DRAFT

Revisiting mode: context in/dependency in Ancient History classroom discourse

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1. Dialogue

Over the past decade dialogue between Systemic Functional Linguistics (hereafter SFL) and Legitimation Code Theory (hereafter LCT) about the nature of knowledge (Christie & Martin 2007, Christie & Maton 2011) has rekindled interest among the linguists involved in the register variable field (e.g. Martin 2007, Martin et al. 2010). More recently, as part of an interdisciplinary project focusing on knowledge building in secondary school history and science lessons (Freebody et al. 2008, Martin & Maton in press), Maton's work on semantic gravity (Maton in press a) has rekindled interest in mode. For Maton, one way of introducing the concept of 'semantic gravity' is to draw on work by Bernstein (2000) who highlighted relation between knowledge practices and their social and symbolic context, with differences in contextual dependence forming a key part of the description:

> One can thus conceptualise knowledge practices in terms of the degree to which meaning relates to its context. This semantic gravity may be relatively stronger or weaker along a continuum of strengths. When semantic gravity is stronger, meaning is more closely related to its social or symbolic context of acquisition or use; when it is weaker, meaning is less dependent on its context. One can also describe processes of *strengthening* semantic gravity, such as when abstract ideas are made more concrete through exemplification, and *weakening* semantic gravity, such as when generalising principles are abstracted from the concrete particulars of a specific context or case. [Maton in press a: xx]

Maton goes on to illustrate different strengths of semantic gravity with respect to the development of key concepts in Bernstein's thinking, as empirical features of pedagogic discourse are generalised and abstracted along a scale involving hierarchy, sequencing rules, criteria; visible and invisible pedagogies; classification and framing; pedagogic codes; and ultimately his pedagogic device.

Bernstein and Maton's use of the notion of 'contextual dependency' naturally invites a response from functional linguists who have theorised comparable terminology for some decades. Hasan 1973 explores the linguistic meaning of the term in relation to Bernstein's characterisation of elaborated and restricted codes; and Hasan 2001 elaborates this discussion, particularly in relation to work by Cloran (1994, 1995, 1999a, b, 2000). As these discussions reveal, dialogue around the sociological and linguistic meaning of the term exemplifies both the fruits and perils of interdisciplinary dialogue in general – as points of contact and inspiration potentially give rise to misunderstanding and confusion. In this paper we'll take this dialogue as an opportunity to raise questions about the varied use of the term 'contextual dependency' in a functional model of language[1], and then return to the question of the complementarity of linguistic and sociological perspectives.

2. Contextual dependency

In SFL a narrow perspective on contextual dependency arises from work on cohesion (Halliday & Hasan 1976, Martin 1992), with respect to reference in particular. In this work

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[1] See Cloran 1999a for a discussion of comparable notions in other theories.

the concept of exophoric reference[2] is deployed, where the identity of people, places and things presumed in discourse is recoverable from the shared sensible environment of a text. For example, in a request like *Could you pass **the salt**?,* spoken at the dinner table, the definite article *the* marks the identity of the salt participant as recoverable from the shared visual field of diners, and it would be odd to say *There's **some salt** in front of you. Could you pass it to me?* (unless the salt was **un**shared visible experience). This narrow reading of context dependency has been shown to be a significant sociolinguistic variable in studies of semantic variation by Hawkins 1977 in relation to Bernstein's code theory, by Rochester & Martin 1977 in relation to schizophrenic discourse and by Martin 1983 in relation to the development of story telling by primary school children – since speakers, depending on their social background, mental well-being and age, appear to make different assumptions about what can and cannot be treated as recoverable from the material (i.e. physical and biological environment) of an utterance.

In general, however, SFL linguists have preferred a wider reading of the term contextual dependency. Hasan 1973: 284 characterises context dependent language as language "that does not encapsulate explicitly all the features of the relevant immediate situation in which the verbal interaction is embedded"; context independent language has the opposite meaning, since "correct decoding of the message is a simple function of one's understanding of the language, requiring no extra-linguistic sources of knowledge". No examples are given, but this characterisation might be taken to include exophoric reference, among other variables. Hasan goes on to point out that context dependency is best seen as a cline, not a categorical opposition.

Alongside variation according to speaker identity (users of language), SFL linguists have been concerned with variation in contextual dependency according to language function (uses of language). For Martin (e.g. 1984a, b, 1992) and others (e.g. Hasan 1985), the register[3] variable at risk here is mode[4], which is concerned in broad terms with the role language is playing in a given social interaction – where role is understood, at least in part, to refer to how much work language is doing (whether language is ancillary to or constitutive[5] of what is going on; Hasan 1985: 58). Cloran 1999a: 37, 2000: 176 models this type of mode variation as a scale, with ancillary and constitutive as poles. Along the scale various types of discourse are arranged in terms of degree of contextual dependency – action, commentary, observation, reflection, report, account, plan/prediction, conjecture, recount and generalisation. Cloran 1999a, 2000 makes no reference to Martin 1984: 26-27 or 1992: 517-

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[2] Exophoric substitution and ellipsis is also possible (e.g. *Can't do it!),* eliding the Subject *I* (exophoric to the speaker) and substituting *do* for a more specific Process (exophoric to what the speaker is trying to do) – both recoverable from the shared sensory environment of the utterance; for an in depth discussion of types of exophoric reference see Hasan 1984.

[3] Halliday, Hasan (e.g. Halliday & Hasan 1985) and others treat mode, along with field and tenor, as dimensions of context, realized through register variation in language; this terminology complicates the discussion at this point in the paper, so Martin's 1992 framework, with field, tenor and mode as dimensions of register (outside of but realised through language), is preferred here (thus avoiding the term context as a cover term for field, tenor and mode).

[4] As Hasan 1999: 281-282, Bowcher 2010 and Hasan & Butt 2011 make clear, the ancillary/constitutive scale has become, for them, a matter of field, not mode (cf. Cloran 199b: 199 who notes that Hasan 1985: 58 earlier proposes this scale as a dimension of mode).

[5] Rephrased in terms of multimodal discourse analysis, the variation in question here has to do with how much work is being done by language and how much by other modalities of communication (including behaviour).

518, where comparable SFL mode scales are earlier proposed – with language in action and language as reflection as poles and ancillary, monitoring, reconstructing, generalising, reviewing and theorising[6] along the cline (Martin 1992: 518). Critically, in both models, many factors are taken into account in addition to exophoric reference.

Cloran for example focuses carefully on what she calls the central entity (CE) of a message, alongside its event orientation (EO). The CE is usually[7] the grammatical Subject of a clause, while the EO is normally grammaticalised as tense choice in its Finite function. Related messages which share the same CE and EO values are treated as rhetorical units (RUs) by Cloran, which units Cloran 1999b: 199 classifies as outlined in Table 1 below. As the table and attendant discussion reveal, several semantic parameters are at stake here alongside exophoric reference, including – the person of the CE, whether the CE involves generic or specific reference, the speech function of a message (goods & services or information), and the habitual or tensed temporality and modality of the EO. Our point here is not to expound the details of Cloran's model, but simply to establish that her model of the role language is playing in the social process takes us far beyond a narrow reading of mode and contextual dependency based on exophoric reference.

EVENT ORIENTATION / CENTRAL ENTITY	HABITUAL	REALIS: CONCURRENT	REALIS: PRIOR	IRREALIS: GOODS/SERVICES EXCHANGE	IRREALIS: INFORMATION EXCHANGE — FORECAST	IRREALIS: INFORMATION EXCHANGE — HYPOTHETICAL
Within material situational setting (MSS)	Reflection	Commentary	Recount	Action	FORECAST	HYPOTHETICAL
• interactant		Commentary	Recount	Action	Plan/ Prediction	Conjecture
• other person/ object	Observation	Commentary	Recount	(shaded)	Prediction	Conjecture
Not within MSS						
• person/object	Account	Report		(shaded)	Prediction	
Class	Generalisation			(shaded)	(shaded)	(shaded)

Table 1: Cloran's 1999b classes of rhetorical unit (RU)

Similarly, Martin 1984a[8] implicates a wide range of semantic variables scaling discourse along his action/reflection cline – including tense, person, exophoric/endophoric or generic reference, choices for Theme and abstract lexical items (and he gestures towards consideration of grammatical metaphor, which is more fully elaborated in Martin 1992). Martin's characterisation of mode depends on his model of field as a set of activity sequences oriented to some global institutional purpose, including the taxonomies of participants involved in these sequences and their configuration with processes as steps in a sequence. His

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[6] Martin 1984a: 27 uses the terms language in action, commentary, reconstruction and construction along his action/reflection scale.

[7] Cloran (e.g. 1995) does allow for CE Existents in existential clauses (e.g. *There's **a fly** on the ceiling.*) and EO circumstantiation (e.g. *Come here right **now**.*)

[8] Martin's 1984a monologue/dialogue 'feedback' scale will be set aside at this point, to simplify the discussion (cf. section 2.2 below).

action/reflection mode scale then has to do with role language is playing in realising activity sequences – as accompanying other modalities of communication and behaviour, or monitoring them in commentary, reconstructing them, generalising them, theorising them and so on. Once again my brief here is not to present Martin's 1992: 508-523 interpretation of mode in detail, but simply to indicate the extent to which contextual dependency in SFL theories of context involves far more than questions about whether the information presumed by a presuming phoric item (e.g. *he, it; this, there; one, do, so*) is recoverable from the shared sensible material environment of an utterance (although this is of course part of the picture).

The scope of Martin and Cloran's perspectives invite a reconsideration of the notion of contextual dependency in SFL and its relation to the concept of semantic gravity in LCT. I'll pursue this here from a metafunctional perspective, working through textual, interpersonal and ideational perspectives on context dependency – drawing on examples from the ongoing work on the teaching of ancient history in Australian secondary schools referred to above.

2. Contextual dependency - a metafunctional perspective

As is well known SFL generally adopts a tri-nocular perspective on meaning, with ideational meaning construing reality, interpersonal meaning enacting social relations and textual meaning organising these contruals and enactments into waves of information flow. We'll start with textual meaning, since this is where so many discussions of context dependency in SFL begin – before moving on to a consideration of potential interpersonal and ideational interpretations of the term.

2.1 Textual meaning

SFL linguists adopting a tri-nocular perspective on metafunctions (cf. Fawcett's 2008 Cardiff model, which proposes eight strands of meaning), have proposed two different understandings of textual meaning. Halliday's grammatical perspective (e.g. Halliday 1973: 141) positions the whole of cohesion (Halliday & Hasan's 1976 reference, substitution and ellipsis, conjunction and lexical cohesion), alongside THEME and INFORMATION systems, as textual (the 'grammar and glue' model). Martin (e.g. 1992, Martin & Rose 2003/2007) recontextualises cohesion as a supervening stratum called discourse semantics, with its own metafunctional organisation. Martin's model will be assumed here, positioning as it does IDENTIFICATION and PERIODICITY as textual meaning, APPRAISAL and NEGOTIATION as interpersonal and IDEATION and CONJUNCTION as ideational.

The narrow reading of contextual dependency as exophoric reference noted above can be illustrated from the following phase of NSW Year 11 Ancient History classroom discourse. The teacher is moving around the class, checking on progress students are making filling in a close passage – the relevant sections of which is as follows (with spaces for missing words underlined):

> [Text 1]
> … Pompei was renowned for ___ . Garum was made from ___ and the city of Pompei must have ___ .
> To make garum ___ was needed. …

For this exercise the teacher and students are drawing information from a photocopied handout from a textbook (Bradley 2005: 89-95), from which the teacher reads aloud. The relevant information (garum, fish guts, smelled and salt) is retrieved from the following sections of the handout:

> [Text 2]
> Pompei was renowned for its garum, a fish sauce which was one of the main condiments used for flavouring Roman cuisine. … There were various flavours depending on the type and quality of the fish used and its method of preparation. Apparently the valuable red mullet made the best garum… Garum was a potent mix, made from 'the guts of fish and other parts that would normally be considered refuse' [22] probably gills, intestines and blood, and the smell must have pervaded Pompei… A product indispensible to the production of garum was salt… ['Social structure, economy and politics', p 93]

As highlighted in bold below, the teacher refers exophorically to the close passage exercise itself, to the handout and to herself and the students (material read aloud from the handout is in caps below, material read aloud from the close passage exercises is in small caps and information retrieved for the close passage is underlined):

> [Text 3]
> T GARUM WAS A POTENT MIX, MADE FROM THE GUTS blab-blab-blab… okay, ALTHOUGH IT WAS POPULAR WITH MOST, SOME LIKE SENECA HATED ITS FOUL SMELL. THE FOLLOWING QUOTE GIVES US A MORE DETAILED DESCRIPTION OF ITS MANUFACTURE. No, then then **it** says ENTRAILS blab… was mixed has been… reduced to OVER A PERIOD OF SIX WEEKS dah dah dah dah dah dah, okay, a PRODUCT, and then **I**'ll bet **the next one** is <u>salt</u>. So what is the word **there**? So **you** need to get something to put in **there**.
> S GARUM WAS MADE FROM <u>red mullet</u> AND THE CITY OF POMPEI MUST HAVE…
> T …MUST HAVE…
> S <u>Smelt</u>.
> T Maybe that's **it**.
> S [laughs] <u>Smelt</u> [spoken whilst laughing]
> T <u>Smelt</u> makes a lot of sense because they said **here**, um, AND THE SMELL MUST HAVE PROVOKED, yeah, but, um that doesn't mean anything, but, THE SMELL MUST HAVE PERVADED POMPEII. So Pompeii must have smelt. Excellent deducting.
> S Thank-**you**.
> T Yeah, very good.
> S <u>Salt</u> [student in the background says].
> T <u>Salt</u>. **The next one**'s <u>salt</u>. **We** know that much.
> [teacher moves to another group]

A range of information presuming resources are deployed exophorically in text 3, including pronouns (*I, we, you, it*), locative adverbs (*there, here*), specific deixis (*the*), comparison (*next*) and nominal substitution (*one*) – as outlined in Table 2 below.

information presumed	exophoric reference to 'material' setting
teacher & students	*I, you, thank-you, we* (pronominal)
textbook handout	*here* (locative)
close passage	*it, it* (pronominal);
	the next one, the next one (specific determiner, comparative, substitute);
	there, there (locative)

Table 2: Exophoric reference in text 3

The general point here as far as contextual dependency is concerned is that the classroom discourse examined here would be impossible to follow without an awareness of the interlocutors involved (teacher and students), and the two texts they are working with (the handout and close passage). Understanding the ancient history content would not be enough. To understand, either you had to be there, or the material setting would have to be reconstructed for you, as I have attempted above.

The choice of exophoric reference to persons and things in the sensible environment of a text as opposed to endophoric (cataphoric or anaphoric) reference to the surrounding co-text is of course sensitive to the choice of specific vs generic reference (Martin 1992, Martin & Rose 2003/2007). With generic reference to whole classes of people, places and things, where lexicalised, no information is presumed; if you understand the meaning of the nouns and subclassifiers involved you understand the meaning of the text. Text 2 above, for example, refers generically to *garum, Roman cuisine, fish, gills, intestine, blood* and *salt*. With generic reference of this kind, you don't have to be anywhere – you just have to know the language of the field; and so there is no contextual dependency of the kind effected by exophoric reference involved.

Turning from IDENTIFICATION to PERIODICITY (Martin & Rose 2003/2007), a broad interpretation of contextual dependency might consider the pattern of choices made for Theme and New, and the extent to which a text scaffolds its information flow with predictive layers of higher level Theme and consolidating layers of higher level New (the height of its hierarchy of periodicity in other words). As far as choices for Theme and New are concerned, exophoric reference, ellipsis and substitution have already been considered; all examples of exophora from the classroom discourse considered above functioned as either Theme or New, arguably strengthening its contextual dependency. Another factor affecting contextual dependency would be the ratio of exophoric and non-exophoric Theme and New choices in a text.

As far as higher order periodicity is concerned, the more planned and edited a text is, the more likely it is to have higher level Themes and News and the more it might be considered to be self-organising (as opposed to unfolding in relation to and thus dependent upon non-verbal activity in which language plays a part – e.g. the teacher's movement from one group of students to another in the lesson introduced above). So a broad interpretation of contextual dependency would have to take this dimension of textual meaning into account. Context independent organisation of this kind can be illustrated from the handout referred to above. Here a quote is introduced as *The following quote gives a more detailed description of its manufacture*, a hyper-Theme characteristic of written planned edited academic discourse (here involving cataphoric endophoric reference - *the following quote*):

> [Text 4]
> Garum was a potent mix, made from 'the guts of fish and other parts that would normally be considered refuse' probably gills, intestines and blood, and the smell must have pervaded Pompei. Although it was popular with most, some, like Seneca, hated its foul smell. The following quote gives a more detailed description of its manufacture.

THE ENTRAILS OF SPRATS OR SARDINES, THE PARTS THAT COULD NOT BE USED FOR SALTING WERE MIXED WITH FINELY CHOPPED PORTIONS OF FISH AND WITH ROE AND EGGS AND THEN […] POUNDED CRUSHED AND STIRRED. THE MIXTURE WAS LEFT IN THE SUN OR WARM ROOM AND […] BEATEN INTO A HOMOGENOUS PULP UNTIL IT FERMENTED. WHEN THIS LIQUAMEN, AS IT WAS CALLED, HAD BEEN MUCH REDUCED OVER A PERIOD OF SIX WEEKS BY EVAPORATION, IT WAS PLACED IN A BASKET WITH PERFORATED BOTTOM THROUGH WHICH THE RESIDUE FILTERED SLOWLY INTO A RECEPTACLE. THE END PRODUCT DECANTED INTO JARS WAS THE FAMOUS GARUM: THE DREGS LEFT OVER WERE ALSO REGARDED AS EDIBLE AND […] KNOWN AS ALLEC.

As we can see, even restricting ourselves to a consideration of textual meaning, both a narrow and broad interpretation of contextual dependency is possible, the former restricted to exophoric reference and the latter taking periodicity into account.

2.2 Interpersonal meaning

In SFL theory, the standard association of metafunctions with register variables positions textual meaning as composing mode, interpersonal meaning as enacting tenor and ideational meaning as construing field. So a relatively narrow reading of contextual dependency would be restricted to a consideration of textual meaning and mode, however those terms are understood (and there is considerable variation in SFL as outlined above). That said, it needs to be kept in mind that the function of textual meaning is in fact to weave interpersonal and ideational meaning together as discourse in relation to the information flow afforded by one channel of communication or another (speaking, writing, signing, phoning, texting, tweeting, e-mailing, posting etc.); so we might expect interpersonal and ideational meaning to be in some sense implicated by considerations of mode. However the correlation of metafunctions with register variables resolves itself or not in SFL theory, we need to acknowledge here that moving to considerations of interpersonal meaning considerably broadens our interpretation of contextual dependency (the broader vision involved in both Cloran and Martin's work on mode, as noted above).

As a first step we can simply note the significance of PERSON is relation to the exophoric reference illustrated above. Arguably, first and second person exophoric reference involves an even more immediate contextual dependency than third person reference to interlocutors. And just as we further considered exophoric reference in relation to periodicity above, here we can consider person reference in relation to modal responsibility (e.g. choice of Subject and Finite in English; see Martin 1992, Chapter 6 for discussion). All of the first and second person reference in the classroom discourse discussed above, Text 3, realised the nub of the argument, as realisd through the Subject function (except for the *you* in *thank-you*, which is in any case lexicalised, and so not relevant to consideration of modal responsibility) – arguably strengthening contextual dependency. So another factor affecting contextual dependency would be the ratio of first/second person Subjects to third person ones in a text.

Once we bring modal responsibility into the picture, we can turn naturally to verbal deixis – realised in the Finite function where the terms of an argument are proposed (as TENSE or MODALITY). Choices for primary tense are the most relevant to contextual dependency (past, present or future):

> past   Garum was made from red mullet…
> present   We know that much.
> future   I'll bet…[9]

Of these, the use of primary present tense which positions events or states as co-occuring with the moment of speaking is arguably more context dependent than primary past and future tenses which displace events and states from the here and now. Choices for modality of course take this dimension of time out of the picture:

> modality   So Pompei must have smelt.

Since modality does not ground modal responsibility temporally in the here and now of dialogue, it can arguably be treated as reducing contextual dependency. Modality does however involve subjective[10] assessments of probability, usuality, inclination, obligation and ability on the part of speakers (in declaratives) and listeners (in interrogatives), and so is in a sense interpersonally dependent on the moment of speaking.

As is well known, the English primary tense system is sensitive to process type, with material and behavioural processes preferring present in present (present continuous) tense for on-going events at the moment of speaking[11], and mental and relational processes[12] preferring simple present tense:

> behavioural process   the students are laughing
> mental process   we know that much

With material and behavioural processes, simple present tense in English refers to habitually recurring events, not specific ones (e.g. *the students laugh a lot in history class*). The choice of simple present or present in present tense is thus an important variable as far as contextual dependency is concerned. Although habitual recurring events can be associated with specific participants (e.g. *John laughs all the time in history class*), they tend to be associated with generic participants (i.e. *the students laugh a lot in history class*), further weakening contextual dependency. As far as mental and relational processes are concerned, the meaning of simple present tense is conditioned by their configuration with specific or generic participants (*we know the answer* vs *top students think a lot*) and associated material and behavioural processes in the same phase of discourse (*the students laugh a lot in history but think a lot too).*

These considerations of modality and primary tense are of course not available in non-finite clauses, which are thus positioned in discourse as non-arguable. The teacher's question below

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[9] I'll bet is actually functioning as a subjectively explicit modality of probability here (*I'll bet the next one is salt/The next one is probably salt*).

[10] As Halliday 1994 outlines, grammatical metaphor can be deployed to reformulate these subjective assessments as objective, thereby reducing context dependency as far as arguability is concerned (e.g. *It's probable that…*).

[11] We have to allow here for the use of simple present tense across process types in commentary mode (e.g. play by play coverage of sporting events, fashion shows, ceremonies and performances of various kinds), where it seems to be preferred for sequences of punctiliar completed action (e.g. *Xavi chips the ball to Iniesta, who heads the ball to Torres, who kicks for goal*); see Matruglio et al. in press for discussion.

[12] Verbal processes are more variable in this regard (cf. *then it says…/are you asking whether…*).

directly negotiates whether she heard the student singing or not (*Did I hear…*), not whether the student was singing or not (cf. *Were you singing in assembly? – Yes, I was.*). This makes it possible for the student to answer *Probably*, about something she can't be sure of (i.e. whether the teacher heard her), as opposed to *Yes* about something she knows (i.e. whether she was singing or not).

T	Did I hear **you singing in assembly**?
S	Probably.
T	It was beautiful.
S	Thank you.
T	Really good.

Similarly, the teacher's question to Cynthia below makes whether she had an opportunity to look at the assignment or not arguable (allowing, however improbably, *Well I had a chance, but decided not to.*); she thereby sidesteps a somewhat more accusatory query about whether Cynthia did her homework or not (cf. *Did you look at the assignment? – Yes I did.*).

T	Cynthia, did you get a chance **to look at the assignment**?
S	Yes I did.

Both the imperfective and perfective alternatives (the *–ing* and *to* forms respectively) reduce context dependency by elevating the propositions they involve from the to and fro of dialogic; non-finite clauses are not up for negotiation in the interactive here and now.

Readers familiar with Romance languages will no doubt be wondering about what their grammarians' term 'subjunctive mood' by now. While subjunctive is not a productive choice of verb inflection in English any more, the 'irrealis' environments where a 'Romance' subjunctive might be deployed are commonplace and relevant to an interpersonal perspective on contextual dependency. Such environments would include hypotactically dependent conditional clauses and projected proposals (bold below):

conditional	T	**If you can't find an answer**, get someone to help you.
proposal	T	Do you wanna **go and get my box**?

In the conditional example above, the teacher displaces student's ability to find an answer from the here and now by construing it as a supposition; in the proposal example, the teacher displaces her proposal that the student get the box by formulating a more indirect request, projecting her proposal with a question as to whether the student wants to or not. In either case, the clause in bold is not only not directly negotiable (not directly arguable as discussed above), but is further removed from the here and now as either a 'modalised' proposition with an 'if' about it (condition) or a modulated proposal about potential action (projection).

From a discourse semantic perspective all these interpersonal examples of degrees of context dependency highlight the system of NEGOTIATION (Martin 1992, Martin& Rose 2003/2007) whereby interlocutors enact exchange structures that arbitrate the sharing of propositions and proposals (i.e. knowledge and action moves). This brings dialogue into the picture, which is turn gives rise to questions about whether interlocutors can see and hear one another or not in face-to-face or print or electronically mediated exchanges. So one might argue that spoken

dialogue is more contextually dependent than printed monologue, and position phoning, skyping, chat rooms, texting, e-mailing, posting and snail-mailing along a scale in between (for discussion of this dimension of mode see Martin 1992). To sum up, what is at stake as far as this interpersonal perspective on contextual dependency is concerned is the degree of negotiability of modal responsibility (the nub and terms of an argument), however a language in fact grammaticalises arguability (cf. Quiroz 2008 comparing Spanish and English systems).

2.3 Ideational meaning

It might seem at first blush that ideational meaning is the constant on which variation in contextual dependency, whether from a textual or interpersonal perspective, depends. From the perspective of field however we can consider whether activity sequences unfold in discourse in the sequence in which they are generalised as constitutive of one or another field. To make garum for example you needed to get hold of the appropriate seafood, mix it up, let it ferment, reduce the mixture and then filter the residue into a receptacle – as outlined in text 4 above. This sequence, and its steps, can however be realised more or less iconically. In English, various conjunctive resources might be deployed to re-arrange the sequence:

> **Before** the liquamen is filtered, it is reduced for six weeks by evaporation; **prior to that** it was beaten into a homogenous pulp…

Texts which unfold in some kind of matching relation to the activity sequence they construe can be contrasted with texts that organise themselves, independently of field time. Text 5 for example, outlined below, is a factorial exposition (Martin & Rose 2008) in which the causes of its poor conservation are scaffolded not in the sequence in which they occurred but in the order in which the writer wishes to present them (*to begin, a second problem, in addition, finally*) and consolidated in a high level macro-new (*as a result of these factors*).

> [Text 5]
> While Pompeii is one of the most studied of the world's archaeological sites, it has been plagued with serious conservation problems, including poor restoration work, damage from vegetation, pressure from tourism and poor site management.
>
> **To begin**, much of the restoration work on Pompeii has been done by local firms with no specialised knowledge of restoration techniques. ...
>
> **A second problem** is the incursion of uncontrolled weeds which have hastened the decay of the ruins. ...
>
> **In addition**, Pompeii's position as an international tourist attraction brings half a million visitors each year. ...
>
> **Finally**, there seems to be no overall management plan for the site. Damaged paths and walls have not been repaired, frescoes have not been preserved, and mangy dogs roam the site. ...
>
> **As a result of these factors**, the description of Pompeii as a victim of state neglect and indifference and an archaeological catastrophe of the first order is an apt one. It's ongoing destruction since its discovery in the 1590s has arguably resulted in a greater disaster than it's initial destruction by the eruption of Mt Vesuvius one and a half millennia earlier.

From the point of view of sequencing, texts with internal scaffolding of this kind are at the opposite end of a contextual dependency scale from those unfolding in step with field time.

Beyond these permutations, an activity sequence as a whole can be realised not as a discourse semantic sequence of events, but named as a figure[13] involving entities, action and setting:

> Wealthy families manufactured garum in Pompei.

And semantic configurations such as these may be themselves construed grammatically as nominal groups (*the production of garum, its manufacture*), rather than clauses. So from an ideational perspective we can use the degree of iconicity between what is going on in a field and its construal in discourse as a further measure of contextual dependency, with more iconic realisations more context dependent than less iconic ones.

The main linguistic resource used to re-work ideational iconicity is discourse is grammatical metaphor (Halliday 1985, 1998, 2004, 2008, Halliday & Martin1993, Simon-Vendenbergen 2003, Zhu 2008), which can be most usefully interpreted in terms of stratal tension – the degree of congruence in the mapping of discourse semantics in lexicogrammar. We have already seen an example of grammatical metaphor with respect to interpersonal meaning, when the teacher coded a proposal she might have coded congruently as *Go and get my box.* (command realised as imperative) as the less direct polar interrogative *Do you wanna go and get my box?* (command as polar interrogative).

congruent proposal	T	Go and get my box?
incongruent proposal	T	**Do you wanna** go and get my box**?**

With experiential meaning the congruent realisation of a semantic figure would be a clause, with entities realised as participants, actions as processes and setting as circumstances. An analysis of the discourse semantics and lexicogrammar of *Wealthy families manufactured garum in Pompei.* is presented below.

discourse semantics	entity	event	entity	setting
	Wealthy families	*manufactured*	*garum*	*in Pompei*
lexicogrammar	Participant	Process	Participant	Circumstance

But figures can be realised metaphorically as participants (*Wealthy families controlled **the manufacture of garum** in Pompei.)* or in circumstances (*Some families became wealthy **through the manufacture of garum**.)* if they are coded as nominal groups:

discourse semantics	entity	event	[figure]	setting
	Wealthy families	*controlled*	***the manufacture of garum***	*in Pompei*
lexicogrammar	Participant	Process	Participant	Circumstance

discourse semantics	entity	event	quality	[figure]
	Some families	*became*	*wealthy*	*through **the manufacture of garum***
lexicogrammar	Participant	Process	Participant	Circumstance

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[13] Halliday & Matthiessen 1999 propose a rank-scale for ideation with sequences made up of figures and figures made up of elements; their term *figure* has been adopted here, with elements specified for this paper as entities, events, qualities, settings and relations.

These congruent and metaphorical alternatives are outlined in Figure 1. As far as experiential meaning is concerned, the more metaphorical the realisation the less iconic the mapping of figures as participant, process and circumstance, and so arguably the less context dependent the discourse.
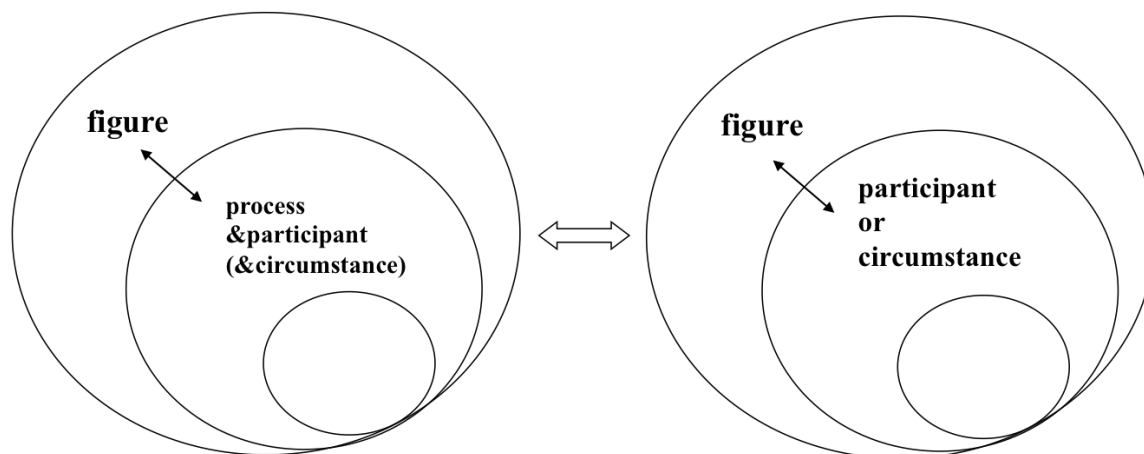

Figure 1: Congruent and metaphorical realisations of a figure

Realising figures as circumstances brings logical meaning into the picture, since in effect a sequence of figures is being realised as a single clause (*Some families became wealthy through the manufacture of garum)* instead of as a clause complex (*Some families manufactured garum and thereby became wealthy)*. Recoding along these lines the sequence involved in making garum might be realised as a clause complex consisting of five interdependent clauses:

	1	Wealthy families acquired the appropriate seafood,
x	2	mixed it up,
x	3	let it ferment,
x	4	reduced the mixture
x	5	and then filtered the residue into a receptacle.

Alternatively pairs of clauses in this sequence could be telescoped as clauses in which the logical relations between figures are coded as Processes (*precedes, is followed, leading to*) or Participants (*the result*):

The acquisition of appropriate seafood **precedes** the mixing process which **is followed** by fermentation and evaporation, **leading to** a filtration process **the result** of which is the production of garum.

Taking into account the logical relation realised as circumstance example analysed above (i.e. *Some families became wealthy **through the manufacture of garum***) the possibilities for recoding sequences as clauses are outlined in Figure 2. Since logical metaphor entails experiential metaphor, the more logical metaphor a text has, the less context dependent as far as iconicity is concerned. Logical metaphor involving 'cause in the clause' is a critical resource for packaging up causes and effect in history discourse and finely nuancing the

causal relation between them. The concluding sentence of text 5 for example sums up an argument to the effect that human neglect has had more to do with the destruction of Pompei than Mt Vesuvius, a conclusion carefully tempered as *arguably* so.

> It's ongoing destruction since its discovery in the 1590s
> **has** arguably **resulted in**
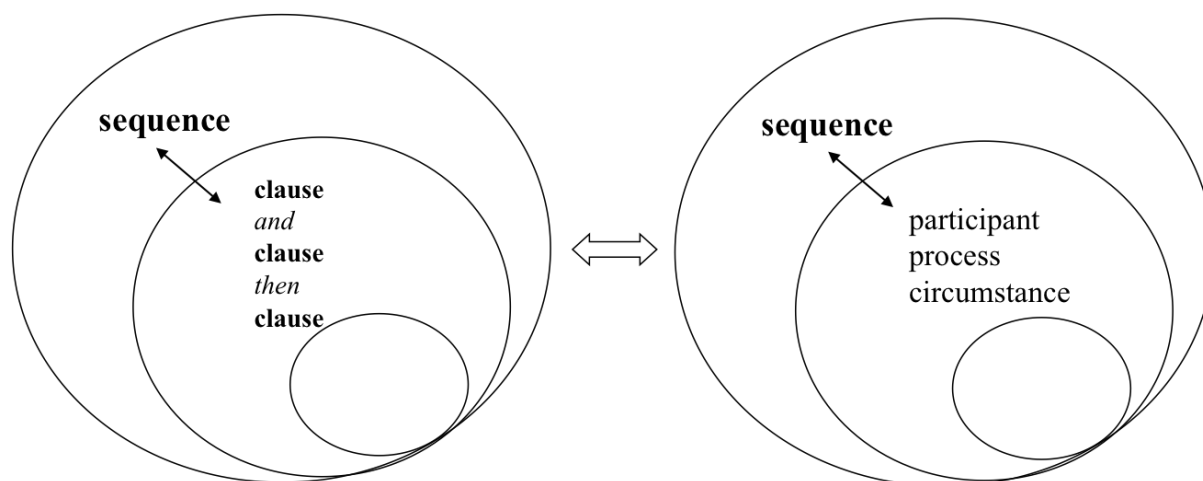> a greater disaster than it's initial destruction by the eruption of Mt Vesuvius…

Figure 2: Congruent and metaphorical realisations of a sequence

It may be helpful at this point to set up a scale of iconicity as far as the realisation of semantic sequences in grammar is concerned[14], beginning with cohesive conjunction between sentences, and continuing with paratactic and hypotactic interdependency between clauses within a sentence (1-3 below); then, with one figure in the sequence nominalised (the eruption of Mt Vesuvius), cause can be realised as through a circumstance (4) or a causative verbal group complex (5); finally, with both figures in the sequence nominalised, cause can be realised as a process (6) or participant (7). The crucial break in iconicity is between 3 and 4, with ideational contextual dependency arguably decreasing from 4 through 7.

> 1 Mt Vesuvius erupted. **Therefore** Pompei was destroyed.
> 2 Mt Vesuvius erupted, **so** Pompei was destroyed.
> 3 **Because** Mt Vesuvius erupted, Pompei was destroyed.
> 4 **Because of** Mt Vesuvius's eruption, Pompei was destroyed.
> 5 Mt Vesuvius's eruption **led to** Pompei being destroyed.
> 6 Mt Vesuvius's eruption **caused** Pompei's destruction.
> 7 Mt Vesuvius's eruption was **the cause of** Pompei's destruction.

This scale can be supplemented with comparable grading focusing on internal conjunctive relations (Halliday & Hasan 1976, Martin 1992) where the logic has to do with argumentation in discourse rather than the construal of cause and effect relations in field. Internal conjunction as arguably less context dependent than external conjunction because

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[14] The scales provided here are based on Halliday's study of the language of physical science, which is most easily accessible in Halliday & Martin 1993: 66; see also Halliday 1998, 2004

propositions and proposals are being related rhetorically rather than in terms of a material sequence of events in a field. High stakes academic writing depends on the incongruent realisations in 4 through 7 below to provide a reasoned scholarly interpretation of physical, biological or social reality.

> 1 Historians carefully study primary sources such as Pliny and Seneca and observe artifacts, frescoes and relevant archaeological sites. **Accordingly** they conclude that wealthy families manufactured highly valued garum in Pompei.
> 2 Historians carefully study primary sources such as Pliny and Seneca and observe artifacts, frescoes and relevant archaeological sites, and **thus** conclude that wealthy families manufactured highly valued garum in Pompei.
> 3 **By** carefully studying primary sources such as Pliny and Seneca and observing artifacts, frescoes and relevant archaeological sites, historians conclude that wealthy families manufactured highly valued garum in Pompei
> 4 **Through** the careful study of primary sources such as Pliny and Seneca and observation of artifacts, frescoes and relevant archaeological sites, historians conclude that wealthy families manufactured highly valued garum in Pompei
> 5 Careful study of primary sources such as Pliny and Seneca and observation of artifacts, frescoes and relevant archaeological sites, **permits** historians to conclude that wealthy families manufactured highly valued garum in Pompei.
> 6 Careful of primary sources such as Pliny and Seneca and observation of artifacts, frescoes and relevant archaeological sites **argues for** the manufacture of highly valued garum by wealthy families in Pompei.
> 7 Careful study of primary sources such as Pliny and Seneca and observation of artifacts, frescoes and relevant archaeological **provides the evidence for** the manufacture of highly valued garum by wealthy families in Pompei.

It is interesting to note that in the phase of teaching drawn on for examples here, almost all[15] examples of ideational metaphor are in the handout, not the teacher's talk. This reflects the general predisposition teachers share to 'unpack' more contextually independent written language into more contextually dependent spoken language – undoing ideational grammatical metaphor as they do so. This predilection for more context dependent talk which does not shunt verbally back to more context independent discourse arguably denies students the opportunity to hear teachers model how more abstract formulations add specialised meaning that cannot be formulated in more commons sense spoken terms. The implications of this unpacking syndrome, which in effect ongoingly strands students in common sense instead of building academic knowledge, are explored in Martin & Maton in press.

2.4 Contextual dependency across metafunctions

In summary then, although contextual dependency is regularly interpreted in the first instance as a question of textual meaning and mode, interpersonal and ideational perspectives are also possible. From the perspective of textual meaning, the key variable is **implicitness** – to what extent does a text depend on exophoric reference, substitution or ellipsis (to its material situation setting to use Hasan's term; e.g. Hasan & Butt 2011) and in addition scaffold its composition with layers of high level periodicity. From the perspective of interpersonal

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[15] A few 'dead' metaphors are used, involving technical terms (e.g. *aesthetic trade, pyroclastic flow*); of the rare metaphors involving stratal tension, some are immediately unpacked (e.g. *Where is the difference? What would be different?*).

meaning the key variable is **negotiability** – to what extent is a proposition or proposal arguable, and if arguable, to what extent does arguability depend on the moment of speaking (in terms of temporality or modality). From the perspective of ideational meaning the key variable is **iconicity** – to what extent are semantic relations realised as congruent configurations of process, participant and circumstance which unfold in discourse in the sequence in which they occur in the field. Grammatical metaphor, as we have illustrated, is a powerful resource for composing high level Theme and New[16], for adjusting negotiability (as 'direct' vs 'indirect' speech acts) and scrambling iconicity (as everyday vs heavily 'nominalised' discourse).

The range of meanings which have been proposed for the term context dependency, both in the SFL literature and in this paper, means care must be taken to clarify what variables are being considered whenever the term is used. The range of variables considered will of course depend on the problem being addressed. For example, students who don't gain control of this resource in secondary school experience their access to context independent discourse as severely impaired. And without control of context independent discourse they will not be able to access the subject specific knowledge enabled by this discourse in textbooks, handouts or on the web and they will not be able to demonstrate control of this knowledge for assessment purposes (Martin & Maton in press). An educational issue of this kind implicates at least a broad textual and ideational perspective on contextual dependency, so that many of the relevant variables can be brought into play. Cloran's focus on pre-school mother/child discourse in the home on the other hand arguably more strongly implicates textual and interpersonal perspectives, as reflected in her work on rhetorical units (Table 1 above).

3. Context dependency and semantic gravity

As noted in section 1, SFL/LCT dialogue around the question of cumulative knowledge-building in secondary school prompted the re-appraisal of work on contextual dependency in SF undertaken here. This naturally raises a question as to the nature of the complementarity between the functional linguistic and social realist perspectives. This of course depends on which variables a linguist selects as a measure of contextual dependency to focus on a problem in a particular episode of action research, and variables might of course be selected to illuminate, from a linguistic perspective, the kinds of variation the sociologist is focussing upon. With this in mind, let's consider Maton's latest characterisation of semantic gravity (Maton in press b):

> *Semantic gravity* (SG) refers to the degree to which meaning relates to its context. Semantic gravity may be relatively stronger (+) or weaker (-) along a continuum of strengths. The stronger the semantic gravity (SG+), the more meaning is dependent on its context; the weaker the semantic gravity (SG-), the less dependent meaning is on its context. All meanings relate to a context of some kind; semantic gravity conceptualizes how much they depend on that context to make sense. How strengths of semantic gravity are realized empirically depends on the specific object of study (Maton in press a). Nonetheless, to give a simple example: the meaning of the name for a specific plant in Biology or a specific event in History embodies stronger semantic gravity than that for a species of plant or a kind of historical event, which in turn embodies stronger semantic gravity than processes such as

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16 Consider for example the experiential metaphor in the hyper-Theme noted in text 4 above: *The following quote gives a more detailed **description** of its **manufacture**.*

photosynthesis or theories of historical causation. Semantic gravity thus traces a continuum of strengths, with infinite capacity for gradation. Moreover, by dynamizing this continuum to analyse change over time, one can also describe processes of: *weakening* semantic gravity (SG↓), such as moving from the concrete particulars of a specific case towards generalizations and abstractions whose meanings are less dependent on that context; and *strengthening* semantic gravity (SG↑), such as moving from abstract or general ideas towards concrete and delimited cases. (Maton in press b: xx)

As we can see from Maton's example, semantic gravity addresses a range of variation overlapping with but not precisely coextensive with the range considered in this paper. Martin in press for example considers a physical geography textbook which includes a photo of a specific mulga tree, accompanied by a report, a factorial explanation and a conditional explanation which make generalisations about the species mulga tree, and an image implicating information about the plant's photosynthesis. The move from the photo to the verbal text is a move from specific to generic reference (even though the photo is intended to be viewed as representative of the species); and the move from generic reference to the concept of photosynthesis would certainly involve grammatical metaphor (since photosynthesis is a nominalised technical term for a process whereby plants convert light energy into chemical energy). From an SFL perspective these shifts in contextual dependency enable the construal of technical biological understandings of the world – specialised understandings which would be modelled with respect to the register variable field, not mode. Similarly, with respect to Maton's examples of Bernstein's shifts in semantic gravity reviewed above in section 1 (i.e. hierarchy, sequencing rules, criteria → visible and invisible pedagogies → classification and framing etc.), we can see that contextual dependency, measured in terms of implicitness (i.e. generic reference) and iconicity (i.e. grammatical metaphor) is implicated; but the degree of technicality as far as Bernstein's interpretation of pedagogic discourse is concerned deepens considerably as semantic gravity weakens. So it would seem that Maton's concept of semantic gravity involves what SFL would model as concerns of both contextual dependency (mode) and technicality (field), with grammatical metaphor playing a critical role as an 'anti-gravity' machine.

That said, Maton views semantic gravity as often working in tandem with his concept of semantic density, a term which addresses condensation of meaning. Together the strengths of semantic gravity and semantic density give a range of different 'semantic codes', which offer insight into the organising principles of practices. For Maton semantic gravity is just one facet of these semantic codes. For example, in analysing classroom discourse, Maton (in press b) explores changes in the strengths of both semantic gravity and semantic density, charting 'semantic waves' in the knowledge being construed – i.e. moves between contextualised, simpler meanings and decontextualised, condensed meanings.

At its most productive, interdisciplinarity encourages disciplines to interrogate their knowledge structure, and adjust and expand it as required. SFL and Bernsteinian sociology have impacted on one another in these terms many times over the course of cooperative research since Halliday and Bernstein's initial collaborations in Britain in the 1960s (Martin 2011). Maton's concepts of semantic gravity, semantic density and semantic waves have certainly sparked a renewed interest in SFL are far as research into field and mode is concerned – prompting as noted above the reappraisal of SFL's concept of contextual dependency in this paper. One question this reappraisal has perhaps raised for future LCT research has to do with negotiability – is there a third variable, working in tandem with

semantic gravity and semantic density, adjudicating the arguability of propositions about the world as part of the production, recontexualisation and reproduction of knowledge. As far as SFL is concerned, the main challenge that lies ahead is that of finding replicable ways of measuring, in linguistic terms sensitive to Maton's concern with knowledge-building, language which strengthens and weakens semantic gravity and semantic density as discourse unfolds – so that waves of knowledge building can be systematised in a more carefully articulated teaching practice.

DRAFT

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