Chapter 3

Ideational Representation

1. Ideational Representation

Ideational Representation is one of the strands of meaning within Systemic semantics. It captures the propositional 'content' of the text, as opposed to interactional meanings (e.g., the speaker's colouring of the text), and textual meanings (the text as message). This chapter will introduces the theory of ideational modelling, specifically as represented in the WAG system.

1.1 Ideational Structures

In the micro-ideational representation, we are concerned with the ideational content of single sentences. Each sentence[1] expresses a configuration of participants, processes and circumstances -- a micro-ideational structure. For instance, figure 3.1 shows the micro-ideational structure of the sentence *I would like information on some panel-beaters*.

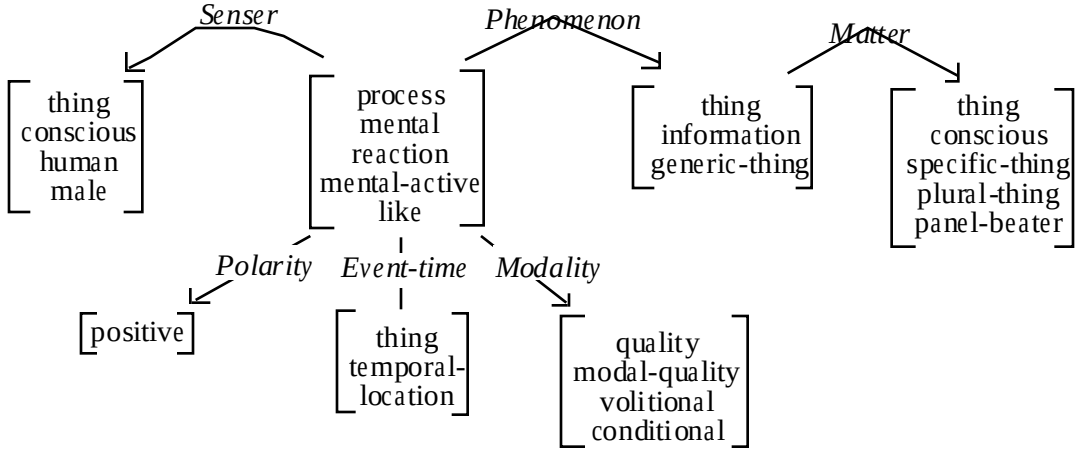

Figure 3.1: Ideational Representation for
"I would like information on some panel-beaters."

This ideational structure is dependency-based, that is, the participants, processes and circumstances are linked as sisters, not as parts of a whole. The arrows in this figure represent dependency relations, the arrow pointing from the *head* towards the *dependent*. In the ideational semantics, constituency is not appropriate because ideational structures can be highly inter-connected structures, which cannot be represented in constituency trees. One entity may play various roles in different processes, and there can be multiple relations between two processes (e.g., process A temporally precedes process B; Process A causes process B). To allow dependency-based ideation representations, the Systemic

[1] With the exception of some sentences which are purely phatic, e.g., "Hello.".

formalism as implemented in WAG has been extended to allow both dependency and constituency: the insertion of a function can be read as either the requirement of a constituent or of a dependent.

This diagram represents only the ideational aspects of the sentence. Some other aspects of the sentence are determined by the interactional semantics (e.g., the identity between the Senser and the Speaker), and the textual semantics (e.g., the reference form chosen for the participants).

The ideational model discussed in this chapter is largely that of the Penman system, although with more focus on institution-specific ideational models. This discussion draws strongly on Bateman's discussion of Penman's ideational model (Bateman 1989c, 1990a, 1990b). I introduce this material here since later chapters will discuss the integration of ideational, interactional and textual meanings, and their realisation into the grammar.

There have been various other approaches to ideational representation in the various cognitive fields (Psychology, Linguistics, Artificial Intelligence), often under the label of 'knowledge representation'. However, as ideational representation is not the focus of this thesis, I will not attempt to bring this work into the discussion. My aim is simply to present the model as it is used in the implementation, largely following the Penman model. For further reading in knowledge representation, see Schank & Colby (1973), Brachman (1979), or Brachman & Levesque (1985).

1.2 Ideational Potentials

Ideational structures such as in figure 3.1 are instantials drawn from the ideational potential -- a system network taxonomising the entities and relations of our conceptual world. Each of the features of the ideational network also has associated realisation statements -- showing what dependent roles (participants, circumstances, etc.) are allowed.

There have been two major approaches to building ideational networks. The first builds a generalised ideational model, which can be used for representing knowledge from a variety of institutions. The second builds ideational models which are institution-specific -- dealing with the model of reality as seen through the eyes of a specific institution. These two approaches are discussed below.

2. Generalised Ideational Models

I will first consider an approach which models ideation using a single generalised network which attempts to taxonomise the whole world.

2.1 The Upper Model

Penman provides such a model, called the Upper Model (UM). This was based on an early design by Michael Halliday, Christian Matthiessen and William Mann -- see Halliday & Matthiessen (to appear); Mann (1985b). Later extension and theoretical contributions were made by John Bateman (see Bateman 1989c, 1990a, 1990b). The concepts in Penman's Upper Model are documented in Bateman, Kasper, Moore & Whitney (1990).

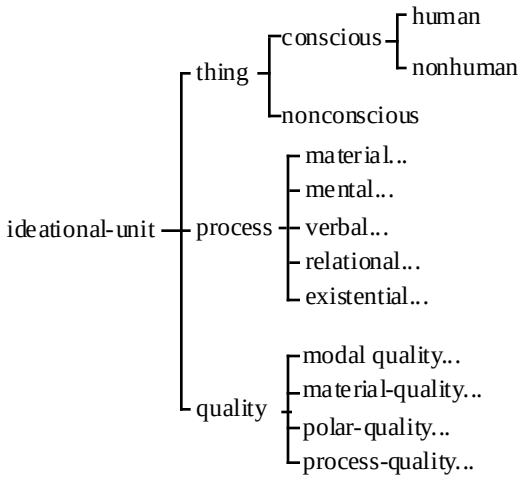

Figure 3.2: Root Systems of the Upper Model

The Upper Model consists of an ideational network, with associated realisation statements[2]. Figure 3.2 shows the least delicate systems of WAG's version of this system network, the primary distinction being between things, processes and qualities. The network can be seen as a taxonomy of the types of entities which we can talk about. In this and following diagrams, a feature name ending with '...' indicates more delicate systems are not shown.

Penman's Upper Model is represented as a 'type lattice' using the Loom knowledge representation language (MacGregor & Bates 1987). This resource consists of a set of *concepts* (ideational types), organised in an inheritance network. For the WAG system, I have re-represented the Upper Model in system network form. This has not proven too difficult, since the two formalisms are reasonably close (e.g., both formalisms are based on inheritance networks; Loom *concepts* correspond to Systemic *features*; and Loom's constraint language correspond reasonably well to Systemic realisation statements).

The network itself represents a **generalised meaning potential** -- these are not register specific concepts, but rather the basic ideational concepts that are common to all registers.

The more delicate systems of the upper-model are shown in figures 3.3 to 3.5, showing the *thing, process* and *quality* sub-networks. Not all systems are shown, for instance, systems relating to the circumstantial roles of processes are absent from the process network, e.g., Cause, Manner, etc.

[2]Penman's version of the Upper Model is represented using a type-lattice, a non-Systemic inheritance formalism. This will be discussed further in section 7.

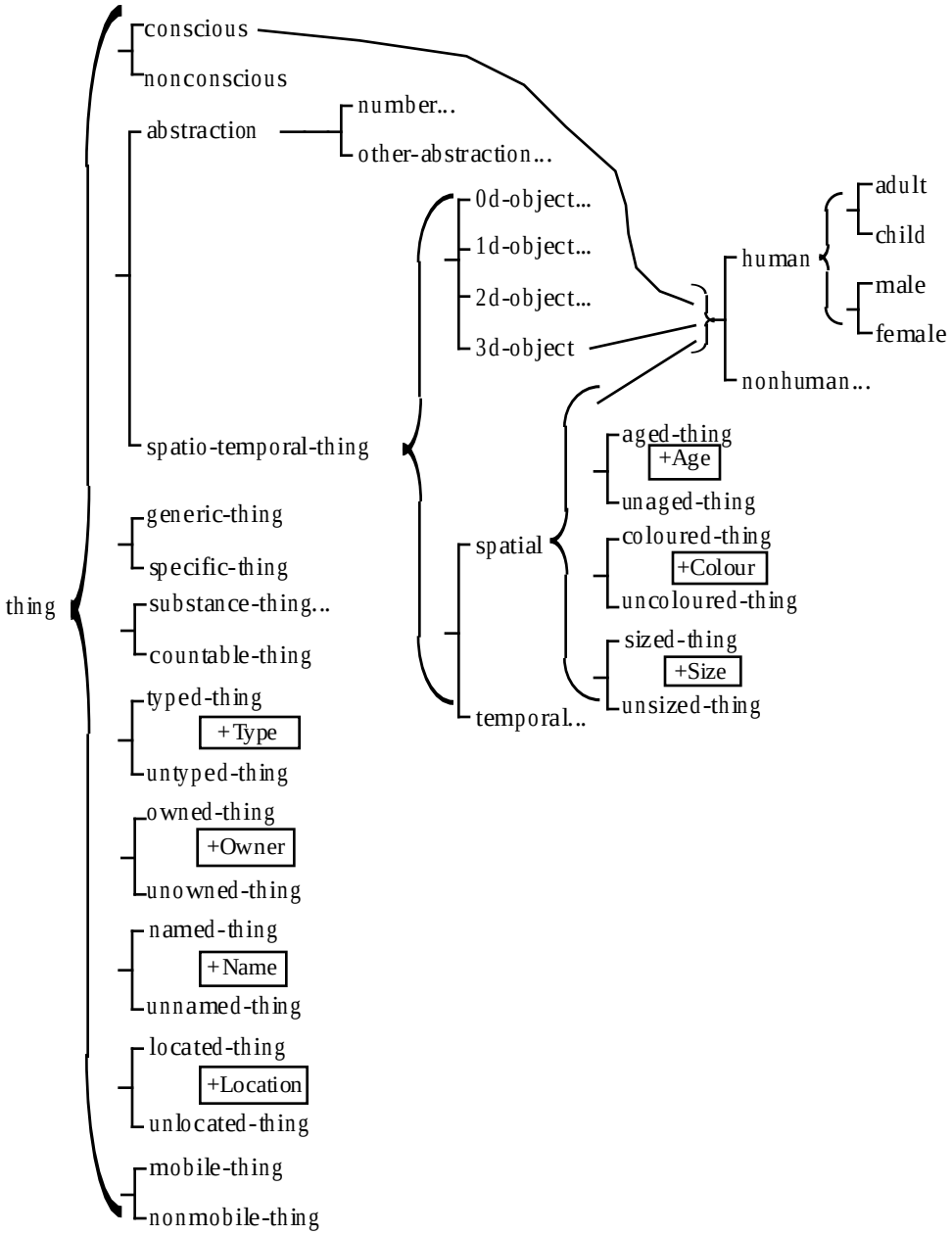

Figure 3.3: WAG's Thing Sub-network

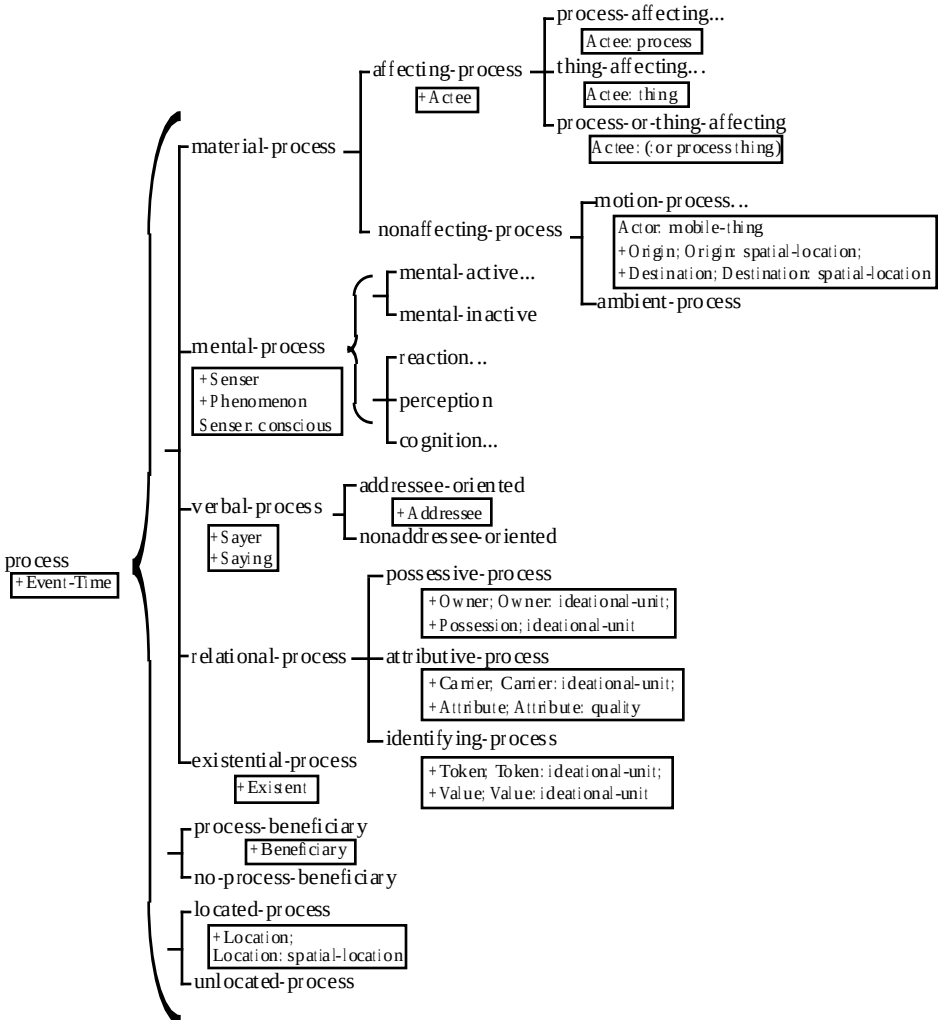

Figure 3.4: WAG's Process Sub-network

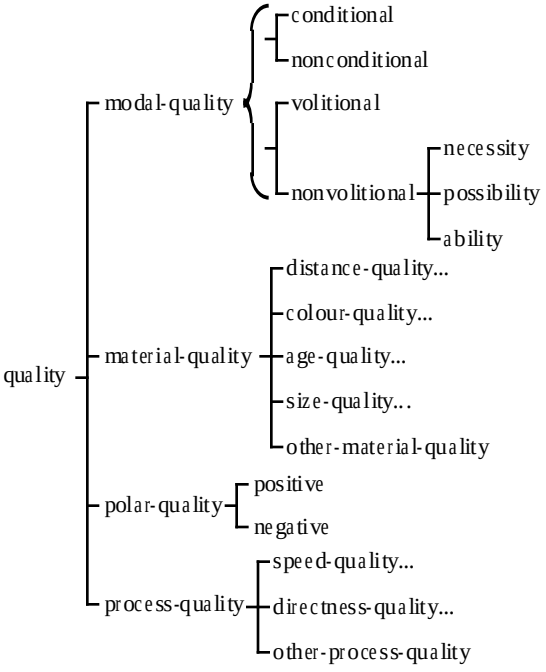

Figure 3.5: WAG's Quality Sub-network

2.2 Ideational Realisations

Many of the features in these networks have associated realisational constraints (as for grammatical features). These are shown in the boxes beneath the features. As stated above, a dependency interpretation is preferred here over the constituency interpretation of the grammar: the '+Actor' associated with the feature *material-process* indicates that the process has a dependent Actor role, which is to be seen as a co-element, rather than as a constituent, of the process.

2.3 Ideational Relations

Above I have shown networks representing the various types of ideational units. There is also a need to represent the various types of ideational relations - the relations between ideational units.

On one level, it would be nice to treat ideational units and ideational relations as fundamentally different. The Systemic formalism treats grammatical relations (grammatical functions) distinctly, so why not in the semantics also. However, there are arguments for treating some types of relations as a sub-type of unit. Halliday (1985), for instance, treats some relations as a type of process, i.e., *relational-processes*. Relations such as ownership, causality and identity are treated in this way. Two arguments for this treatment are:

- These relations can be realised in the same was as processes, i.e., as clauses, e.g., *My arrival caused a stir*; *John owns a boat*; *John is the president.*;
- They can have temporal-duration and modality like processes, e.g., *I owned a boat for three years*; *I might be the president.*

Both Penman and WAG follows this approach, treating some types of relations as relational-processes. Figure 3.4 above shows the three basic relational-processes WAG's Upper Model recognises at present. I follow this approach since it *reifies* the relation -- treats it as a unit, thus allowing the relation itself to be assigned roles, such as Event-Time and Modality.

Penman also includes various other types of ideational relations under this relational-process category, for instance, participant roles (Actor, Actee, Senser, Phenomenon, Possession, Location, etc.), logical relations (conjunction, disjunction, alternation, etc.), and rhetorical relations. The relational-process network from Penman's Upper Model is shown in figure 3.6.

I would argue that it is wrong to treat these relations as a type of unit: it confuses the notions of relation and unit, and abuses the notion of 'relational-process' as used by Halliday (1985). WAG thus makes a basic distinction between units and relations, which is reflected in figure 3.7, showing the root of WAG's network. The figure shows three meta-systems which organise the various networks in the linguistic resources. Most relations are treated as relations, rather than units. These are distinguished into *ideational-relations*, *rhetorical-relations*, *interstratal-relations* and *grammatical-relations*. *Ideational-relations* are further distinguished between *logical-relations* and *experiential-relations* (which includes the participant-relations from Penman). Under the relational-process category (a sub-type of ideational-unit), we find only those relations we would expect from Halliday's treatment.

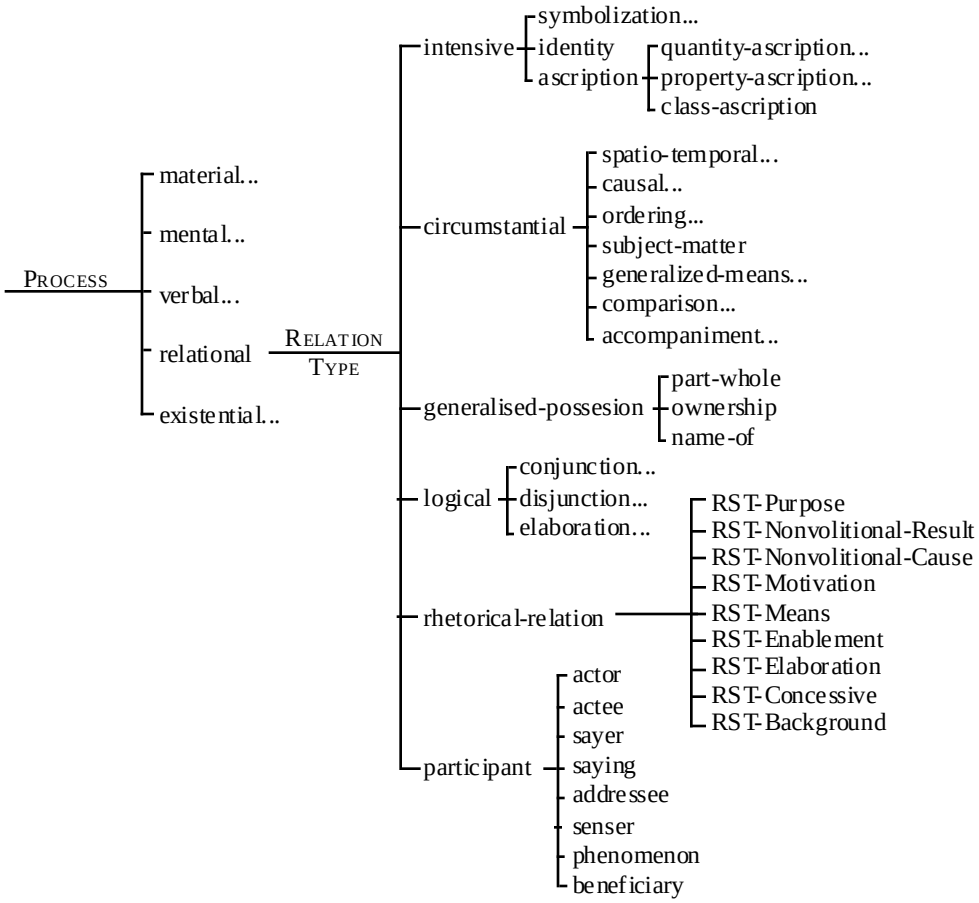

Figure 3.6: The Penman Relational-Process Sub-Network

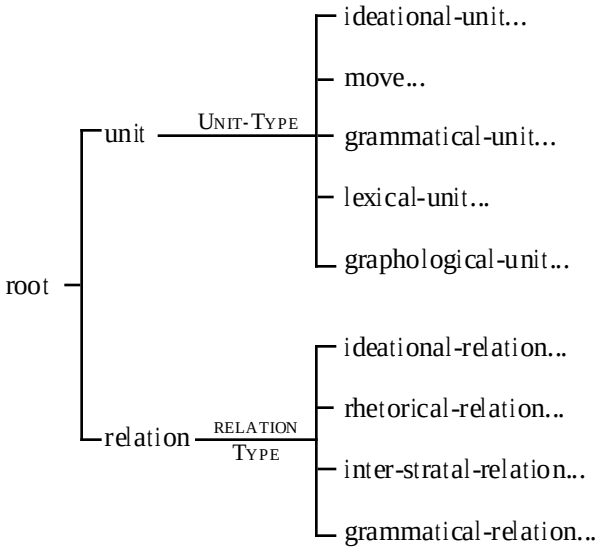

Figure 3.7: WAG Separates Units and Relations

2.4 Criteria for setting up Upper Model categories

The Upper Model has not been set up as a purely conceptual level of representation, independent of language. Rather, it has been set up to capture the semantic distinctions necessary for a linguistic model of English:

> "An entity is a member of a certain class only if the language treats the entity as it does others in that class." (Bateman 1990b, p7).

Bateman demonstrates this principle by showing how the concept of *computer* is subordinated to the Upper Model concept *conscious*, since language treats computers as a thinking object: capable of entering mental processes, e.g., *calculate*, *decide*, etc. The Upper Model thus represents "a set of general objects and relations of specified types that behave systematically with respect to their possible linguistic realisations." (Bateman 1990b, p1).

The Upper Model is thus a level of representation within the linguistic system. It is a level which "abstracts away from superficial details of syntactic form, thereby simplifying the control task." (Bateman 1990b, p4).

2.5 Mapping between Upper Model and Grammar

Given that the Upper Model represents a set of generalisations over linguistic form, it follows that each concept in the Upper Model network "entails knowledge about how that concept (and therefore its descendants) is expressed in natural language." (Bateman 1990b, p4).

We are all aware of the congruent mappings between some of these concepts: processes are congruently expressed as verbs, things as nouns, and qualities as adjectives and adverbs. A brief perusal of any text will soon show that these are only typical realisations[3] -- incongruent realisations may also occur -- process as noun ('the eruption'), thing as adjective ('the glass blower'), etc. I will look more closely at the complex mappings between ideational features ('concepts') and lexico-grammatical form in chapter 6 on interstratal mapping.

Two points need to be made about the relation between an Upper Model concept and the linguistic forms:

- **Inheritance of Grammatical Constraint:** just as features in a network inherit the structural realisations of features to their left, they also inherit interstratal constraints. We thus see an accumulation of grammatical constraints as we traverse from left to right through the Upper Model (Bateman 1990b, p4).
- **Upper Model only partially constrains linguistic realisation:** The Upper Model is only one layer of the micro-semantics. The formation of an utterance requires specifications of interactional and textual semantics in addition to the ideational specification (see chapters 4 and 5).

[3] Congruent realisations are only typical in a register-free sense. In some registers, processes, for instance, are more typically realised as nouns, the more so as the level of abstraction increases.

	John	*gave*	*a book*	*to Mary*
Grammatical Analysis	Actor	Process	Goal	Recipient
Ideational Analysis	Actor	Process	Actee	Recipient

	John's	*giving*	*of a book*	*to Mary*
Grammatical Analysis	Deictic	Thing	Qualif	Qualif
Ideational Analysis	Actor	Process	Actee	Recipient

Figure 3.8: Congruent and Nominalised Realisation

2.6 Grammatical Metaphor under the Upper Model

The Upper Model has many similarities to Halliday's transitivity systems in the lexico-grammar (dealing with types of clause structure -- see Halliday 1985). The Nigel grammar, based on Halliday (1985), shows these redundancies quite clearly. For instance, consider the transitivity and ideational analyses the Nigel grammar would assign to the two texts in figure 3.8. While the first example suggests that the grammar and semantics are redundant with respect to each other, note that the second example shows the value of the redundancy.

The first example represents a congruent realisation: semantic material process realised as grammatical material clause. However, there is more than one realisational option -- the same ideational structure could have been realised as a nominal group (as in example 2, in which case the semantic and grammatical structures are not the same). See Bateman (1990a) and Halliday & Matthiessen (to appear) for more detailed discussion of this point.

3. Institution-Specific Ideational Models

Within a given society there are many ways of structuring reality. Each individual has a number of useful reality templates, and chooses the model which is most appropriate to the situation. An economist's ideational network may divide humans up into buyers and sellers, employers and employees; or treats humans as a resource ('labor'), along with 'land' and 'capital'. However, when at church the economist works with another reality template, dealing with 'believers' and 'non-believers', 'saints' and 'sinners'.

The availability of divergent models of reality, suitable for different uses, corresponds to what Benson and Greaves (1981) call *institutional focus* :

> "Society is comprised of well-defined, describable, organised activities in which participants must interact in ways specific to these activities. Whenever an individual plays a part in church, in government, education, commerce, science, agriculture, transportation and the like, behavior, including language, will manifest institutional focus" (p46).

Each institution breaks up the world in its own way -- it has its own 'model of reality'. Fowler says much the same thing in different words:

> "The language that we use and which is directed towards us embodies specific views -- or 'theories' -- of reality... Different styles of speech and writing express contrasting analyses and assessments in specific areas of experience: not total world views, but specialised systems of ideas relevant to events such as political demonstrations, to processes such as employment and bargaining, to objects such as material possessions and physical environment" (Fowler 1970, p1)

No one institution-specific model describes the whole world. To interact with our world -- verbally or non-verbally -- we draw upon a range of such models. For instance, to talk about buying and selling fruit, we need to deal with (at least) two models: one dealing with *buying-and-selling*, the other with *fruit.*

I will use the term *domain model* to refer to these institution-specific models. The term has often been used to refer to the knowledge needed to generate a particular text-type, thus one would have a single domain-model for cake recipes. Under my treatment, a cake recipe would draw upon two domains, one for cooking methods, and one for the cakes and their description (*layer, icing, slice* etc.).

I will use the Systemic formalism to represent these institution-specific models. System networks represent and organise the types of entities recognised in the model. The realisation statements constrain the role-relationships between these entities. Figure 3.9 represents a possible ideational network for the Rugby domain. The network is not complete by any means, only showing the detail necessary for a target dataset. Figure 3.10 shows some role-constraints for the rugby processes.

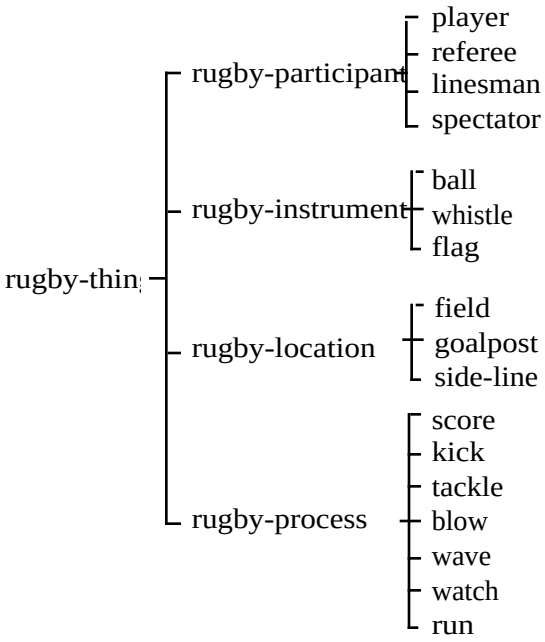

Figure 3.9: A Rugby Domain Ontology

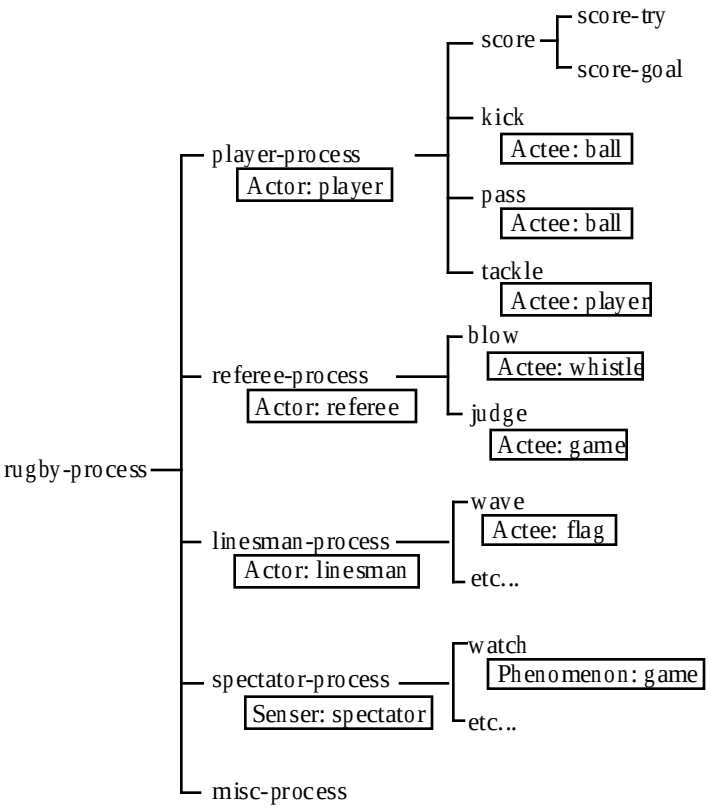

Figure 3.10: Role Restrictions in the Rugby Domain

3.1 The Relations between Domain-models

The approach discussed above assumes that there is no single ontology[4] for the world. It takes a fragmentary approach, where the ideational resources consists of a large set of institution-specific ontologies, each institution having its own ideational ontology. These domain models make up part of our "knowledge of the world".

Our ideational world-knowledge is not simply a set of unrelated domain models. Benson and Greaves (1981) note that these models are inter-related:

> "Classifying institutions necessarily involves drawing boundaries in interlocking group behaviours. At this stage we incline to ad hoc procedures, developing intuitions which are widely shared, ordering institutions in terms of generality, for example science (most general) through physical science (more specific), physics, atomic physics, etc., down to the most particular sub-discipline it seems useful to think about." (pp. 47-48)

Martin (1992) also explores this super-ordinate relationship between domains. He introduces the notion of *field agnation*[5] to handle the similarity between closely related domains. For instance, the domains of *rugby league* and *rugby union* are fairly close. *Soccer* is slightly more afield. We can either treat each of these domains as separate domains, or try to capture generalisations over domains, using super-domains, e.g., *ball-sports*

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[4] An *ontology* is a systematic statement about how the categories of an institution relate to each other, particularly in regard to super-ordinate relationships.

[5] Note that 'field' is part of the context of situation, while we are talking about the organisation of the ideational resources as a potential. However, Martin's discussion of field agnation applies to our present discussion.

Some domains that share concepts are easily related through a super-domain. Other cases are not so clear. Often we have domains which share concepts because the institutions interact, yet there is no clear generalisation over the institutions. For instance, the *protest* domain and the *police* domain share common ground, such as the process of *arresting*. They share these concepts because the institutions interact, not because they are sub-domains of some greater domain (like sport). Society can be seen to consist of many interacting, overlapping institutions. Some aspects of field agnation may need to be represented through an inter-dependency graph, rather than a taxonomy of domains.

4. A Combined Approach

Both institution-specific and generalised approaches have their advantages and disadvantages for ideational modelling, so it is difficult to choose between them. One solution is to use a combined approach -- using both a generalised network and specialised institution-specific (domain) models.

Penman adopts this approach. The Upper Model is at the core of Penman's ideational resource. These concepts are mapped onto grammatical forms. The concepts of domain networks are then mapped onto Upper Model concepts. They thus inherit the grammatical realisations of the Upper Model concept. The domain model concepts may also provide more specific constraints.

In other words, the Upper Model is a resource "for organising domain knowledge appropriately for linguistic realisation" (Bateman *et al.* 1990). This approach avoids the problem of grammaticalising each domain individually. In Bateman's words:

> "The upper model in this guise then, arguably, provides exactly the level of abstract semantic conceptualisation that is needed for allowing users straightforward communication between their domains and Penman without considering details of linguistic realisation." (1990b, p15)

Figure 3.11 contrasts the three approaches outlined so far: (i) A generalised semantics, mapped onto lexico-grammar; (ii) A domain-specific semantics mapped directly onto the lexico-grammar; and (iii) a domain-specific semantics where the lexico-grammatical mapping is mediated by a generalised-semantics.

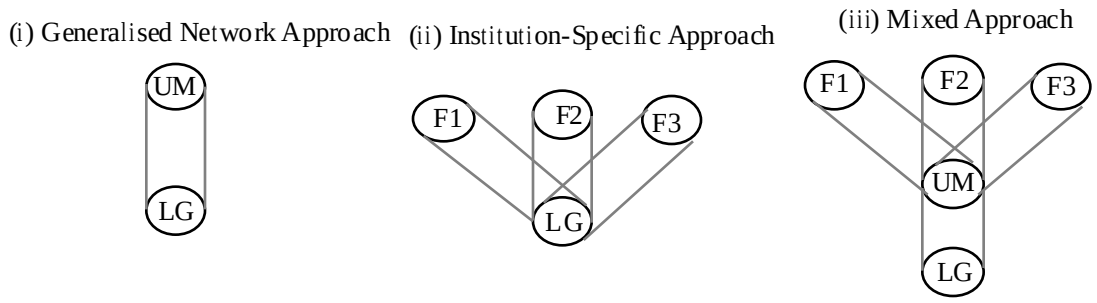

Figure 3.11: Three Approaches to Ideational Modelling

4.1 Mapping Institution-specific terms onto the Upper Model

There are two ways in which domain models can be related to the Upper Model:

1. **Increasing Delicacy**: the user provides systems which extend in delicacy the systems of the upper model. This is the typical approach taken using the Penman system. Figure 3.12 shows the Upper Model being extended with some systems from a telephonic information service domain.

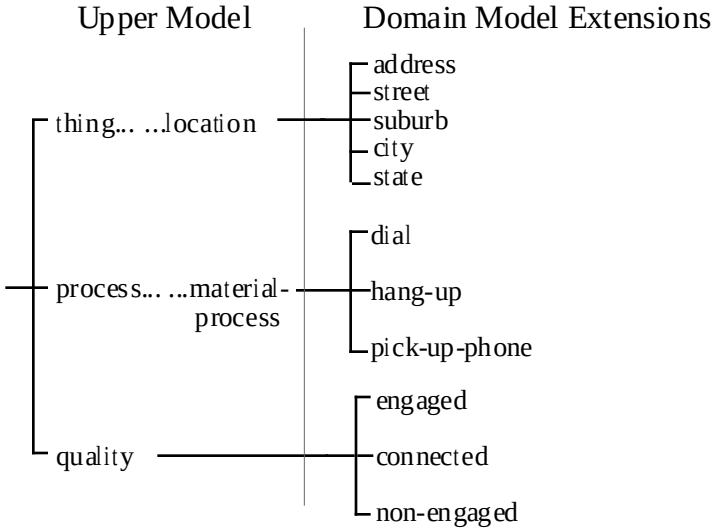

Figure 3.12: Domain Specificity of Concepts

All the domain-specific concepts I added just above "inherit" the grammatical patternings of the Upper Model concept which they specialise. There is no need to specify how newly introduced concepts are grammaticalised, they need only to be linked to existing concepts which the system already knows how to grammaticalise.

2. Self-organised Domain: the user's domain model can be a network in itself, organising the concepts as appropriate for the register's view of reality. A resource will then need to be provided to map register-specific concepts onto the Upper Model concepts which are grammaticalised in the same way. Figure 3.13 shows a self-organised rugby domain being mapped onto the corresponding Upper Model concepts. A grayed line indicates that the domain feature inherits the constraints of the Upper Model feature.

Note that this type of inheritance is not easily represented in Systemics, since, in Systemics, all features of a system are required to inherit the same features (through the entry condition of the system). In Loom, the original formalism for the Upper Model, this type of inheritance is easy, since each feature individually states its own inheritance -- different features within the same ‘system’ can have different inheritance.

One alternative would be to represent the relationship between domain model and Upper Model as a stratal difference, with domain semantics represented as a stratum above the generalised semantics, with the domain feature realised by preselecting the appropriate Upper Model feature(s). I do not like this approach however, since it requires an additional stratum in the resource model.

While I prefer the self-organised domain approach -- the self-contained modularity of domain models is theoretically appealing -- this approach has presented implementational problems, as discussed just above. For this reason, the WAG system followed the first approach -- placing domain systems as more delicate extensions of the Upper Model.

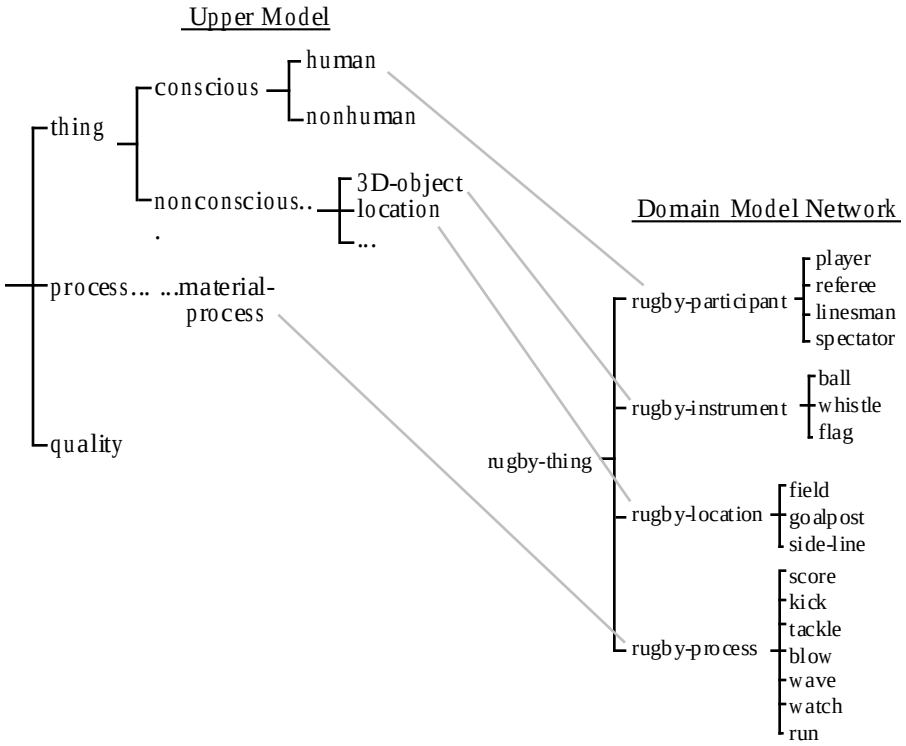

Figure 3.13: Mapping Domain Network onto the Upper Model

4.2 Advantages of the Mixed Approach

A linguistic system which makes use of both a core generalised ideational resource, and subsumed domain models has advantages over systems which take one or the other approaches. These advantages are outlined below.

Advantage over Institution-Specific Approach: If we were to take a purely institution-specific approach, we would need to provide lexico-grammatical mappings for each domain-model. The advantages of a mixed approach over such an approach are as follows:

1) **Redundancy Reduction**: there will be quite substantial similarities in the lexico-grammatical realisations of each domain-model. By representing these only once, the redundancy is reduced.
2) **Co-ordination of Domains**: Where an utterance draws upon several domains (see section 5 in this chapter), there may be problems co-ordinating the lexico-grammatical constraints from each domain: they may state incompatible constraints[6]. These problems are reduced by requiring each domain model to channel their realisations through the generalised resources.
3) **Transportability**: If each domain model states directly its lexico-grammatical realisations, then the addition of each new domain requires a fair amount of work. Channeling domains through the Upper Model means that rather less information needs to be provided by each new domain model.

[6]This has not been a daunting task to many systems so far since the majority of systems have been restricted to a single domain.

Advantage over Generalised Approach: The advantage of a mixed approach over a purely generalised network approach are:

1) **Modularity**: institution-specific networks allow modularity in knowledge representation. We can store the clusters of meanings related to a particular institution in one packet, which can be loaded in or out as needed.

2) **Customisation**: rather than apply the one model-of-reality to all knowledge, we can allow each domain to break up the world in the most convenient way to that domain.

5. Multiple Domains in a Single Text

It was not made clear above that it is not necessary for a single text to belong to a single domain. This is in fact a rare phenomenon. Usually, a text draws upon a number of different institutions.[7] In Benson and Greaves' words:

> "It is not at all unusual for a text to realize more than one field. For both the speaker or writer and the audience, this involves a synthesis of experience: the simultaneous perception of things from one semiotic vantage point." (1981, p50)

For example, the text in figure 3.14, which is borrowed from Kress (1985), draws upon several domains:

- **Football:** match, tour, rugby side, '24 to 6', pitch
- **Law Enforcement:** police, forces, guarding, 'hold back', arrest
- **Protest**: controversial, angry protesters, chant, slogans, anti-, disrupt, march, demonstrators, confrontation, demonstration
- **War**: victor, invade, annihilate, march, squads, vulnerable, reinforcements, storm, clashes, peacefully, calm, forces
- **Television Journalism:** special, satellite report, reporting, 'for Eyewitness News', 'Elsewhere around the country', 'this evening'
- **New Zealand Geography:** New Zealand, Poverty Bay, Gisbourne, Auckland

[7] It is perhaps the interplay between the different institutions in a text that makes new meanings. One primary means of meaning-creation involves the transfer of ways of structuring reality from one institution to another, see for instance, Pike's (1967) discussion of language in terms of the *physics* distinction between particle, wave and field.

The first match of the highly controversial springbok tour of New Zealand produced two victors today: the South Africans and the police. The Springboks had the easier of the clashes annihilating a Poverty Bay rugby side twenty-four to six. But the NZ police forces guarding the ground at Gisbourne had to cope with dozens of angry protesters who chanted anti-apartheid slogans, blew whistles to disrupt the match, and made two attempts to invade the pitch. Here is today's special satellite report.

Things began peacefully enough with a march through the town. But the calm wasn't to last for long. Squads of police hurried to the vulnerable back fence but reinforcements weren't there quickly enough. The demonstrators stormed the fence, with only a handful of police trying to hold them back. Many managed to get up a slippery bank and began tearing the fence down. Violent clashes followed. More clashes, this time more bitter, erupted. The confrontation was to last several hours. Several people claimed to have been injured in the brawls. As some lay on the ground, emotions subsided.

The demonstration ended late this afternoon after thirteen had been arrested. Elsewhere around the country many other people were arrested. Demonstrations such as this one in Auckland this evening spanned the length and breadth of the nation today as the anti-tour groups branded today NZ's day of shame. JW reporting from NZ for Eyewitness News.

Figure 3.14: The Springbok Text (from Kress 1985)

Kress notes that the military domain is drawn upon in a metaphorical manner, rather than to express unbiased reality:

"The choice of lexical items is guided by the metaphor of a military clash, a battle; and this metaphor permits the casting of one side as the 'enemy', and the other as 'friend or protector'." (p34).

Note also the intermixing of the domains within each sentence, so that the participants of a protest domain might be involved in a process lexicalised from the military domain, as shown in figure 3.15.

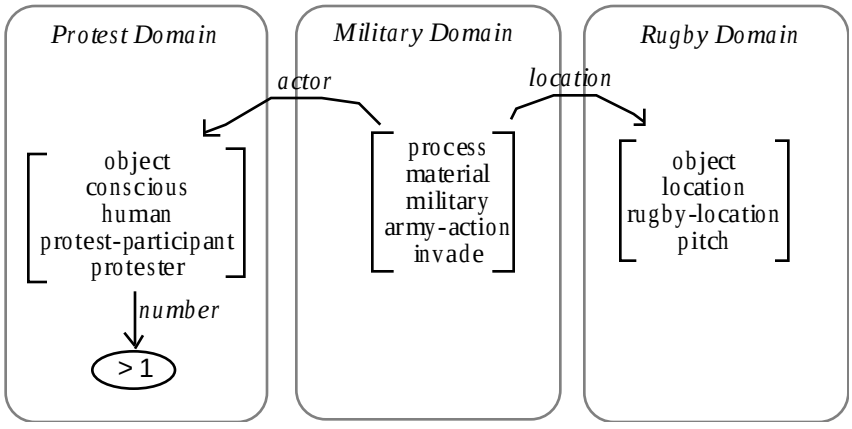

Figure 3.15: Ideational Representation of "The demonstrators invaded the pitch."

There are two sub-types of this phenomenon which are of interest:

1) **Metaphorical Re-Casting**: Where a participant from one domain is put into a role which is typically restricted to participants of the other domain. For instance,

in the example above, the actor of an *invade* process would be typically restricted to a military force. By placing demonstrators in this role, they are cast as a military force.

2) **Free Intermixing of Domain Concepts**: concepts from different domains can co-occur in the same utterance without causing any metaphorical re-casting. For instance, the sentence "The NZ police forces guarded the ground at Gisbourne." intermixes concepts from the police domain (*guard, police*), rugby domain (*ground)*, and Geography domain (*NZ, Gisbourne*).

The first of these types of domain intermixing leads to problems for the ideational resources as so far implemented, since it allows an ideational unit to be assigned conflicting features: in the example in figure 3.15, the Actor inherits the features *[human: protest-participant: protester]* from the lexical item, yet the fact that this participant is the actor of an *invade* process requires that this be a different sort of participant. Constraint relaxation techniques are needed to deal properly with such cases.

6. Summary of Ideational Representation

WAG generally follows Penman's approach to modelling ideation -- using a generalised ideational semantics (the Upper Model), with institution-specific semantics subsumed under this (domain-models as more delicate specifications to the Upper Model). Only the Upper Model is directly related to the possible grammatical realisations[8] -- the domain model concepts inherit the grammatical constraints from the Upper Model features.

The WAG approach differs in two ways from Penman's:

- **Systemically Represented**: WAG represents the ideational networks using the system network formalism, while Penman's Upper Model uses Loom's 'type lattice' formalism.
- **Treatment of Relations**: In the Penman version of the Upper Model, all ideational relations are treated as a type of relational processes, including not only the usual intensive, circumstantial and possessive relations, but also rhetorical relations, logical relations and participant roles. The WAG resource model makes a primary distinction between *entities* (including *things, processes* and *qualities*), and *relations* (which includes semantic roles such as *Actor* and *Phenomena*), treating rhetorical-relations, logical-relations and participant roles as relations rather than entities, and thus not as a type of process.

The WAG system allows multiple domains to be loaded simultaneously. The ideational content of a sentence can thus draw upon the resources of several domains. However, the system has not yet been extended to handle the metaphorical intermixing of these domains.

[8]There are a few exceptions where domain-concepts are realised in ways atypical for the language as a whole.