and the audience – that goes to the readers. A very good example of that is this part (i.e. "About composing"), cause this actually targets people who want to upgrade their writing. So you are the audience at that time, you are being taught how to write. So you see by the style and the tone of the writing that it's used to educate, and it's put into simple English.

Reshan: It was informative – a lot of writing, but that was also a problem, cause there's too much of writing.

Mthobisi: I think this really will work wonders, I'm really serious about that. This, like, enables the students to really know what is a proper essay from starting point to the end, you know. It's got so much and is so comprehensive. I think they (i.e. other students) will use it, in terms of writing essays, assignments. Personally I think I'll use it, every time I had to compose or do something I'll use it.

Thandeka: To me it (the "About composing" section) kind of like summarises everything I really wanted to know, because, um, I've got – I've sort of got a problem, 'cause I didn't know I had it, I just found out while we were doing this (project). I don't really read what is written, I just look at the (topic) – and ok, I just look at, here, ok there's "Land Reform", and I just go, "Ok, Land Reform, what do you know on Land Reform?" And then I write everything I know. I don't really read the whole thing and, like, what is asked about Land Reform.

Nelisiwe: I think it's right, it's great, by reading the whole thing it shows how to write. It's an interesting idea, which is why I'd use it.

Links could be seen between these – and other sentiments expressed by the participants – and some of the issues which came up for them in the composing sessions. For Akhona the program made articulate and explicit her intuitive grasp of the composing system, it reflected the "truth" of the reality of composing. Earl identified with the practicality of the advice and the way it was broken down systematically. Busiswa liked the order and control the program offered in handling the functioning of a process which sometimes seemed erratic and random. The program gave Malusi insight into the drafting process in terms of capturing ideas quickly rather than saving time by producing a more or less fair copy from the outset. As well as the remark given above, Ebrahim also made a significant comment in terms of his dilemma when composing:

> But what happens if you've already written the essay and they don't like it at all? So you could save so much time by just asking a couple of questions. If you write the whole thing, and then you ask them and they don't like it – they don't like anything about it: you would have saved your time by asking those couple of questions before you started (i.e. in the "Preparing to write" section).

In other words, considering his audience and purpose before he wrote would have prevented him from becoming blocked during composing and ultimately submitting an assignment which was not likely to find favour with the assessor.

Rochelle spent most of the time reading "About composing": her main problem in the recorded composing session had been trying to carry out too many composing functions at once. She was perceptive in realising that the tutor could be discarded once the basic procedures had been learned: "Ja, maybe I'll use it for a couple of times and then, after that, I'll get used to it, and then you don't have to look at it." Lwandile was excited about the idea of using mind maps to save time on laborious rewriting (he had used a mind map in the composing session, but had not actually included all of these ideas in his essay). Zafika, who loved reading, saw that the tutor program might also be useful to authors: "I think authors could relate to this, when they're writing their books". She also connected her "going blank" during composing with the writer's blocks described in the program. Thula, who was clearly language-gifted (i.e. in his performance during the video protocols), liked the long stretches of textual information, and realised that these were lessons, "used to educate" and "put in simple English". Reshan, on the other hand, found the texts too verbose and long-winded, "too much of writing". However, he did test out as many routines as he could, and said the writer's block section and various checklists might be useful. There may be a link between his practicality, and his dislike of long verbal passages and the relative terseness of his text (his essay was a bit "thin"). Nelisiwe was generally approving in her response, but the only link with her previous composing session was a reference to "Writing rough drafts" from the program. As she has written notes rather than a rough draft, this might have been an indication that the program really was showing her "how to write".

Thandeka saw the "About composing" section in the program (which could just as well have been in a printed note) as summarising what she needed to know to be

able to write well. With the help of this section she had in fact correctly identified her problem as not analysing the topic properly so as to gather information for her essay with more discrimination. However, she would have needed to use the program for in the actual context of a subject essay to realise that key academic requirements (e.g. genre) are often not made explicit in the topic. It was still perceptive of her to see that her problem lay in contextualising the essay properly, and the program appeared to have provided her with help to solve the problem herself.

Mthobisi, however, appeared to have made the most significant discoveries in his trial run of the program. On discussion of his response to the program afterwards, he declared: "This is the most wonderful thing that has ever happened to me!" as he had managed to use the program to self-diagnose the problems experienced during his earlier composing session. To recap, his lecturer had put his poor performance down to lack of fluency in English, and I myself had wondered whether he might be using oral strategies to compose, as his text resembled casual speech. Mthobisi himself seemed to sense that his text had not developed beyond the rough draft stage, commenting earlier on: "This is not yet finished." After trying out the program for 20 min, he concluded that his most serious error had been not to consider his audience and purpose before starting to write, and not to establish the exact nature of the academic expectations operating in this specific case. This appeared to be a more accurate diagnosis than either the lecturer's or mine, as composing which is not properly contextualised lacks the social impetus necessary to drive it through redrafting to its completion, leaving it raw and "unfinished", and a first draft often resembles speech rather than writing. The most important thing about use of a program rather than lecturer response is that Mthobisi saw it as operating without prejudice in giving him non-judgmental feedback. As a highly politicised student actively involved in student affairs he had clearly been worried that prejudice might play a part in assessment of his essay, particularly as he had expressed liberation sentiments which might cause offence to lecturers of Dutch descent (his lecturer had actually seen his essay as being incoherent rather than offensive).

8.12.2 Improvements Suggested by Students

The following improvements were suggested by the students:

- Fewer long passages and more chunking, bullets and checklists.
- Better back and forward navigation.
- Use of colour and animation
- A full screen option
- A help option
- More use of icons
- More screen prompts
- Exemplars of student writing

Some of these improvements were carried out in later versions of the writing tutor program, but others were left until more extensive testing could take place with larger numbers of student (and staff) users.

8.13 Conclusion

This concludes my brief in this investigative cycle, which was to develop a theoretical model of written composition to underpin the design and production of a writing tutor program. The writing tutor program is by necessity based on the first empirical model, as this describes in simplified form the mechanism whereby the key functions identified in the theoretical model are carried out in real-life composing situations. While a computerised writing tutor in the form of a help menu has the disadvantage of not being as responsive, interactive and flexible as a human tutor, in itself it provides a more dynamic empirical model of composing than a static diagrammatic representation. Moreover, it is able to accommodate supplementary features of the empirical model which could not be included in a diagram (e.g. inner dialogues and writer's block). A menu-driven help program based on the five stages of composing also allows the inclusion of supporting explanatory information and teaching materials without taking away from the writer's focus on the five stages during composing. The net result is that the writing tutor program can be seen to provide a model of not only composing but also of a method for teaching/learning written composition. It does so by providing learners with a conceptual mechanism which can inform the social practice of communication in written mode. Because students can see the connection between their own real life composing and the schema of composing in the core of the main menu, it not only guides practice but can be used for self-diagnosis of writing problems.

Conclusion

In the Introduction I undertook to fulfil certain aims, and therefore in the first part of this concluding chapter I shall sum up the extent to which these aims were achieved with reference to the methods used and the various outcomes, as well as the significance of the latter. This will be followed by suggestions as to further applications and developments of the modelling process, and the chapter will conclude with a reflection on the inquiry process.

The Extent to Which the Aims Were Achieved

The Description of Writing Unfolding in the Course of the Modelling

The first aim was "to provide a description of writing which fits with the social phenomenon as experienced and observed in a lifetime of writing, teaching and research". I must emphasise that this was not meant to be in the nature of a lifetime quest, but that the modelling process was complemented by my lifetime experience. As teacher, lecturer, researcher and supervisor in a field (i.e. English Communication) which is massively over-subscribed, as it were (e.g. 5,000 students for one lecturing Programme to service) I have been fairly saturated with reading/writing/talking (not to mention navigating immense dimensions of electronic text). Taking on a post which involves research administration has spawned yet more oceans of paperwork, so that I am fairly drowning in text. Interactions with the students I am supervising raise the intensity of these interactions to a fever pitch (I have literally lost count of my doctoral students, who surpassed ten in number some time ago). When I surface momentarily to focus on my own investigative work and writing, as now, it is in the undertow of the richness and intensity of a lifetime's experience of communicating, to which the rigour of the modelling process stands in stark contrast. A swimmer's view of the ocean is sharply limited: the swimmer's sense of the heaving complexity of forces is, however, total. For those who find the modelling process described here too analytical, too cold, too cerebral, I would remind them that discovering the essence of a process requires a sharply

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defined vision which may seem at odds with the richness of the whole phenomenon, and that I am by no means detached from that experience. I swim in it daily, and dream it by night.

The point about arriving at the description of an "essence" of the communicative process is not that one now has a simple "five point plan" to impose on all interactions. It is more that it gives one a depth perception of sensing how these core elements interact with such diverse and infinitely creative results. It is not just a matter of seeing *that* communication works, but *how* and *why* it works in that specific case. While I have attempted to present the five functions with enough clarity – and parsimony – for them to be easily grasped, they did not all slip into my mind as obligingly as the first three discovered (i.e. ideational, interactive and social). I wrestled for some time to crystallise the concept of a "contextual" function, which is not, of course, always performed by human agency. The system of communicative functions, while on the surface simple, banal even, is one of infinite complexity. As I pointed out earlier:

> It must be borne in mind that systems are complex and layered, and that there is no one-to-one correspondence between the functions and the causal agents which perform them. The same causal agent can perform different functions, and the same function can be performed by different causal agents. What can be confusing is that aspects of the contextual, ideational, interactive, social and reflexive – which are functions – can also act as causal agents. For example, context can be a causal agent performing the ideational function, as it can contribute to message content. Ideational content can be a causal agent performing the contextual function by making the context clearer (Chapter 6, p. 127).

The above explanation merely scratches the surface of the complex mechanism involved in communication, written or otherwise. It does, however, go some way to supporting my claim that the composing system (i.e. the second empirical model) can provide a model explaining the diversity and idiosyncratic nature of actual instances of written composition. This is, I believe, the greatest contribution of Franck's modelling process: that the essential functions of a process can be performed in infinitely varied ways.

Some of the insights about writing raised in this account are as follows:

- Writing is a socially-embedded and socially-permeated process, with extra- and intra-systemic social operation.
- Written mode is a highly idiosyncratic adaptation of a common communicative system.
- Some of the idiosyncrasies of written mode can be explained by viewing writing as a distanced interaction-by-proxy.
- The commonalities and variables in composing can be explained in terms of extra-systemic factors and intra-systemic variation.
- The composing process is a type of algorithm with probable causality.
- The model of composing is a social algorithm, such as can be used to transmit knowledge of social processes.

The description of writing offered in this account goes beyond providing a model of the composing system, however. The critical realist approach has shown writing from a very different perspective. The system of communicative functions which constitutes the theoretical model of writing depicts composing as a communicative interaction: the written codes whereby it is negotiated, as well as the textual (or other) conventions which accompany it, are then mechanisms used to effect the communicative interaction. The main contribution of the critical realist approach to writing employed here is to suggest that communication (written or otherwise) is not *set in place* by discourse, or *equivalent* to discourse, but *effected* by means of discourse (i.e. with the meaning of "socially differentiated language repertoires"). This does not mean that writers no longer need to focus on the written text or discourse conventions, but that they can now focus on the text – and conventions – in terms of how these are used in carrying out the communicative functions.

The Modelling Process As Contributing to the Description of Writing

A summary of the modelling process which outlined its salient features only would read as follows:

While a model of composing (i.e. *Stages of the writing process*) had already been developed in a previous study (Pratt 1987) and had proved effective in teaching composition at both secondary and tertiary level, this "pedagogical model" (the user's model) did not satisfactorily explain why composing should occur in stages (or in these particular stages) nor how features of the specific context in which writing occurred might shape composing. Following the orientation chosen, critical realism, this study viewed writing as a complex social mechanism which needed to be modelled for its functioning to be understood. Franck's modelling process showed the *Stages of the writing process* to be in the nature of an empirical (practical) model: to explain its workings, a theoretical model of writing needed to be formulated. The theoretical and empirical models, according to Franck (2002), would constitute the formal and applied aspects of the social mechanism involved in written composition. This mechanism would not only describe what learners were doing as they engaged in writing, but, when explained to them, would constitute a conceptual mechanism informing their everyday practice.

A theoretical model of written composition was formulated, constituting the five functions "without which" effective communication could not take place (i.e. describing the prerequisites for communication). The formulation of the theoretical model made it possible to formulate a more analytical empirical model of composing. The new empirical model had an input option which helped to explain how local factors impacted on composing, causing infinite variation within the composing system. When used to analyse the composing of 13 students writing a revision assignment in Town and Regional Planning, the "analytical" empirical model explained some of the variations within the system, including instances of

recursion, and could also be used to account for the degree of success achieved by students, as judged by an independent assessor, their usual lecturer for that academic subject. The later empirical model could be seen to reflect the complexity and diversity of real life composing, thereby validating the theoretical model.

As a commentary on the above, it must be emphasised that the modelling was not intended to develop a "field theory" of composition – or any other type of "grand theory", or even to explain all of the things it eventually *did* explain: the aim was to design effective teaching/learning interventions. At the outset I did not actually set out to model composing, but to understand the writing process so that I could assist undergraduate students to compose their "minor academic essay". The diagram of what I later called the "user's model of composing" was scribbled onto the chalkboard minutes before my first conferencing interview, prompted by a contract I had made with my student tutorial group to "explain the stages of the writing process". The diagram was of course erased by the next day (the first time the lecture room had been cleaned), but I had jotted it down from memory that evening, encouraged by the success of the interview. What struck me particularly about using the model as intervention was that I had simply explained the stages drawn hastily on the board, and had then asked the student two questions:

1. What stage are you now at?
2. What do you need to do next?

Craig (for that was the name of the first student) replied: "I'm at Stage 2, rough drafts, and I need to finish jotting down most of my ideas, and then go on to Stage 3, structuring for the reader." Then, to my astonishment, he left to get on with it. What had actually happened was that I had provided the student with a conceptual mechanism to guide writing practice without constant reference to the lecturer for guidance. My master's research (in which I was engaged at the time) in fact leapt ahead to testing out this conceptual mechanism (a term I coined only later) without pausing for a depth rationale, mainly because the process approach I was using then could provide only surface reasons (most of which are included in Chapter 4).

The steps into which I have divided Franck's modelling process (Chapter 3, pp. 46–47) make it seem relatively simple. It was not so in practice. While I intuitively grasped the principle involved, attempts at formal explication of the modelling were tortuous, slow and embarrassingly circuitous until I read Robert Franck's account of modelling, which provided a "blueprint" to map out the modelling in formal terms. By then the actual modelling had been all but concluded (even the prototype program), apart from the 13 further case studies validating the second empirical model, and hence, the theoretical model. Even so, I was still grappling with the concept of the mechanism in its social science sense. The second empirical model had in fact already been published in a conference paper as a figure entitled: "The hierarchy of mechanisms involved in written communication" (Pratt 2005a:252) before I realised that my diagram in effect described a more refined empirical model. This was because I had at the time been focusing on the *stages* of composing as mechanisms, which, in a sense, they are, but they are better understood as part of a whole composing mechanism.

Apart from providing the models which were the purpose of the modelling (however implicit this process was at first), and which led to useful practical applications, I would suggest that the modelling process was significant in arriving at these original concepts:

- The depiction of the communicative functions as a primary system;
- Identifying the system of communicative functions as a generalizable principle;
- The concept of distancing (temporal, spatial and valence) in communication, and its effects on the various manifestations of communication;
- Speculation on the formation of the modes and genres, in terms of input into the system of communicative functions.
- The notion of the "conceptual mechanism".
- The notion of "contingent" and "intentional" determination.

The Models Formulated

A further aim (as expressed in the Introduction) was "to give an account of the models formulated, showing how they established writing as a social process". The models formulated were as follows:

1. The first empirical model, or "user's model"
2. The theoretical model, or system of communicative functions
3. The second empirical model, or composing algorithm (although strictly speaking, so is the user's model, while less succinctly expressed).

Writing, though a social process, is a solitary act, an interaction by proxy only, so that it immediately becomes difficult to show the social element in a model. Interaction, which takes the forms of turn-taking in speech, is signalled mainly by structure in writing, although other (i.e. rhetorical) devices may be used to make writing more like a conversation. Of the list of stages of the first empirical model, the user's model, the scope for social interaction is hardly promising:

Stage 1: Prewriting (focus: data gathering)
[FUNCTION: CONTEXTUAL]

Stage 2: Draft writing (focus: idea generating)
[FUNCTION: IDEATIONAL]

Stage 3: Major editing (focus: idea organising/structuring)
[FUNCTION: INTERACTIVE]

Stage 4: Minor editing and polishing (focus: editing)
[FUNCTION: SOCIAL]

Stage 5: Evaluation (focus: evaluating)
[FUNCTION: REFLEXIVE]

It was evident that "Minor editing and polishing" was a social activity, as in linguistics the degree of correctness (or otherwise) in a text has long been identified primarily as a social rather than semantic issue (Palmer 1971). However, even after the discovery of the underlying functions (in square brackets), it was clear that the context in which writing was set included social factors, which would dictate to some extent the social conventions to be followed in editing. Social factors must also surely influence content, structure and feedback. At one stage I had "social" permeating all of the functions in my theoretical model (see Pratt 2005a:251), which in fact led to the realisation that social factors *did* in fact permeate all stages of composing, but that they did so as input into the composing system (see Fig. 6.4 in Chapter 6). There were also other contingent factors which might impact on the system, not all of them social.

The second empirical model, the composing system, is not materially different from the first in its depiction of stages, as follows:

INPUT {
- Contextualising/data gathering
- Idea generation
- Reader accommodation
- Editing
- Evaluating

The inclusion of an input function was a real breakthrough, as meant that the refined model not only provided a better rationale for the infinite diversity of actual instances of composing, but also clarified two very different operations of the social in composing: the social *function*, which needs to be performed for written communication to be successful, and social *influences,* which act as input into the composing system. The context would necessarily include social factors, but that is how writing is usually *contextualised* (i.e. in some form of social context, which makes the social context a *mechanism* effecting the contextual *function*, and not a function in itself). The fact that social factors could be seen to impact on every stage of composing was what made it very difficult to separate the social function in composing from the social factors impacting on it. The main achievement of the empirical models was to explain not only the idiosyncratic form which written communication takes, but also to assist understanding of its highly complex functioning as a social system.

The other, perhaps more significant advantage of the second empirical model was its re-formulation in lean, algorithmic format. It no longer gave advice to the learner writer as to how to achieve "good" writing habits, but rather provided the researcher with a template for analysing both good *and* bad composing behaviour (for "bad", the analyst notes that stages are either omitted, performed simultaneously, or performed ineffectually, rather than that specific advice is not carried out).

The Practical Application of the Modelling in the Creation of a Computerised Writing Program

Programming started before the second empirical model was clearly formulated, and my collaboration with the programmer contributed to the perception that the second model constituted a composing algorithm. The help menu format allowed a layering not possible in a two-dimensional diagram of a model. In a sense, then, the programming process not only expanded the scope of the model as represented in two-dimensional representations, but also explicated some of the complexity of the inter-layered systems which could only be sketched in the second empirical model. As help menu was based around the stages of composing algorithm, in its core structure the program modelled what it was teaching

Leading off the main menu of the program were submenus with a combination of the practical advice and guidance given in the user's model, but greatly expanded to include supplementary materials. The program also reflected the algorithmic operation of the second empirical model, with its input option. The difficulty of how to present the input option in the programming also fed back into the formulation of the second empirical model, in terms of the program having one general option (*Teacher's advice*) for the input to occur (hence, a general input option in the model) and yet five sub-sections into which input could be subdivided, hence, the recognition that input impacted at various stages, as well as overall. I wrestled with the idea of where general advice might be displayed in the writing tutor program, but the realisation that contextualising was the main function of Stage 1 meant that all general advice could be input (and displayed) in the submenu leading off *Preparing to write.* The actual data capturing method to be used for the program input option was problematic at first. Having the learner writer's actual teacher (or mentor) feed in data into the program was logistically not feasible, because it would have required complicated handling procedures, as well as teachers with an advanced level of computer literacy. The fallback position of having the learner input data in a *Teacher's advice* section turned out to be the best solution, as:

- Guidance comes from many sources besides the teacher, and teachers can use very different criteria (as confirmed in Chapter 5).
- The learner became an active constructor of knowledge rather than merely a recipient.
- The learner was prompted to establish local criteria on number of different levels.
- The learner was not only obliged to listen to the guidance, but to type it into a screen box, thus reinforcing learning (this besides having it as an onscreen display option reminder, easily available).

The main problem posed by the design of the writing tutor program was to keep the application as ubiquitous as possible in terms of general advice and guidance offered (so as not to contextualise it locally in advance), while offering the learner

writer a range of general materials and routines. The prototype in fact conflated two earlier versions, a school-level writing tutor and an undergraduate version, which made the inclusion of suitable materials even more difficult. In this case the dynamic tension between the systemic and situated aspects of composing was making itself felt in the actual application design. This was resolved by including the materials and routines which I knew fitted in with the models, from my own teaching and composing experience. The application, then, contains the essence of myself as teacher in its lesson content, as well as the essence of writing in its systemic structure. This is probably not all that unusual: what was notable in the design of the program is that the system of functions underpinning it also provided an educational design principle to inform the computer application (see Chapter 8). This kind of layering (see Pratt & Peppas 2008) supports the notion of learning to write, and writing to learn.

Further Applications and Developments

The following further areas of research and applications are suggested. Some have been followed up, and others are in process. There is such broad scope offered by the modelling and possible applications that the author cannot personally follow up all avenues of investigation (some have been followed up by postgraduate students, however).

The Use of the Theoretical Model as Generalizable Principle in Social Science

As mentioned in the Introduction, the model of communicative functions provided a generalizable interactive principle for use in other areas or fields of social science. It has been used in course design in both classroom-based and online courses (Pratt 2005c). This is because learning is viewed as an interactive process, which, like communication, must be contextualised, generate some form of knowledge content, be governed by local criteria, and offer opportunities for feedback, including that provided by formal testing (see Pratt & Peppas 2008). The system of communicative functions has also provided the basis for an empirical model of blended learning delivery developed by my colleague Rob Gutteridge (Gutteridge 2006, Pratt & Gutteridge 2006). Piloting mixed mode research modules designed to build research capacity has suggested that the communicative functions is a principle underpinning investigation, explaining an empirical model of research processes contained in the modules (Pratt 2009b). To illustrate the unfolding versatility of the principle behind the system of communicative functions, a Television student, Alan van Heerden, adapted it to provide a framework for analysing features of successful film documentaries in his Bachelor of Technology Research Report (van Heerden 2008). It has also been used, together with the second empirical model, to explore the nature of hypermedia communication, in particular, to suggest that the type and extent of

distancing involved are more significant factors than synchronicity or asyncronicity per se (Pratt 2007a:710–711). For further study, it is suggested that the principle might be applied as a theoretical framework in disciplines involving design (e.g. Fashion, Jewellery and Graphic Design).

The Representation of the Theoretical Model as a Mathematical Formula

The rationale for this was the more easily to test out the possibility of its being a generalizable principle in other fields or areas. Attempts to do so have so far suggested that the theoretical model may provide the basis for a model of interactive determination. The difficulty has been in framing the functions so that they can be generalized to as many fields as possible, prior to mathematical formulation of the system of functions. The process so far has fed back into the field some interesting conjecture on the actual nature of communication, and precisely what type of force – or field effect – is generated when communication occurs, if one compares it to natural phenomena (this has yet to be formalised in studies or research papers, as collaboration with researchers in the natural sciences is required).

A Study of How the Composing (or Communicative Functions) are Encoded in the Text

The rationale for this was speculation that some of Halliday's "language functions" might in fact be communicative functions, and that others might be the result of encoding these in language in the written text. So far this avenue of exploration has not been followed up, but would provide a fruitful area for doctoral research.

Use of the Second Empirical Model to Analyse Composing in Different Genres

The different genres – or contexts – involved need not necessarily be educational, and this has already been pioneered in the analysis of film documentaries, although a new empirical model had to be derived from the system of functions, one which made sense in terms of the various components of film texts.

Analysis of Composing Carried Out Primarily on Computer

Nellhaus' comments on the "materiality" of texts (1996) suggest that composing on computer may involve more than just a change of medium, and may generate some very different writing profile graphs to those obtained from composing using

traditional writing materials. Before this is carried out it is suggested that an application – or suite of applications – be designed to expedite and facilitate recording and analysis of such composing, as each instance of short composing (2–3 hours) can take up to 40 hours to document even before analysis takes place.

Testing Out of the Writing Tutor Program

While this has not taken place as a formal investigation, an immediate application of *NEWT* on completion of a working prototype was its piloting at DUT as part of a Teaching Development Grant (TGG) project, *Introducing newt@dut*, which was designed to provide a mixed mode writing clinic for staff and students. TDG funding enabled further refinement of the prototype program to include a *Flash* tutorial, mind map and flow chart applications (the first for idea generation, the second, for linear structuring of the ideas thus generated) as well as an ideas database. The program download has since been encrypted to enable it to be used in Community projects without compromising copyright. Over the last 3 years the *Writing Clinic* has been piloted (Pratt 2009a) with undergraduate and postgraduate groups (including masters and doctoral students), and has been refined with a new customised webpage with *NEWT* download which can be used by staff and students both at the university and at schools collaborating in the project. The *Writing Clinic* webpage now being set up includes data capturing devices which will help to record and analyse feedback. A TDG project is being set up for the Town and Regional Planning Programme (which was involved in the last set of video protocols). This will allow more extensive testing out and monitoring of use of the WTP and *Writing Clinic* webpage.

The Development and Testing Out of Specialist Versions of the Writing Tutor Program

Specialised versions of the WTP could be developed to assist students with writing research proposals and research articles, the former, because Faculty requirements are clearly specified, the latter, because they lend themselves to formulaic structures. This has not yet been attempted, although masters and doctoral students have used the prototype WTP to assist with the composing of research papers and dissertations.

Development of Other Tutors Based on the "Floating Menu Bar" Principle

As the floating menu bar format of the WTP floats above any Microsoft application (and could be adapted for Apple Mac or Open Office), it could be used for other tutors, for example, compiling a PowerPoint slide show, designing a webpage, using

a spreadsheet or database. It is beyond my scope to develop such applications in terms of my current commitments, however, although one of my doctoral students is designing a computer application to model Chomsky's generative grammar, which could be encompassed in a similar design.

Reflection on the Inquiry Process

The modelling process followed covered a period of 20 years and thus extensive evidence exists to support the models formulated. While based on theoretical development, this study has been found to have many practical applications in composition instruction, as well as the writing tutor software (Pratt 2007b:226–253). Unexpected (but felicitous) side effects of the study were the realisation that the model of communicative functions appeared to constitute an educational design principle, moreover, that is could be viewed as a theoretical model underpinning not only learning processes but also research processes (Pratt & Peppas 2008). Since thesis acceptance and obtaining the post of Research Co-ordinator in the Faculty of Arts and Design (FAD) at DUT, my focus shifted to developing research capacity, generally in the form of workshops, an in-house conference (*FAD Conference 2009*), and piloting online research modules, more specifically in personal supervision, mainly of doctoral students, many of them our own staff members involved in qualifications improvement. This has meant that I myself cannot follow up all avenues of further exploration personally, but I hope to be involved in both supervising and further research publications documenting staff and student modelling in the social sciences.

In conclusion, working from the reality of writing as experienced by myself, fellow teachers and researchers, and students towards a conceptual picture of what it must entail involved a very arduous process, in itself full of recursion, and only clearly discernable towards the end. This meant that the investigative process literally constituted reinventing itself by hindsight, and then had to be painstakingly reconstituted in the actual writing up. As a result the investigation was drawn out, with many delays and obstacles. It also meant that yet more data had to be gathered, and video protocols are not time and cost effective. While based on theoretical and empirical development, this study has resulted in a very practical application, which, it is hoped, will transform the way in which students learn composing.

Glossary

Academic writing In its widest sense, academic writing is any act of writing which serves the ends of learning; however, it is habitually used to refer to the writing of the essays, assignments or dissertations which are used to assess academic progress. In this account academic writing is not viewed as generic, but as context-specific and shaped by local academic needs and requirements; there is, however, a "school type" of writing practice – usually de-contextualised – the outcome of which could be said to constitute a genre. Academic writing (i.e. composing) is viewed as an integral part of the social construction of knowledge, and not just a conduit (unless, of course, a transmission type of knowledge construction is involved).

Algorithm A set of well-defined (and finite) instructions for accomplishing a process, often containing steps which are repeated until the process is complete.

Andragogical A student-centred model of learning, used to refer to adult learning, as opposed to the more common "pedagogical", or teacher-centred, model, used to refer to child (or youth) learning.

Architecture of functions The system of functions comprising a theoretical model is referred to as an "architecture of functions" as it provides a "blueprint" of the functions underpinning the operation of social and physical phenomena.

Causal agent A sentient being which acts to bring about change, whether consciously or otherwise.

Causal model A causal model is aimed at representing the combination of causes determining some phenomenon. Following Franck, the causal mechanism whereby the functions of a system are carried out may be represented by a causal model.

Composing In this account composing is treated as a communicative interaction, and the overall pattern it takes, while socially generated and influenced, is considered to operate at a deeper level than local discoursal conventions or contingent circumstances. Composing is thought to derive its basic patterning from the need to carry out essential communicative functions, and not from discoursal features of the various genres (e.g. a novel, a poem, a news report), although these, along with contingent factors, can be seen to account for some of the myriad surface variations in

specific instances of composing. That the general pattern described here (the empirical model of composing) may have been influenced by both western technology and western literacy practices is not disputed. It may also be the case that "islands" of newly literate ethnic groups may not be aware of or use this pattern unless exposed to western educational practices. However, learner writers from newly literate groups may also not use this pattern because composing has not been properly contextualised by teachers for whom the social context of academic composing has become implicit, and therefore there is no meaningful social context to drive the revision and polishing phases of the process. Some of the contingent or social factors which may lead to non-completion (or partial completion) of the phases of composing pattern will be discussed in connection with the empirical work.

Computer mediated learning (CML) Learning which is directly mediated by Information and Communication Technology (ICT). The term is used in this account in preference to computer assisted instruction (CAI), which so broad as to include any use of a computer in instructional programmes, and computer assisted language learning (CALL), as is should be clear from this account that writing involves more than language learning.

Conceptual mechanism A concept which informs everyday social practice. The pedagogical model of composing is a conceptual mechanism, as is the writer tutor program based on it.

Contingent determination A term suggested provisionally in this study to refer to attendant or circumstantial factors (including socio-cultural factors) impinging on communicative processes, rather than the intentional causality of a human agent carrying out such a process. Contingent determination may refer to both sentient and insentient causality, however.

Deduction Refers to the practice of applying a general principle or theory, derived from one set of circumstances, to another set, in order to explain (or predict) phenomena.

Determination Causality, with which term it is used interchangeably in this account. At least eight types of determination have been identified (1) causal determination; (2) quantitative self-determination; (3) interaction; (4) dialectical determination; (5) statistical determination; (6) structural determination; (7) teleological determination; and (8) mechanical determination (Bunge 1989, in Franck 2002:234).

Dialogical critique According to critical realist principles, access to the "real" can be reached only through an ongoing critical dialogue between the knower and the thing known (i.e. dialogical critique is a way of knowing).

Discourse Socially differentiated language forms and conventions, including paralinguistic elements and other nonverbal behaviour. Crystal's traditional definition of discourse (1980:114) as "a continuous stretch of LANGUAGE larger than a SENTENCE", which is extended to include socially differentiated speech events

(such as "a conversation, a joke, a sermon an interview", 1980:115), suggests that discourse possesses the same langue/parole distinction as language. Thus discourse can exist in potential, that is as a socially shared repertoire of language forms and conventions (i.e. mentally, as in Bhaskar's empirical domain), in the real domain as socially embedded utterances (i.e. events/mechanisms), or the actual domain as experiences and reflections on these, whether in the delivery or the reception of an utterance. In this account neither language nor discourse (whether in potential or realised as utterance) are conflated with human communication, which is considered to be the larger process, and which, while always socially contextualised in actual occurrence, has underlying features about which general observations can be made, in much the same way as with salient features of discourse. In this study, both language and discourse are considered to constitute key (but not the sole) mechanisms effecting the communication process by carrying out certain essential communicative functions. Within a critical realist perspective, discourse, while it can occupy the real domain in the sense of being a mechanism, should not be conflated with knowledge or reality, as both Bhaskar (in Laclau & Bhaskar 1998) and Archer (Archer, Sharp, Stones, & Woodiwiss 1998) have pointed out in some detail. Discourse can have "real" force, however, in the sense of being a mechanism.

Domain In the critical realist ontology these refer to levels (or layers, or types) of existence. There is the reality of external events and their causes (often unknown to humans), in the "real" domain; the reality of our own incontrovertible experience, in the "actual" domain; and a mental reality of ideas, reflections, theories – including the entire body of human knowledge – in the "empirical" domain.

Empirical model A description of a process or phenomenon which illustrates how it works in a real life situation. The user's model of composing is an empirical model, as it describes what a writer does while composing. Note that there is no correspondence between Bhaskar's "empirical domain" and the "empirical model" described by Franck: the former is a state of existence, part of Bhaskar's ontology, while the latter is a model based on real-life functioning (*all* models, no matter of what nature, fit into Bhaskar's empirical domain, which deals with theoretical entities).

Empiricist A rational viewpoint (associated with Empiricist philosophy) which holds that knowledge is derived from experience.

Epistemology An account of the nature of knowledge, or theory about how knowledge comes into being.

Functional architecture The system of functions in a theoretical model.

Generative mechanism Used by Bhaskar interchangeably with the term "causal mechanism".

Induction Refers to the process of classical induction, whereby a general principle or theory is inferred from a set of experiences.

Intentional determination A term suggested provisionally in this study to refer to the setting in train of a social process such as communication, whether conscious or involuntary. Intentional determination refers to causal agents.

Intransitive/transitive In critical realism, "intransitive" refers to the real domain, which is not the result of human thought – it exists independently of our perceptions of it; "transitive" refers to the empirical domain of knowledge and theories, which are a construct of human thought.

Learning Broadly defined as the social construction of knowledge: precisely how knowledge should be constructed is a matter of local choice from amongst the social options available at any given time, dependent on current relations of power.

Learning object Any device (e.g. thing, electronic device, program) which can be re-used to facilitate learning in different contexts. While learning objects are connected with technology-enhanced learning, they are not limited to any particular technology (an abacus could be said to constitute a reusable learning object). The user's model is a type of re-usable learning object, as is the writing tutor program on which is based.

Left and right brain theory Whether the mind's creative and logical functions are situated physically in the left and right hemisphere of the brain, or in the anterior and posterior lobes, or in other places unspecified, is not the issue here: a person's creative functioning is observably distinct from his or her logical functioning, and while we may oscillate rapidly between the two states, the two modes of functioning are clearly distinct, as well as mutually exclusive.

Mechanism A physical, social or mental process characterized by some particular configuration of its components, that normally leads to some specific outcome. The systemic "architecture of functions" which Franck shows as underpinning causal mechanisms can be viewed as giving mechanisms their distinct form and structure. According to Franck, theoretical and empirical models represent different aspects of the same social mechanism: the former, its architecture of functions (i.e. formal element) the latter, its causal architecture (i.e. applied or practical element).

Model Refers to any representation – be it mathematical, statistical, conceptual or figurative – of the structure or working of a natural or social entity, for example with the help of a diagram and more recently with the help of computer simulation.

Ontology An account of the nature of reality, as described in various philosophies.

Paradigm Comprehensive world view. The term "paradigm" has been so overexposed in academic parlance that it has become almost meaningless. To complicate matters, Kuhn (1969), whose seminal work, *The structure of scientific revolutions,* introduced the term into academic debates, used the word with at least three meanings: (1) comprehensive world view, (2) disciplinary matrix, and (3) exemplar – then reneged on the first meaning, the one which is used most commonly in the field of Education, in a *Postscript*. In the literature on written composition the term paradigm is used with all three meanings, but this is rarely explicated.

Paradigm shift The process of paradigm shift occurs when an existing paradigm (with the meaning of world view) cannot account for an increasing number of anomalies, and the scientific community goes through a period of confusion where alternative paradigms compete for supremacy until one paradigm should achieve domination. The new paradigm provides a conceptual framework within which all of its implications can be explored; this continues until such time as the new framework is also found wanting and yet another paradigm shift takes place. A paradigm shift involves more than the mere application of new theories to findings which cannot be accommodated within previous theories: it is a shift in overall perspective, that is the way researchers. see reality itself

Poiesis The social construction of knowledge. Precisely how knowledge should be constructed is a matter of local choice from amongst the social options available at any given time, dependent on current relations of power.

Positivism An orientation which posits an external reality which can be known and explained through observation, experiment and measurement.

Poststructuralist A position which views reality as tentative and diverse, constructed socially by means of discourse (which tends to be equated with text) and rejects the notion of a fundamental common reality underpinning the world as constructed in discourse.

Principle A principle is that which comes first in the order of things and/or in the order of explanations. A theoretical model is a principle when it does not presuppose other explanations.

Property The property of a system is what happens as a result of that system (i.e. it is the output of the system), which can be established by observation. The property of a system is the actual phenomenon being investigated, and may change with different input into that system.

Realist A realist orientation posits an external reality which exists independently of our attempts to make sense of it – it is not necessarily a reality of solid material objects, however.

Reality In critical realist terms, a tripartite amalgam of an external physical – and social – world, our experience of these, and our reflections on their meaning. Thus reality has an external physical (and social) aspect, a primal immediacy in terms of our undisputable experience of the former, and a mental existence as we puzzle to reconcile these aspects.

Retroductive methodology Retroduction is a methodology typical of critical realist research, starting with observation of the phenomenon (i.e. in the domain of *actual*), next, postulating the *real* structures and mechanisms underpinning observable events, and then demonstrating the existence of these structures and mechanisms with reference to actual events (i.e. in the domain of *real*).

Semiosis Meaning making (i.e. the social construction of meaning).

Social algorithm A term used in social psychology to refer to one of the patterns of social functioning which young people need to learn in order to participate effectively in social life. A social algorithm is a type of conceptual mechanism.

Stochastic causality Causality which possesses a high degree of probability in bringing about an event.

Stratification Layering, in critical realism, particularly vertical layers of causes, which may be diverse, complex and hidden from surface view.

Text Handwritten, printed or electronically represented words on a page or monitor screen, i.e. linear verbal script displayed on a permanent (or semi-permanent) two-dimensional medium. It is accepted that text can also refer to graphic representations and audio or video-recordings of speech and/or nonverbal behaviour, but these, while used to capture data or communicate concepts, are not the focus of this study.

Theoretical model A formal, abstract system of functions which are essential for the occurrence or existence of the physical or social phenomena in question. A theoretical model can also be referred to as a "theory". The five communicative functions – contextual, ideational, interactive, social and reflexive – constitute a theoretical model.

Theory A theory represents the conceptual structure of a natural or social system. It attempts to abstract the principles without which some properties of this system could not be as they are.

Think-aloud protocol A method whereby composing procedures are reconstructed by having writers verbalise their composing activities and record these on tape recorder. Writers need to have some training in advance.

Transcendental argument An argument which goes beyond what can be observed directly (i.e. in the realm of experience, or "actual" domain), to speculate on the nature of reality, or the nature of natural or social phenomena (i.e. events and their causes as existing in the "real" domain).

Transitive/intransitive In critical realism, "intransitive" refers to the real domain, which is not the result of human thought – it exists independently of our perceptions of it; "transitive" refers to the empirical domain of knowledge and theories, which are a construct of human thought.

Truth In critical realism, a position which can be established to approximate reality most closely.

Under-labourer While the "handmaiden to the sciences" theme is regularly echoed in critical realist literature, it is interesting to note what Locke, who was considered to be the first British empiricist, actually said: ". . .it is ambition enough to be employed as an under-labourer in clearing the ground a little, and removing some of the rubbish that lies in the way to knowledge". By the latter Locke

meant “the learned but frivolous use of uncouth, affected, or unintelligible terms, introduced into the sciences, and there made an art of”.

User’s model The concept of a user’s model was derived from Widdowson’s suggestion that language models drawn from the perspective of the language learner might be more helpful for language learning than models derived from pure linguistics (1984:9).Widdowson broached this notion in a series of seminal lectures, but does not seem to have followed it up.

Variable Variables may occur both inside and outside a system, and it is important to make this distinction when modelling.

Video protocol A method of reconstructing composing behaviour by playing back a videotape of a composing session and drawing up a writing profile based on the actions in the video recording, the writer’s interpretation of these, and the evidence in the written texts. Visual cues are extremely helpful in prompting recall of cognitive functions. Split screen recording using two cameras is recommended, as this can be used to capture the emerging text as well as the writer’s facial expressions and actions (video protocol analysis is abbreviated to VPA).

Writing This account focuses on writing as an interaction which includes text, but where “writing” is taken to mean “the act of writing” or “composing” and not “text”, unless otherwise indicated (or cited in a context where “writing” clearly means text, or is used deliberately to exploit the ambiguity of the word, as in the writing tutor program main menu).

Bibliography

Ahmad, K., Corbett, G., Rogers, M. & Sussex, R. (1985) *Computers, language learning and language teaching*. Cambridge: Cambridge University Press.

Alessi, S.M. & Trollip, S.R. (1991) *Computer-based instruction: methods and development* (2nd edition). Englewood Cliffs, NJ: Prentice-Hall.

Allmendinger, P. (2002) *Planning theory*. New York, NY: Palgrave.

Arapoff, N. (1968) Controlled rhetoric frames. *ELT Journal* 32(1):27–36.

Arapoff, N. (1969) Discover and transform: a method of teaching writing to foreign students. *TESOL Quarterly* 3(4):297–304.

Archer, M.S. (1998) Introduction: realism in the social sciences. In M.S. Archer et al. (eds.) *Critical realism: essential readings.* London: Routledge.

Archer, M.S. (2002) Realism and the problem of agency. *Journal of Critical Realism* 5(1):11–20.

Archer, M.S., Sharp, R., Stones, R. & Woodiwiss, T. (1998) Critical realism and research methodology. Opening remarks at the Second Plenary, *CCR Conference,* Essex. http://www.journalofcriticalrealism.org/archive/ALETHIAv2n1_archer12.pdf (30 July 2004).

Baëhr, P. (1990) Review article: critical realism, cautionary realism. *Sociological Review* 38(4):765–778.

Baijnath, N. (1992) Problems with process – tracing the writing problems of EPA students to their roots. *South African Journal of Applied Language Studies* 1(1):69–78.

Bartholomae, D. (1985) Inventing the university. In M. Rose (ed.) *When a writer can't write*. New York, NY: Guilford Press.

Bennet, F. (1999) *Computers as tutors: solving the crisis in education*. Sarasota, FL: Faben Inc.

Bereiter, C. & Scardamalia, M. (1981) Does learning to write have to be so difficult? In C.N. Candlin (ed.) *Learning to write: first language/second language*. Essex: Longman.

Bereiter, C. & Scardamalia, M. (1985) Cognitive coping strategies and the problem of "inert knowledge". In S.S. Chipman, J.W. Segal & R. Glaser (eds.) *Thinking and learning skills: research and open questions*, Vol. 2. Hillsdale, NJ: Erlbaum.

Berlin, J.A. (1988) Rhetoric and ideology in the writing class. *College English* 50(5):477–494.

Bhaskar, R. (1978) *A realist theory of science*. Hassocks: Harvester Press.

Bhaskar, R. (1979) *The possibility of naturalism: a philosophical critique of the contemporary human sciences*. Brighton: Harvester Press.

Bhaskar, R. (1986) *Scientific realism and human emancipation*. London: Verso.

Bhaskar, R. (1989) *Reclaiming reality: a critical introduction to philosophy*. London: Verso.

Bhaskar, R. (1994) *Plato etc.: the problems of philosophy and their resolution*. London: Verso.

Bizzell, P. (1992) *Academic discourse and critical consciousness*. Pittsburgh, PA: University of Pittsburgh Press.

Blakeslee, T.R. (1980) *The right brain*. Garden City, NY: Anchor Press/Doubleday.

Bloom, L.Z. (1992) The composition curriculum: a paradigm of possibilities. Paper presented at the *43rd Annual Meeting of the Conference on College Composition and Communication*. Cincinnati, OH, 19–21 March 1992.

Blunt Bugental, D. (2000) Acquisition of the algorithms of social life: a domain-based approach. *Psychological Bulletin* 126(2):187–219.
Boling, E. & Soo, K. (1999) CALL issues: designing CALL software. In J. Egbert & E. Hanson-Smith (eds.) *CALL environments: research, practice, and critical issues*. Alexandria: TESOL.
Boyle, T. (2001) Towards a theoretical base for educational multimedia design. http://www-jime.open.ac.uk/2002/2/boyle-02-2-paper.html (23 October 2003).
Britton, J. (1981) Shaping at the point of utterance. In C.N. Candlin (ed.) *Learning to write: first language/second language*. Essex: Longman.
Bruffee, K.A. (1984) Collaborative learning and the "conversion of mankind". *College English* 46(7):635–652.
Bruffee, K.A. (1986) Social construction, language and the authority of knowledge: a bibliographical essay. *College English* 48(8):773–790.
Bunge, M. (1997) Mechanism and explanation. *Philosophy of the Social Sciences* 27(4):410–465.
Burch, T.K. (2002) Computer modelling of theory, explanation for the 21st century. In R. Franck (ed.) *The explanatory power of models: bridging the gap between empirical and theoretical research in the social sciences*. Norwell, MA: Kluwer Academic Publishers.
Canagarajah, A.S. (1993) Comments on Ann Raimes "out of the woods: emerging traditions in the teaching of writing". *TESOL Quarterly* 27(2):301–306.
Candlin, C.N. (ed.) (1981) *Learning to write: first language/second language*. Essex: Longman.
Carroll, R.T. (2003) Automatic writing. *The skeptic's dictionary.* http://www.skepdic.com/autowrite.html (13 July 2007).
Cazden, C., Cope, B., Fairclough, N., Gee, J., Kalantzis, M., Kress, G., Luke, A., Luke, C., Michaels, S. & Nakata, M. (1996) A pedagogy of multiliteracies: designing social futures. *Harvard Educational Review* 66(1):60–92.
Chase, G. (1988) Accommodation, resistance and the politics of student writing. *College Composition and Communication* 39(1):13–22.
Chick, J.K. (ms) Report on roundtable discussion: key questions about writing. *19th Annual Convention of TESOL*, New York, NY, 1985.
Chomsky, N. (1965) *Aspects of the theory of syntax*. Cambridge, MA: MIT Press.
Clark, R. (1992) Principles and practice of CLA in the classroom. In N. Fairclough (ed.) *Critical language awareness*. Essex: Longman.
Cockburn, A. & Dale, T. (1997) CEVA: a tool for collaborative video analysis. In S.C. Payne & W. Prinz (eds.) Proceedings of the *International ACM SIGGROUP Conference on Supporting Group Work 1997*. Phoenix, AZ, USA, 11–19 November 1997:47–55.
Coe, R.M. (1986) Teaching writing: the process approach, humanism, and the context of "crisis". In S. de Castell, A. Luke & K. Egan (eds.) *Literacy, society and schooling*. Cambridge: Cambridge University Press.
Coe, R.M. (1987) An apology for form: or, who took the form out of the process? *College English* 49(1):13–28.
Condon, S.L. & Cech, C.G. (1999) Discourse management in three modalities. In S. Herring (ed.) *Computer-mediated conversation*. Cresskill, NJ: Hampton Press.
Cope, B. & Kalantzis, M. (eds.) (1993) *The powers of literacy: a genre approach to teaching writing*. London and Washington: Falmer Press.
Corso, G.S. & Williamson, S.C. (1999) The social construct of writing and thinking: evidence of how the expansion of writing technology affects consciousness. *Bulletin of Science, Technology & Society* 19(1):32–45.
Costanzo, W. (1987) The English teacher as programmer. *Computers and Composition* 4(3):65–76.
Cotton, K. (1991) Computer-assisted instruction. *School Improvement Research Series*. http://www.nwrel.org/scpd/sirs/5/cu10.html (16 July 2004).
Cumming, A. (1989) Writing expertise and second language proficiency. *Language Learning* 39(1):81–135.
Cupchik, G. (2001) Constructivist realism: an ontology that encompasses positivist and constructivist approaches to the social sciences. *Forum: Qualitative Social Research On-line Journal* 2(1). http://www.qualitative-research.net/fqs-texte/1-01/1-01cupchik-e.htm (7 August 2004).

Daiute, C.A. (1983) The computer as stylus and audience. *College Composition and Communication* 34(2):134–145.

Danermark, B. (2001) Interdisciplinary research and critical realism – the example of disability research. Paper presented at the *5th Annual IACR Conference*. Roskilde University, Denmark, 17–19 August 2001.

de Callatäy, A. (2002) Computer simulation methods to model macroeconomics. In R. Franck (ed.) *The explanatory power of models: bridging the gap between empirical and theoretical research in the social sciences*. Norwell, MA: Kluwer Academic Publishers.

Denzin, N. & Lincoln, Y. (eds.) (2005) *Handbook of qualitative research* (3rd edition). Thousand Oaks, CA: Sage Publications.

Downes, S. (2001) Learning objects: resources for distance education worldwide. *International Review of Research in Open and Distance Learning*, July, 2001.

Ekstrom, M. (1992) Causal explanation of social action: the contribution of Max Weber and of critical realism to a generative view of causal explanation in social science. *Acta Sociologica: Journal of the Scandinavian Sociological Association* 35:107–122.

Elbow, P. (1989) Towards a phenomenology of freewriting. *Journal of Basic Writing* 8(2): 42–71.

Elbow, P. (1991) Reflections on academic discourse: how it relates to freshmen and colleagues. *College English* 35(2):135–155.

Emig, J. (1971) *The composing processes of twelfth graders*. Urbana, IL: National Council of Teachers of English.

Emig, J. (1977) Writing as a mode of learning. *College Composition and Communication* 28(2):122–128.

Eyman, D.A. (1995) Hypertextual collaboration in the computer-assisted composition classroom: an introduction to computer-mediated communication pedagogy. Unpublished masters dissertation. http://localsonly.wilmington.net/~eymand/thesis.html (19 July 2004).

Faigley, L. (1986) Competing theories of process: a critique and a proposal. *College English* 48(6):527–542.

Fairclough, N. (1989) *Language and power*. Essex: Longman.

Fairclough, N. (ed.) (1992) *Critical language awareness*. Essex: Longman.

Fairclough, N. (1999) *Global Capitalism and Critical Awareness of Language*. http://www.schools.ash.org.au/lit/web/norman1.html (11 June 2005).

Fairclough, N., Jessop, B. & Sayer, A. (2001) Critical realism and semiosis. Paper presented at the *5th Annual IACR Conference*. Roskilde University, Denmark, 17–19 August 2001.

Farley, F.H. (1982) The future of educational research. *Educational Researcher* 11(8):11–19.

Farrow, K., Power, D. & Freebody, P. (1994) Computer-assisted writing development for deaf students: "Writing Safari". Proceedings of the *Australian and New Zealand Conference for Educators of Deaf Students*, *Quality and Choice*. Sydney. http://www.cltr.uq.edu.au/oncall/farrow91.html (31 August 2004).

Feifer, R.G. (1992) Sherlock: an intelligent tutoring system for teaching people how to learn. In D. Kopec & B. Thompson (eds.) *Artificial intelligence and intelligent tutoring systems*. New York, NY: Ellis Horwood.

Fielding, M. (1993) *Effective communication in organizations*. Ndabeni, Cape: The Rustica Press.

Finnie, G.R. (1991) *The computer as tutor*. Pietermaritzburg: University of Natal Press.

Fishman, S. & McCarthy, L.P. (1992) Is expressivism dead? *College English* 54:647–661.

Fleetwood, S. (2005a) Ontology in organization and management studies: a critical realist perspective. *Organization* 12(1):197–222.

Fleetwood, S. (2005b) Conference 2006. *Bhaskar Mailing List* posting of 14 October 6:43 p.m.

Flower, L.S. & Hayes, J. (1980) Uncovering cognitive processes in writing: an introduction to protocol analysis. In L.W. Gregg & E.R. Steinberg (eds.) *Cognitive processes in writing*. Hillsdale, NJ: Lawrence Erlbaum.

Flower, L.S. & Hayes, J. (1981) A cognitive process theory of writing. *College Composition and Communication* 32:365–387.

Franck, R. (2002) *The explanatory power of models: bridging the gap between empirical and theoretical research in the social sciences.* Methodos Series, Vol. 1. Norwell, MA: Kluwer Academic Publishers.

Fulkerson, R. (1990) Composition theory in the eighties: axiological consensus and paradigmatic diversity. *College Composition and Communication* 41(4):409–429.

Furneaux, C. (1998) Process writing. In K. Johnson & H. Johnson (eds.) *Encylopedic dictionary of applied linguistics* (pp. 257–260). Oxford: Blackwell.

Gee, J. (1990) *Social linguistics and literacies: ideologies in discourse*. London: Falmer Press.

Graves, D.H. (1978) Balance the basics: let them write. *Paper on research about learning*. New York, NY: Ford Foundation.

Grice, P. (1975) Logic and conversation. In P. Cole & J. L Morgan (eds.) *Syntax and semantics 3: speech acts*. New York, NY: Academic Press.

Grundy, S. (1987) *Curriculum: product or praxis?* Sussex: The Falmer Press.

Guba, E. (ed.) (1990) *The paradigm dialog*. Newbury Park, CA: Sage Publications.

Gutteridge, R. (2006) The myth of panacea: a critical realist exploration of blended course delivery. Proceedings of *NADEOSA 10th Anniversary Conference*. Pretoria, 23–24 August 2006.

Habermas, J. (1972) *Knowledge and human interests* (2nd edition). London: Heinemann.

Hairston, M. (1982) The winds of change: Thomas Kuhn and the revolution in the teaching of writing. *College Composition and Communication* 33(1):76–88.

Halliday, M.A.K. (1985) *Spoken and written language*. Oxford: Oxford University Press.

Halliday, M.A.K. & Hasan, R. (1989) *Language, context, and text: aspects of language in a social-semiotic perspective* (2nd edition). Hong Kong: Oxford University Press.

Harré, R. (1979) *Social being*. Oxford: Basil Blackwell

Harré, R. (1986) *The philosophies of science*. Oxford: Oxford University Press.

Harris, J. (1989) The idea of community in the study of writing. *College Composition and Communication* 40(1):11–22.

Healey, D. (1999) Theory and research: autonomy in language learning. In J. Egbert & E. Hanson-Smith (eds.) *CALL environments: research, practice, and critical issues*. Alexandria: TESOL.

Heath, S.B. (1983) *Ways with words: language, life, and work in communities and classrooms*. New York, NY: Cambridge University Press.

Hedge, T. (1988) *Writing*. Oxford: Oxford University Press.

Hodgson, G.M. (2003) The problem of agency in critical realism. http://www.herts.ac.uk/business/esst/Staff/g-hodgson/hodgson.html (15 January 2004).

Hodgson, L.M. (2002) Exploring changing identities: a case study of black students' understanding of themselves as users of English, and as users of other languages. Unpublished Masters dissertation, University of Natal, Pietermaritzburg.

Hughes, B.T. (1989) Balancing enthusiasm with skepticism: training writing teachers in computer-aided instruction. *Computers and Composition* 7(1):65–78.

Hultgren, F.H. (1982) Reflecting on the meaning of curriculum through a hermeneutic interpretation of student-teacher experiences in home economics. Unpublished Ph.D. dissertation, Pennsylvania State University, University Park, PA.

Hymes, D. (1967) Models of interaction of language and social setting. *Journal of Social Issues* 13(2):8–28.

Irwin, L. (1997) Critique and transcendental argument. http://philosophy.consumercide.com/irwin-bhaskar.html (26 August 2003).

Ivanic, R. & Simpson, J. (1992) Who's who in academic writing. In N. Fairclough (ed.) *Critical language awareness*. Essex: Longman.

Johns, A.M. (1990) L1 composition theories: implications for developing theories of l2 composition. In B. Kroll (ed.) *Second language writing: research insights from the classroom*. New York, NY: Cambridge University Press.

Jones, C.S. (1982) Composing in a second language: a process study. Paper presented at the *16th Annual TESOL Convention*. Honolulu, May 1982.

Jones, D.C. (1996) Beyond the postmodern impasse of agency: the resounding relevance of John Dewey's tacit tradition. *Journal of Advanced Composition* 16(1):81–102.
Judd, D. (2003) *Critical realism and composition theory*. London: Routledge.
Judge, D., Stoker, G. & Wolman, H. (1995) *Theories of urban politics*. London: Sage Publications.
Kenning, M.J. & Kenning, M.M. (1983) *An introduction to computer assisted language teaching*. Oxford: Oxford University Press.
Kern, R. & Warschauer, M. (2000) Theory and practice of network-based language learning. In M. Warschauer & R. Kern (eds.) *Network-based language teaching: concepts and practice*. Cambridge: Cambridge University Press.
Kirscht, J., Levine, R. & Reiff, J. (1994) Evolving paradigms: WAC and the rhetoric of inquiry. *College Composition and Communication* 45(3):369–380.
Kostelnick, C. (1989) Process paradigms in design and composition: affinities and directions. *College Composition and Communication* 40(3):267–281.
Krapels, A. (1990) An overview of second language writing process research. In B. Kroll (ed.) *Second language writing: research insights for the classroom*. New York, NY: Longman.
Krashen, S.D. (1988) *Second language acquisition and second language learning*. Oxford: Pergamon Press.
Kuhn, T. (1962) *The structure of scientific revolutions*. Chicago, IL: University of Chicago Press.
Kuhn, T. (1969) Postscript. In T. Kuhn *The structure of scientific revolutions*, 2nd edition. Chicago: University of Chicago Press.
Küppers, G. (2004) Self-organisation: the reduction of complexity. *The SEIN-Project.* http://www.uni-bielefeld.de/iwt/sein/newdefso.html (4 October 2004).
Laclau, E. & Bhaskar, R. (1998) Discourse theory vs. critical realism. *Alethia* 1(2):9–14.
Laine, C. & Schultz, L. (1985) Composition theory and practice. *Volta Review Year* 87:9–20.
Lawrence, M. (1973) Enquiry method and problem solving in the ESL classroom. *TESL Reporter* 6(1):1–12.
Lawrence, M. (1975) *Reading, thinking, writing*. Ann Arbor, MI: The University of Michigan Press.
Leu, Jr., D.J., Kinzer, C.K., Coiro, J. & Cammack, D.W. *(2004). Toward a theory of new literacies emerging from the Internet and other information and communication technologies*. In R.B. Ruddell & N.J. Unrau (eds.) *Theoretical models and processes of reading (pp.* 1570–1613). Newark, DE: International Reading.
Liebman-Kleine, J. (1986) In defense of teaching process in ESL composition. *TESOL Quarterly* 20(4):783–788.
Lindfors (1986) Writing to be read. Keynote address at the *Language Development Conference*, University of Natal, September 1986.
Locke, J. (1690) Epistle to the reader, in *An Essay Concerning Human Understanding*. http://oregonstate.edu/instruct/phl302/texts/locke/locke1/Book1a.html (1 October 2004).
Lynn, S. (1987) Reading the writing process: toward a theory of current pedagogies. *College English* 49(8):902–910.
MacKenna, S. (2004) A critical investigation into discourses that construct academic literacy at the Durban Institute of Technology. Unpublished Ph.D. dissertation, Rhodes University, Grahamstown.
MacLennan, G. (2005) CR according to the (2005) edition of the Sage Handbook of Qualitative Research (Denzin and Lincoln)? *Bhaskar Mailing List* posting of 14 October 8:43 a.m.
Macleod, M. & Rengger, R. (1993) The development of DRUM: a software tool for video-assisted usability evaluation. *Proceedings of HCI'93*. www.usabilitynet.org/papers/drum93.pdf (3 January 2006).
Mahoney, J. (2003) Tentative answers to questions about causal mechanisms. Paper presented at the *Annual Meetings of the American Political Science Association*. Philadelphia, PA, 28 August 2003.
Marsh, G.E. (2003) Blended instruction: adapting conventional instruction for large classes. *Online Journal of Distance Learning Administration*, VI (IV) Winter 2003. http://www.westga.edu/~distance/ojdla/winter64/marsh64.htm (13 October 2004).

Martin, N. (1981) Scope for intentions. In C.N. Candlin (ed.) *Learning to write: first language/second language*. Essex: Longman.
Matsuhashi, A. (1982) Explorations in the real-time production of written discourse. In N. Nystrand (ed.) *What writers know: the language, process, and structure of written discourse*. New York, NY: Academic Press.
Matthiessen, C. & Halliday, M.A.K. (1997) Systemic functional grammar: a first step into the theory. In M.A.K. Halliday & R.P. Fawcett (eds.) *New developments in systemic linguistics*. http://minerva.ling.mq.edu.au/resource/VirtuallLibrary/Publications/sfg_firststep/SFG%20intro%20New.html (17 February 2006).
McCarty, W. (2003) 'Knowing true things by what their mockeries be': modelling in the Humanities. *CHWP A.24*. http://chass.utoronto.ca/epc/chwp/CHC2003/McCarty2.htm (5 October 2004).
McDaniel, E. (1987) Bibliography of text-analysis and writing-instruction software. *JAC* 7. http://jac.gsu.edu/jac/7/Articles/15.htm (2 March 2003).
Meehan, E.J. (1968) *Explanation in social science: a system paradigm*. Homewood, IL: The Dorsey Press.
Mironesco, C. (2002) The role of models in comparative politics. In R. Franck (ed.) *The explanatory power of models: bridging the gap between empirical and theoretical research in the social sciences*. Norwell, MA: Kluwer Academic Publishers.
Monteith M. (ed.) (1993) *Computers and language*. Oxford: Intellect Books.
Morén, S. & Blom, B. (2003) Explaining human change: on generative mechanisms in social work practice. *Journal of Critical Realism* 2(1):37–60.
Naiman, N., Frohlich, M., Stern, H. & Todesco, A. (1978) *The good language learner*. Toronto: Ontario Institute for Studies in Education.
National Languages Working Committee for Technikons. (2003) Technikon RSA, Johannesburg, 8–9 May 2003.
Nellhaus, T. (1996) Sub texts: or, the materiality of discourse – an alternative view. Paper delivered at the *Rethinking Marxism Conference,* Amherst, MA, 7 December 1996.
Nellhaus, T. (1998) Signs, social ontology, and critical realism. *Journal for the Theory of Social Behaviour* 28(1):1–24.
Norris, C. (1999) Roy Bhaskar interviewed. *The Philosophers' Magazine,* 8. http://www.raggedclaws.com/criticalrealism/archive/rbhaskar_rbi.html (18 August 2003).
North, S. (1987) *The making of knowledge in composition studies*. Upper Montclair, N.J.: Boynton/Cook.
O'Brien, P. (1993) eL: using AI in CALL. In M. Yazdani (ed.) *Multilingual multimedia*. Oxford: Intellect Books.
Ong, W.J. (1982) *Orality and literacy: the technologizing of the word*. London: Methuen.
Palmer, F. (1971) *Grammar*. London: Penguin.
Paltridge, B. (2004) Approaches to teaching second language writing. Proceedings of the *17th English Australia Conference, Adelaide*, Sydney, English Australia.
Peeters, D. (2002) On modelling in human geography. In R. Franck (ed.) *The explanatory power of models: bridging the gap between empirical and theoretical research in the social sciences*. Norwell, MA: Kluwer Academic Publishers.
Pellone, G. (1995) Educational software design: a literature review. *Australian Journal of Educational Technology* 11(1):64–84. http://www.ascilite.org.au/ajet/ajet11/pellone.html (11 December 2004).
Perl, S. (1980) Understanding composing. *College Composition and Communication* 31(4): 363–369.
Pfingstag, N. (1984) Showing writing: modeling the process. *TESOL Newsletter, Supplement No.1: Writing and Composition* 18(1):1–3.
Pianko, S. (1979) A description of the composing processes of college freshman writers. *Research in the Teaching of English* 13(1):5–22.
Pratt, D.D. (1987) A process approach: the formulation of a simplified conceptual framework showing the stages of the writing process, and an investigation into the effects on writing

behaviour of communicating this framework directly to the learner. Unpublished masters dissertation, University of Natal, Durban, South Africa.

Pratt, D.D. (1988) A process approach to writing. In M.J. Marwick (ed.) *High School Ideas for ENGM July 1988* (pp. 142–148). Natal Education Department: Language and Publications Service.

Pratt, D.D. (1990) The process approach to writing. In K. Chick (ed.) *Searching for relevance*. Durban: South African Applied Linguistics Association.

Pratt, D.D. (2002) Changing partners: inner dialogues and creativity in writing. *Workshop for South African Writers' Circle*. Westville, Durban, South Africa, 9 February.

Pratt, D.D. (2003) The making of CourseMaker, a web-based shell program which can be set up by the teacher to run online courses. Paper presented at the *SACOMM Conference*. DIT, Durban, South Africa, 25–27 June 2003.

Pratt, D.D. (2005a) Social mechanism and software design: the use of a stochastic social-process algorithm in the design of a writing tutor program. Proceedings of the *3rd International Conference on Computer Science and its Applications* (*ICCSA-2005*). San Diego, CA, USA, 27–30 June 2005:249–254.

Pratt, D.D. (2005b) Modelling writing as the basis for a writing tutor computer program. Proceedings of the *Ed-Media World Conference on Educational Multimedia, Hypermedia & Telecommunications*. Montreal, Canada, 27 June–2 July 2005.

Pratt, D.D. (2005c) An analysis of the design features of three mixed-mode courses in a master's degree programme. Proceedings of the *IASTED International Conference on Education and Technology* (*ICET 2005*). Alberta, Canada, 4–6 July 2005:135–141.

Pratt, D.D. (2005d) Comm. skills online three years down the line: reflecting on design principles in blended learning. Proceedings of the *6th Annual Conference on World Wide Web Applications*, Cape Technikon, Cape town, 29–31 August 2005.

Pratt, D.D. (2005e) The comm. skills online project: a tentative exploration of the interrelationship between traditional page-bound literacy, computer literacy and the development of academic literacy. *International Journal of Learning* 11:1739–1746. http://ijl.cgpublisher.com/product/pub.30/prod.475.

Pratt, D.D. (2006a) Modelling social algorithms as design templates for educational software. Proceedings of the *IADIS Virtual Multi Conference on Computer Science and Systems* (*MCCIS 2006*) 15–19 May 2006.

Pratt, D.D. (2006b) Social transformation and software design: a critical realist approach to the teaching of written composition. *International Journal of Learning* 13:153–164. http://ijl.cgpublisher.com/product/pub.30/prod.1095.

Pratt, D.D. (2006c) From social algorithm to pedagogical application: some implications for educational software. Proceedings of the *9th IASTED International Conference on Computers and Advanced Technology in Education* (*CATE 2006*). Lima, 4–6 October 2006:139–145.

Pratt, D.D. (2007a) No middle ground, but many mansions: design features of effective mixed mode courses. *SAJHE* 21(6) Special Edition NADEOSA 2006:705–720.

Pratt, D.D. (2007b) A realist approach to writing: developing a theoretical model of written composition to inform a computer mediated learning interaction. Unpublished doctoral thesis. Durban University of Technology, South Africa.

Pratt, D.D. (2008) The use of ICT for research development in the Humanities at a multicultural University of Technology. Proceedings of *NADEOSA 2008 Conference.* University of Pretoria, Groenkloof Campus, 18–19 August 2008.

Pratt, D.D. (2009a) Composition theory in practice: piloting a mixed mode writing clinic at the Durban University of Technology. *International Journal of Learning* 16(1):169–184. http://ijl.cgpublisher.com/product/pub.30/prod. 2002.

Pratt, D.D. (2009b) A systems approach to the teaching/research nexus. Proceedings of the *7th International Conference on Education and Information Systems, Technologies and Applications* (*EISTA 2009*). Orlando, FL, USA, 10–13 July 2009.

Pratt, D.D. (2009c) Mixed-mode Communication courses at a multicultural technikon: a pilot study combining web-based learning and an Internet search project with face-to-face classroom instruction. In S.P. Schaffer & M.L. Price (eds.), *Interactive convergence: critical issues in multimedia* (pp. 143–170). Vol. 10, Oxford, UK: Inter-Disciplinary Press. http://www.inter-disciplinary.net/publishing/id-press/ebooks/interactive-convergence-critical-issues-in-multimedia/

Pratt, D.D. & Gutteridge, R. (2006) The role of the social mechanism in social transformation: a critical realist approach to blended learning. Proceedings of the *8th Annual Conference on World Wide Web Applications*. Bloemfontein, 6–8 September 2006.

Pratt, D.D. & Peppas, M. (2008) The BTech research module for journalism: theoretical aspects of course design in developing research capacity through blended learning. Proceedings of *3rd International Conference on e-Learning* (*ICEL 2008*). University of Cape Town, 26–27 June 2008.

Raimes, A. (1985) What unskilled ESL students do as they write: a classroom study of composing. *TESOL Quarterly* 19(2):229–256.

Raimes, A. (1987) *Exploring though writing: a process approach to ESL composition*. New York, NY: St. Martin's Press.

Raimes, A. (1991) Out of the woods: emerging traditions in the teaching of writing. *TESOL Quarterly* 25(3):407–430.

Raimes, A. (1993) The author responds. . . *TESOL Quarterly* 27(2):306–310.

Reid, J.M. (1993) *Teaching ESL writing*. Englewood Cliffs, NJ: Regents/Prentice Hall.

Rowley, K. (1998) Computational instructional design for construction of adaptive tutors in real time from distributed learning objects. Poster paper presented at *ITS '98*. San Antonio, Texas. http://www.isrd.com/publications/conferences/ITS98/its98.htm (21 October 2004).

Rowley, K. & Meyer, N. (2003) The effects of a computer tutor for writers on student writing achievement. *Journal of Educational Computing Research* 29(2):169–187.

Rowley, K., Carlson, P. & Miller, T. (1998) A cognitive technology to teach composition skills: four studies with the R-WISE writing tutor. *Journal of Educational Computing Research* 18(3): 259–296.

Rubin, J. (1975) What the "good language learner" can teach us. *TESOL Quarterly* 9(1):41–51.

Sanders, D. & Kenner, R. (1984) Whither CAI? The need for communicative courseware. In D.H. Wyatt (ed.) *Computer-assisted language instruction*. Oxford: Pergamon Press.

Sanghera, B. (2004) Critical realism. http://uk.geocities.com/balihar_sanghera/carcrealism.html (2 October 2006).

Sayer, R.A. (1992) *Method in social science: a realist approach*. London: Routledge.

Sayer, R.A. (2000) *Realism and social science*. London: Sage Publications.

Schön, D. (1983) *The reflective practitioner: how professionals think in action*. New York, NY: Basic Books.

Schön, D. (1987) *Educating the reflective practitioner: toward a design for teaching and learning in the professions*. San Francisco, CA: Josey-Bass.

Schubert, W.H. (1986) *Curriculum: perspective, paradigm, and possibility*. New York, NY: Macmillan.

Schwandt, T.A. (1994) Constructivist, interpretivist approaches to human inquiry. In N.K. Denzin & Y.S. Lincoln (eds.) *Handbook of qualitative research*. Newbury Park, CA: Sage Publications.

Searle, J. (1969) Speech acts: an essay in the philosophy of language. Cambridge: Cambridge University Press.

Shaughnessy, M.P. (1977) *Errors and expectations*. New York, NY: Oxford University Press.

Shaw, P. (1992) Variation and universality in communicative competence: Coseriu's model. *TESOL Quarterly* 26(1):9–25.

Silva, T. (1990) Second language composition instruction: developments, issues and directions in ESL. In B. Kroll (ed.) *Second language writing: research insights from the classroom*. New York, NY: Cambridge University Press.

Snyder, I. (1993) Writing with word processors: a research overview. *Educational Research* 35(1):49–68.

Sommers, N. (1980) Revision strategies of student writers and experienced adult writers. *College Composition and Communication* 31(4):378–388.

Sommers, N. (1982) Responding to student writing. *College Composition and Communication* 33(2):148–156.

Spack, R. (1984) Invention strategies and the ESL college composition student. *TESOL Quarterly* 18(4):649–670.

Spady, W. (1994) *Outcome-based education: critical issues and answers*. Arlington, VA: American Association of School Administrators.

Steuck, K. (2004) FOCUS: Intelligent tutoring systems. *Distance Education Systemwide Interactive Newsletter*. http://www.uwex.edu/disted/desien/2000/0003/focus.htm (21 October 2004).

Strauss, A. & Corbin, J. (1994) Grounded theory methodology: an overview. In N.K. Denzin & Y.S. Lincoln (eds.) *Handbook of qualitative research*. Newbury Park, CA: Sage Publications.

Strauss, A. & Corbin, J. (1999) *Basics of qualitative research* (2nd edition). Newbury Park, CA: Sage Publications.

Street, B. (2003) What's new in new literacy studies? Critical approaches to literacy in theory and practice. *Current Issues in Comparative Education* 5(2):1–14.

Swales, J.M. (1990) *Genre analysis: English in academic and research settings*. Cambridge: Cambridge University Press.

Szwed, J.F. (1981) The ethnography of literacy. In M.F. Whiteman (ed.) *Writing: the nature, development, and teaching of written communication. Vol. 1: Variation in writing: functional and linguistic-cultural differences*. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Tannen, D. (ed.) (1982) *Spoken and written language*. Norwood, NJ: Ablex.

Tannen, D. (ed.) (1984) *Coherence in spoken and written discourse*. Norwood, NJ: Ablex.

Tomlin, R.S., Forrest, L., Pu, M.M. & Kim, M.H. (1997) Knowledge integration and information management in discourse. In T.A. van Dijk (ed.) *Discourse: a multidisciplinary introduction*. London: Sage Publications.

UNESCO (2006) Understandings of literacy. *Education for All Global Monitoring Report*. http://www.unesco.org/education/GMR2006/fullchapt6_eng.pdf (29 January 2006).

van Dijk, T.A. (1997) The study of discourse. In T.A. van Dijk, (ed.) *Discourse studies: a multidisciplinary introduction: Vol. 1: Discourse as structure and process*. London: Sage Publications.

van Heerden, A. (2008) An analysis of three documentaries to investigate features of successful documentaries with the intention of identifying key elements. Unpublished BTech research report, Durban University of Technology.

Wad, P. (2001) Critical realism and comparative sociology. Paper presented at the *5th IACR Conference.* RUC. 17–19 August.

Walshe, R.D. (1980) More and better writing without more marking. *Education Journal* :29–42.

White, R. (1989) Getting it write. Note issued at *9th Annual SAALA Conference*, University of Natal, Durban, South Africa, July 1989.

Widdowson, H.G. (1984) *Explorations in applied linguistics 2*. Oxford: Oxford University Press.

Wyatt, D.H. (1984) Computer-assisted language instruction: present state and future prospects. In D.H. Wyatt (ed.) *Computer-assisted language instruction*. Oxford: Pergamon Press.

Young, M.J. (2003) Human performance model validation: one size does not fit all. http://www.scs.org/scsarchive/getDoc.cfm?id=2367 (13 August 2004).

Young, R. (1978) Paradigms and problems: needed research in rhetorical invention. In C. Cooper & L. Odell (eds.) *Research in composing*. Urbana, IL: National Council of Teachers of English.

Zamel, V. (1976) Teaching composition in the ESL classroom: what we can learn from research in the teaching of English. *TESOL Quarterly* 10(1):67–76.
Zamel, V. (1982) Writing: the process of discovering meaning. *TESOL Quarterly* 16(2):195–209.
Zamel, V. (1985) Responding to student writing. *TESOL Quarterly* 19(1):79–101.
Zamel, V. (1987) Recent research on writing pedagogy. *TESOL Quarterly* 21(4):697–715.
Zamel, V. (1992) Writing one's way into reading. *TESOL Quarterly* 26(3):463–485.
Zamel, V. (1993) Questioning academic discourse. *College ESL* 3(1):28–39, Instructional Resource Centre, the City, University of New York.
Zebroski, J.T. (1989) The social construction of self in the work of Lev Vygotsky. *The Writing Instructor* 8(4):149–156.

Index