



Time travel: The role of temporality in enabling semantic waves in secondary school teaching

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ABSTRACT

Based on the theoretical understandings from Legitimation Code Theory (Maton, 2013) and Systemic Functional Linguistics (Martin, 2013) underpinning the research discussed in this special issue, this paper focuses on classroom pedagogy to illustrate an important strategy for making semantic waves in History teaching, namely *temporal shifting*. We begin with a brief contextualisation of how Legitimation Code Theory (LCT) and Systemic Functional Linguistics have been used together to investigate cumulative knowledge-building before outlining how the LCT concepts of *semantic gravity* and *semantic density* were enacted in linguistic terms for this research in order to understand the linguistic resources marshalled by actors in making semantic waves. The paper then moves on to consider temporality from both linguistic and sociological perspectives and to demonstrate how it is implicated in movements up and down the semantic scale to create semantic waves.

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1. Introduction

When it comes to cumulative knowledge-building, time is of the essence. Time is, of course, implicated in the very notion of cumulative knowledge-building, which involves both looking backwards to previous ideas and looking forwards to future contexts in which current knowledge can be applied and extended. However, this is but one facet of the role of temporality in cumulative pedagogic practice. Maton (2013) highlights the significance for knowledge-building of making 'semantic waves' in the knowledge being expressed in classroom discourse (as well as other practices). These semantic waves involve recurrent movements in the 'semantic gravity' and 'semantic density' of knowledge, or (simply put) the context-dependence and condensation of meaning (see Section 3, below). As we shall discuss, time travel or shifting the temporal and spatial coordinates of discussion, can be a key pedagogic strategy for making semantic waves and thereby enabling recontextualization of knowledge. In particular, strategies aimed at metaphorically locating students in the time of the historical context being discussed can be used in the classroom to enable students to traverse the distance created by texts situated in unfamiliar contexts and which use condensed and archaic language. That is, they enable knowledge to be recontextualised: from historical contexts to current classroom contexts; and from complex constellations of historical meanings into simpler current meanings. Such strategies thereby involve changes in semantic gravity and semantic density, making semantic waves in order to build cumulative knowledge.

This research is part of a larger inter-disciplinary project which investigates the question of how better to enable cumulative teaching in schooling by using approaches from systemic functional linguistics (SFL) and Legitimation Code Theory (LCT) in tandem. The Disciplinarity, Knowledge and Schooling (DISKS) project (Freebody et al., 2008) continues the long and fruitful dialogue between SFL and the tradition of code theory from the sociology of education which began with discussions

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between Halliday and Bernstein in the early 1960s and continues into the present day (Christie & Martin, 2007; Christie & Maton, 2011). The project's focus on cumulative knowledge-building stemmed from concerns, explicitly raised over the past decade by social realist sociology of education (Maton & Moore, 2010), that research and policy in education has neglected the role of knowledge. As Maton (2013) highlights, what he terms 'knowledge-blindness' has been a symptom in educational contexts for several decades. The DISKS project aimed to redress the balance and bring knowledge back into the educational picture by investigating how cumulative knowledge is built in schoolteaching, specifically focusing on secondary school History and Biology.

These investigations into knowledge-building and the role language plays in cumulative schoolteaching have generated new insights into History and Biology in secondary schooling (Martin, Maton, & Matruglio, 2010). A key problem to emerge was the issue of how teachers can facilitate traversing what Maton (2013) calls the 'semantic gap' between the knowledge that resides in high-stakes reading to the knowledge that students need to express in high-stakes writing for assessment (see Figs. 2 and 8 in Maton, 2013). Analyses of teaching texts and students' assessments suggest these both exhibit weaker semantic gravity and stronger semantic density than the knowledge expressed in classroom discourse. Simply put, the knowledge expressed in classroom discourse is typically more context-dependent and less condensed, that is it involves simpler and fewer meanings than the knowledge expressed in the written texts that students must read and write. This raised the question of how classroom practice may move between highly condensed, abstract and generalised knowledge and more concrete, contextualised, situated, commonsense knowledge. The project showed that teachers were adept at moving from the former to the latter through 'unpacking' what they perceived as difficult passages of reading for their students. However, movements back up to less context-dependent and more condensed technicalized meanings occurred much less frequently in the data. In this paper we continue the exploration began by Maton (2013) and Martin (2013) into the nature of these different forms of knowledge, the complex linguistic resources they involve, and, crucially, how to enable movements in both directions along the semantic scale to create semantic waves.

In preceding papers, comparison of the language that teachers use when 'unpacking' texts for students and the language of the original texts themselves has yielded insight in how language is used to enable movement up and down the semantic wave. Technicality, specialised language and grammatical metaphor have all been found to be necessary for mastering semantic waves in school learning and thus enabling achievement and have been reported on elsewhere (Martin, 2013; Martin et al., 2010). In addition to these resources, the strategy of *temporal shifting* is also implicated in movement along the semantic waves and is used in classroom talk. This paper will focus on the language of classroom pedagogy to explore some of the ways that time is manipulated in the oral language of the classroom in order to facilitate cumulative knowledge-building in teaching and learning. This paper focuses on senior school History lessons and explores temporality from both a linguistic and sociological perspective. Following a brief explanation of our understanding of time in schooling to date, this paper will then focus on temporality and how it is used in the classroom to make semantic waves and so enabling cumulative knowledge-building. First we focus on how time is manipulated in history teaching to bring students out of the time of the classroom and into the time of the text. Secondly we explore how this temporal shifting is implicated in constructing the commentary and comment modes of history. Finally we conclude with a brief example of how time travel is also an issue in the study of Biology, and point to avenues for further research into temporality and knowledge-building.

2. Time in history writing

Existing research in the context of secondary schooling has focused on how time is used in the written texts of schooling rather than in the language used in classroom practice. However, this work provides an important starting point for thinking about the use of time in classroom pedagogy. We will therefore comment briefly on the most relevant aspects of this research before considering the language of the classroom.

Most, if not all the research already conducted into time in the written texts of schooling has been concentrated in the subject of History, where time is an obvious and central issue. There has been little, if any, previous research into the role of time in, for example, science writing. The construal of time in the genres of History, however, has already been the subject of detailed investigation in the field of SFL (see among others Coffin, 1996, 1997, 2006; Martin, 2002, 2003). In Coffin's research on the configuration of time in the school History curriculum (2006), she identified six categories for the construal of time in school History. These are given below along with examples provided by Coffin to illustrate each category (temporal realisations in italics):

Sequencing	after coming to power in 1959, (Castro...)
Segmenting	the Great Depression
Setting	(25 million suffered malnutrition) in 1928
Duration	(he maintained his position) <i>for 50 years</i>
Phasing	<i>the onset</i> (of the Great Depression)
Organising	firstly...secondly...finally

Coffin found that as students progressed through the curriculum they used fewer resources for sequencing and setting in time and more for segmenting time. This was also accompanied by a movement away from personal construals of time towards a more institutionalised understanding of time:

The movement from the representation of more familiar and directly experienced stretches of time to larger historically labelled stretches suggests that successful learning of the discourse of History is partly a process of shedding personally

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