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Recommended Citation

Keen, Emily; Milton, Simon; and Keen, Chris, "Providing for Perspectives: The Role of Discourse Analysis in Ontology Concept Formulation and Development" (2013). *ACIS 2013 Proceedings*. 159.

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**24th Australasian Conference on Information
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Providing for Perspectives: The Role of Discourse Analysis in Ontology Concept Formulation and Development

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Abstract

Concept formulation and ontology development are problematic to achieve in complex social settings. Previously, we have proposed and illustrated a method to develop an ontology based on grounded theory, whereby the ontology is linked to the social processes involved. Further, distinct actors in the social setting assume perspectives that are often fundamentally different from each other. We have previously argued that perspectivism is a cogent theoretical explanation for the different emergent ontologies. However, a rigorous method for analysing the text, in order to identify these perspectives has been needed. In this paper we propose the identification of perspectives by using discourse analysis to bridge between term identification and clarification of perspectives. We have found that discourse analysis provides the structure and rigour required to establish the presence of perspectives, and that actors use metaphors and the genre of historical stories to bridge between, or link with, other perspectives. It is likely that identifying perspectives and the role of language in linking them will produce ontological modularity that is true to the social setting.

Keywords

Ontology development, concept formulation, discourse analysis, ontological modularity.

INTRODUCTION

Concept formulation for ontology development in complex social settings remains problematic (Keen, Milton & Keen, 2012b). The concept formulation process is not well defined, or based on rigorous processes in ontology development methodologies (Castro et al., 2006; Winters & Tolk, 2009). In order for the social realism of the actors in social setting to be captured, the perspectives of each actor need to be acknowledged and incorporated into the concept formulation process. As previously noted (Keen, Milton and Keen, 2012a), developing an ontology for use in a social process requires conceptualisation of the domain, and the influence of skills and perspectives of actors in the processes to be considered.

A complex social setting was selected to provide the context for consideration, development and operationalization of a rigorous concept formulation methodology. Discourse from recordings of a community festival's voluntary management committee meetings were analysed, and an ontology developed that was grounded in the discourse of these meetings. The management meetings provided a rich source of text for concept formulation. The text of the meetings provide a way of understanding the social processes involved in the management and running of community events. The committee brings a broad range of skills and knowledge. There has been a relatively high turn-over of members over the past twelve months, which is a common concern in volunteer association where there is a single focus (Smith, 1994). This further highlights the need to share knowledge between offerings of the festival.

Previously, we have outlined an approach to concept formulation which is grounded in rich text (Keen, Milton & Keen, 2012a), based on an application of the coding phases of grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 1997), with term clarification and disambiguation using a reference lexicon, in this case WordNet (Princeton University, 2010). It is essential that ontology concept formulation methodologies have a rigorous concept formulation process which enables semantic abstraction from the domain narration while also disambiguating the terms in the narrative.

Grounded theory was proposed as a means of deriving terms using qualitative analysis, and is applied to the creation of an ontology, using bottom up coding from rich text (Lamp & Milton, 2007; Urban, 2009). The objectives of the approach needed to be informed by appropriate ontological theory, were to be faithful to the social setting of the target domain, and to create a parsimonious ontology. We have illustrated the approach using fragments of text from a case study, the results of which we reported (Keen, Milton & Keen, 2012a, Keen, Milton & Keen, 2012b).

We have previously argued that actors will assume fundamentally different perspectives, based on their background and any formal or assumed roles in that setting (Keen, Milton & Keen, 2012b). Further, that perspectivism can provide a useful theoretical basis and is not incompatible with a common-sense realist stance taken in the coding steps (Keen, Milton & Keen, 2012b), but that the identification and clarification of perspectives had remained problematic to operationalize. Discourse analysis (Martin & Rose, 2008; Halliday, 1997) provides a structured framework to assist the researcher in moving from specific terms to establishing the meaning of sentences and multiple sentences. This is achieved through the clarification of themes, rhemes, fields, tenor and genres: the stages of discourse analysis.

In this paper, we explore the following question:

How can the use of discourse analysis facilitate the steps of concept formulation in ontology development?

The paper is structured as follows. We begin by re-introducing the ontology development methodology. We then explain the role of discourse analysis in steps going beyond specific terms, before presenting the results of applying the steps with specific focus on the steps impacted by using discourse analysis. We finish with a discussion of the implications.

THE ONTOLOGY DEVELOPMENT METHODOLOGY

The steps involved in concept formulation, as previously published (Keen, Milton & Keen, 2010; Keen, Milton & Keen, 2012), are shown in the left column of Table 1 below. The approach progressively moves from specific terms (steps 1-3), to consider generalised relations (step 4), to identify perspectives evident in the text (step 5), and then to establish the ontological structures that emerge from analysis of the setting.

Table 1: A Comparison of Ontology Concept Formulation Steps

Step	Initial Steps of Ontology Concept Formulation	Discourse Analysis Applied to Ontology Concept Formulation
1	Identification and classification of terms using ontological theory	Identification and classification of terms using ontological theory
2	Term clarification from context	Term clarification from context
3	Term disambiguation via a lexicon (Word Net)	<i>Term disambiguation through themes and rhemes – identification and validation via a lexicon (Wordnet)</i>
4	Identification of ontological (generalised) relations	<i>Identification of ontological generalizable relations</i>
5	Interpreting perspectives from the text	<i>Interpreting the influences of Context and Culture</i>
6	Refining the ontology	<i>Identifying perspectives through patterns in discourse</i>

Discourse analysis, mostly impacts Steps 5 and 6, because these directly address the derivation of meaning of sentences as a requirement to develop a deep understanding of the fields, roles, and tenors used by the actors in the discourse. However, discourse analysis may also impact the other steps. For example, Step 3 may be impacted because it is only through consideration of the rhemes and themes in a sentence that one can meaningfully disambiguate terms in that sentence, in conjunction with a lexicon, such as WordNet.

In the results section later, an illustrative case is presented to demonstrate how steps 3-6 have been modified by the adoption of discourse analysis. For completeness and clarity all steps are listed in the right column Table 1. We also cover these steps in the Results section of the paper.

However, before we present the results, we need to understand how discourse analysis relates to ontology development. Specifically, discourse analysis places individual terms from the text into meaning units. For example, terms play roles in rhemes and themes for identifying the meaning of fragments and whole sentences. Further, sentences, via the theme of the sentences, link with other sentences through addressing common fields.

It is the various fields an actor traverses that give rise to the perspective(s) the actor takes. The fields may or may not relate to the role an actor formally assumes. The role, in turn, may lead to a specific tenor being used by the actor (for example, a tenor in which the participant is chairing a committee). We develop this further in the following section.

RELATING DISCOURSE ANALYSIS TO ONTOLOGY DEVELOPMENT

Recall, that in this paper we explore the use of discourse analysis to explain more rigorously how perspectives relate to the terms, sentences, and groups of sentences in rich text. Additionally, we apply the elements of discourse analysis to the ontology development methodology steps previously published in Keen, Milton and Keen (2013). Specifically, we seek a deeper understanding of the role of discourse analysis in completing the task of interpreting group conversation, ultimately leading to specifying the merological structure of a complex social domain. We intend to use discourse analysis to provide the scaffolding to bridge the specific term-based analysis with much broader analysis. This may also help operationalize the application of perspectivism, leading to ontological modularity, that is the identification of relevant components of reference ontologies to re-use. These identified ontologies may be from different domains.

Applying discourse analysis as the underlying framework for disambiguation of natural language has been supported by the work of Martin & Rose (2008), Sykes (1994), Andersen (1991), Stamper (1992) and Halliday (1994). These authors have shown that natural language, although complex in structure contains considerable detail that is amenable to analysis. Discourse analysis can also be a useful addition to fact-oriented conceptual schema development processes (Calway & Sykes 2001). To ensure that the merological structure of the ontology is a reflection of the language of the domain, the concept formulation process must examine the influence that the context has on each actor's use of discourse, the interpreted intent of the actor and an analysis of any patterns in the use of fields, tenors, and genres found in the text.

Definitions from discourse analysis that are relevant to this discussion are:

Theme: The topic of the sentence, normally at the beginning of the sentence, and identifying what the sentence is about (Halliday, 1978).

Rheme: The rheme elaborates the full meaning of a sentence and describes any other relevant aspect(s) of the theme (Halliday, 1978).

Thematic progression: the manner in which a theme is developed over multiple sentences. Specifically, these develop as participants provide or seek more information about the theme (Halliday, 1978)

Field: An abstract description of what is happening in the discourse based upon the thematic progressions. This includes the nature of the social action that is taking place, and the nature of the activity that the participants are engaged in (Martin & Rose, 2008). For example, a field may a broad discussion between committee members with regard to a motion at a committee meeting.

Tenor: An abstract description of how the participants in the discourse relate to each other. This includes the nature of the participants, their status and roles, the kinds of relationships between these roles, the types of speech roles adopted (Martin & Rose, 2008). For example, an office bearer of an organisation may be negotiating a fee for service with a potential service provider and adopts an aggressive tenor.

Mode: How the discourse is played out in the social setting. This includes the form of the communication, the symbolic organisation of the language being communicated and the function and expectations associated with the form of communication being used (Martin & Rose, 2008). For example, communication between a volunteer coordinator and applicants for voluntary positions may occur via a series of web-based applications, and subsequent email exchanges.

Stance: The form and strategy that indicate a participant's commitment to the nature of the information that that are providing to the discourse (Halliday, 1994). For example, a passionate assertion of the irrefutable truth of a statement, or a tentative proposition of a possible explanation of an event or phenomenon.

Genre: Recurrent configurations of meaning (e.g., narration or story), enacting social processes within a particular social context (Martin & Rose, 2008). This refers to the way in which the participant(s) present information as a sequence of contributions to a discourse within a social setting. Examples of genre are a timeline-based recounting of events as a narrative, and providing a detailed description of a given thing or event in a time-less manner.

Together the *field*, *tenor* and *mode* goes a long way to characterising the meaning and context of a fragment of a discourse (Martin & Rose, 2008). *Theme* and *rheme* lead to a thematic progression over multiple sentences. An abstract understanding of the aboutness of a fragment clarifies the field and summarises the thematic progressions in the fragment. *Stance* and *genre* clarify the stance of the actors and the form of language used. Taken as a whole, and after examining patterns in the discourse, these all influence the ontological relations (including the mereological structure) required to support the social setting. These also potentially clarify the ontological modularity required to support the social setting.

RESULTS

In this section we present an analysis of a case, and the results in the form of revisions of the above ontology development methodology steps, based on our experience of using discourse analysis to strengthen the coding process and concept formulation.

In the fragment of text shown in Appendix A, entitled ‘People Sneak In’, three committee members are discussing the characteristics of venues and the implications of adopting various measures for venue security. The structure of a venue (in this case a marquee) is discussed from a location perspective, from a resource perspective, from a security perspective and customer experiential perspective.

Step 1: Identification and classification of terms using ontological theory

The coding method commences in Step one by firstly identifying and classifying the ontic terms, the descriptive characteristics of an entity or "plain facts" (Heidegger, 1927; Star 1998). This is done according to general ontological theory, based on common-sense realism (Chisholm 1996). The ontological theory also acts as a coding family by clarifying the top-level categories to which the ontic terms belong, such as “event”, “place” and “time period”. Ontic terms are those terms that refer to things in reality that are "relating to, of, or having real being" (Webster, 2012).

Table 2 shows examples of Ontic terms and General Concept which have been identified in Appendix A ‘People Sneaking In’.

Table 2: Illustration of Ontic Terms and General Concepts

Ontic Terms	General Concepts
Venue	Location, Boundary, Structure
Perimeter	Safety, Security, Entry point, Barrier
Location	Position, Stage
Individual	Customer, Customer Behaviour, Experience

Step 2: Term clarification from context

To abstract from the specific terms identified in Stage 1, the second step uses open coding, based on grounded theory, together with the terms identified in step one that categorises the text into more abstract categories that emerge from the text. This step is the most explicit use of open and axial coding from grounded theory. The unit of analysis at this stage is the sentence. Terms that capture interpretations which are reasonable common sense refinements of the initial terms in reference to the context of the text. Consideration of the theme and rheme at the sentence level to clarify the associated general concepts. .

Table 3: Illustration of Clarification of Context

Context	General Concepts
<i>T: Have you ever tried to do a marquee venue?</i>	Venue, Venue Mode, Resource
<i>T: It's all marquees, it's out in the bush, but I'm sure it costs an arm and a leg.</i>	Venue, Venue Mode, Expense, Condition, Characteristic
<i>XP: Is it a gated festival?</i>	Event, Time period, Perimeter, Boundary, Control
<i>T: Yes.</i>	
<i>XP: That's the difference. The difference for a couple of reasons, with marquees you can have a door and an exit ...</i>	Entry, Exit, Reasoning

Key: Actors: T - Treasurer

Actor: XP: Ex-President

Step 3: Term disambiguation through theme and rheme identification and validation via a lexicon

The third step clarifies and disambiguates all terms identified in Steps 1 and 2 by referring to a lexicon, and by re-examining the outcomes of open and axial coding from Step 2 to clarify terms, and choosing appropriate definitions for these terms from the lexicon. Not all terms can be unambiguously defined using the lexicon, because of the incompleteness of the lexicon, or the inherent ambiguity in the text.

Discourse analysis of the text identifies themes and rhemes that explain how the terms are combined to form meaningful sentences. Rather than simply using a lexicon, such as WordNet for disambiguation of terms, themes and rhemes are used to enhance and validate the disambiguation from WordNet.

This step needs to include the identification of themes and rhemes in the text to identify how the thematic progression of the sentences influences the lexicon interpretation. This step goes further than simple term disambiguation. Once identified, the themes and rhemes enhance the disambiguation process by providing evidence of thematic development across sentences; reference to rhemes enhances the understanding of the attributes of the theme discussed from multiple perspective. It should also be noted that the thematic progression of a sentence is commonly achieved by actor's use of non-literal idioms and metaphors and therefore the contextual intent of these idioms and metaphors need to be considered to identify the literal ontological concepts and contextual concepts or rhemes which convey the attributes of the theme.

Looking at the thematic progression of a sentence which refer literal terms and non-literal idioms and metaphors, one can see the value of identifying the primary them or core concept and referring to wordnet and contextual rhemes of the sentence to identify the most appropriate concepts.

Examples of themes and rhemes derived from consideration Appendix A are indicated in Table 4 below and Figure 1.

Table 4: Illustration of Clarification of Themes and Rhemes

Context	Themes	Rhemes
<i>T: Have you ever tried to do a marquee venue?</i>	Venue	Mode, Boundary
<i>T: It's all marquees, it's out in the bush, but I'm sure it costs an arm and a leg.</i>	Festival venues (part-whole relationship between festival and venues)	Mode, Location, Scene, Characteristic expense, Condition
<i>XP: Is it a gated festival?</i>	Event, Control	Festival time period Perimeter, Boundary
<i>T: Yes.</i>		
<i>XP: That's the difference. The difference for a couple of reasons, with marquees you can have a door and an exit ...</i>	Structure	Entry, Exit, Access, Pathway

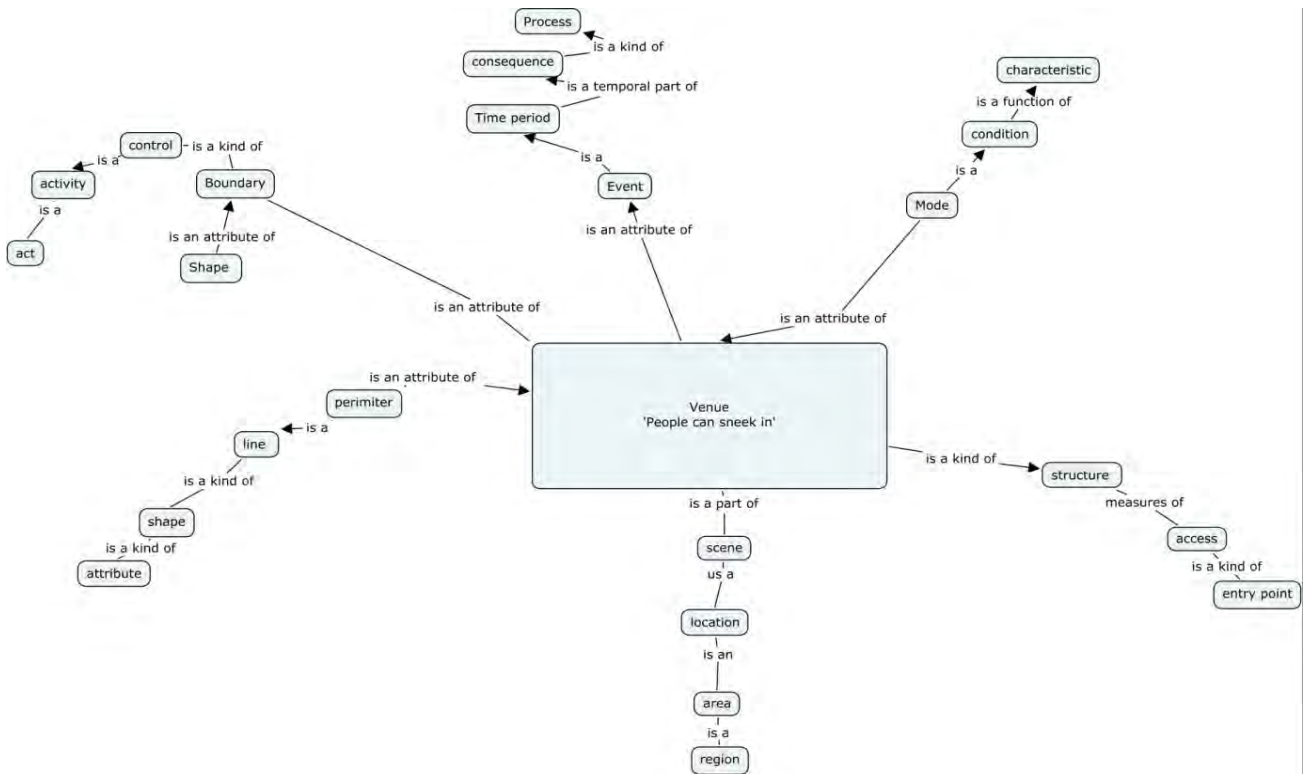


Figure 1: Initial Semantic Structure of theme ‘Venue’ in the case of ‘Appendix A: People Sneaking In’

Step 4: Identification of ontological (generalised) relations

Step four identifies the ontological relations in the text, and is the second use of ontological theory based on Chisholm’s common-sense realism. Chisholm’s ontology categorises the structure of reality and divides the world into entities that are contingent and non-contingent (but necessary entities) (Honderich, 1995). The meronym relations from Step 3, contained in general ontological theory Chisholm’s ontology (Chisholm, 1996) are viewed as instances of *part-whole* or *is-contained-in* relations. A limited number of *all-some* relations can also be extracted from this text, as the natural language context is not absolute. It is also apparent that social relations are as important in the social context, because they are relations which are absolute within that social setting. For example, the ownership of venues, and membership of committees are significant social relations in this case. This step was not impacted by the use of discourse analysis but how attempt to semantically model key themes and related rehem into ontological relations for semantic modelling.

The association of concepts and relationships assist in the identification and clarification of perspectives adopted by the speaker in the text being analysed. Attributes are identified as contributing to an understanding and modelling of the social process, event or individual. The relations shown in Table 5 are derived from consideration of Appendix A.

Table 5: Illustration of Ontological and Social Relations

Ontological Relations	Social Relations
Mode is an attribute (characteristic / condition) of a venue	A venue is a part of customer experience
Event is contained in a venue	Expense is an attribute of a venue
A venue is a scene in a location	A venue boundary is a kind of control
Venue is a kind of structure	Access and entry points are an attribute of venue
A venue has a means of access	Perimeter is an attribute of a venue
Entry point is a part of a venue	Structure is an attribute of access / entry
Boundary is a kind of control	

The identification of social and ontological relations in the discourse assists the coder in identifying how the thematic progression of the discourse leads to an interpretation of these relationships within the perspectives identified in Step 5. These relations form part of the identified field of the discourse being analysed.

At the end of this step, the coder is able to identify a list of ontological and social relations, derived from the text, and based on Spradley's ethnographic relations (Spradley, 1979). On completion of stage 4, the aim should be to create a simple ontological model which incorporates the ethnographic relationships, provides a visual semantic model, and helps to highlight any concepts that may be absent from the model.

The coder reflects and interprets the ontological relations that are present in the text, and how to model the structure of ethnographic relationships relevant to the domain.

Step 5: Interpreting the influence of context and culture: The pragmatic flow of discourse

This step was significantly changed and redefined through the use of discourse analysis. Previously, this relied on identifying the meaning of fragments of text (i.e., multiple sentences) based on the coder's interpretation. Discourse analysis was adopted to make this more rigorous by grounding the interpretation on relevant meaning units (e.g., theme, rheme, and field).

The objective of Step 5, following on from the identification of the theme of the sentence at the term level (Step 2), is to identify the field (what is being spoken about) at multiple sentence level. The identification of fields in the discourse provides a mid-way categorisation between the specifics of sentence-level meaning and the much broader idea of perspective. It does this by identifying the meaning and intent of multiple sentences. It has been identified by Martin & Rose (2008) that the flow in discourse is inherently influenced by the actor's existing knowledge, their social relationships or affiliations within the context, and the formal and social roles the actor(s) adopt. Therefore, this step also includes parts of discourse analysis that gives rigour to discussing the complex interplay between the social context, culture, processes and social relationships evident in the text. This goes well beyond the term-based understanding of the context in (Step 2), and does so in an integrated way. This is partly achieved by identifying tenors within the discourse, as these indicate formal and informal social relations between actors. This is then completed by the identification of the formal and informal roles, relationships and affiliations of the speakers.

Rather than implying that the coder interprets perspectives from the text from a subjective or literal sense, the objectives of Step 5 have been expanded to interpret the context and culture surrounding the use and interpretation of language and the social relationships influence the use of language, for instance the use of 'jargon'. Step 5 assists the coder in making sense of the use of language and provides a grounded approach by which to abstract and classify multiple sentences by field. For instance, it has been identified that the intended field surrounding the fragment shown in Appendix A is the 'mode of venue'.

Interpreting the influence of context and culture and the pragmatics of the discourse, it is evident in the fragment that there is social and thematic progression in the discussion of 'mode of venue', the primary field of the discourse. Multiple actors contribute the discussion, as they consider the implications of the field on security, finance, access and customer experience.

Step 6: Identifying perspectives through patterns in discourse

Originally, this step was intended to sharpen and shape the ontology, by refining a list of terms, the definitions of terms, the ontological relations between terms, and the ontological hierarchy of terms up to the most general categories of individual, event, and attribute and to identify the completeness and exhaustiveness of the ontology. However, after using discourse analysis for earlier steps, this step now helps to recognise perspectives by seeing patterns in the discourse. Patterns we have found include (1) the recurrence of fields and the relationship of fields with specific actors or roles, and (2) how genre is used in the discourse to relate to other actors. Both of these allow us to see perspectives in the discourse. Knowing what perspectives exist and how actors span perspectives gives us a way to more deeply understand what different ontologies may be required, and, further, gives us an insight into how to bridge to reference ontologies.

Multiple perspectives are shown through patterns of fields. For example, two or more field may be simultaneously discussed and the interface between the fields negotiated as part of the discourse. However, other patterns of language use may also betray perspectives. For example, use of genres may help actors from other perspectives better understand that of the speaker's. Specifically, this step aims to clarify how actors use language in way that indicates perspectives. We also found the discourse is heavily dependent on metaphors, which are non-literal, but meaningful within the context of a discussion. Further, as identified by Pinker (2010), repeated vagueness or ambiguity in language was used, and often is useful in determining intentionality in social discourse.

Summarising, an actor's use to modes, metaphors and genres, provide insight into how that actor attempts to express their perspective, while also attempting to appeal to the perspectives of others. It has been identified in this study that actors employ metaphors to cross the conceptual boundaries between domain perspectives. The use of metaphors and idioms provides a link between the referent concepts and intent or perspective of the speaker. An example of the use of a conventional metaphor in Appendix A is *'I'm sure it costs an arm and a leg'*, which indicates that the actor is attempting to create a bridging reference between the perspectives of 'experience' and 'resource and planning'.

The actor T's formal role or tenor in this discourse is 'Treasurer'. However this actor also considers the perspectives of experience, and the resourcing and planning of a marquee. The Ex-president (XP) reinforces the genres of story / experience and refers to the perspective of Regulatory and Governance.

Table 6: Discourse Patterns and Genres: Refinement of the perspectives

Fragment	Mode	Metaphors suggesting domain perspectives	Perspectives suggesting modularity	Interpretation of Genre
<i>T: Have you ever tried to do a marquee venue?</i>	Individual's proposition	<i>Have you ever tried</i>	Planning and Process	Reference to an external event, indicates the use of the genre 'Story' as a method of comparison.
<i>T: It's all marquees, it's out in the bush, but I'm sure it costs an arm and a leg.</i>	Exposition as a part of a narration	<i>I'm sure it costs an arm and a leg</i>	Resource / Service	Reference to an external event indicates the use of narration with an additional reference to the genre of discussion and the use of a common metaphor to indicate expense.
<i>XP: Is it a gated festival?</i>	The mode and qualities of security are being discussed in a narration	<i>gated festival</i>	Regulatory and Governance	A comparative proposition in reference to a narration
<i>XP: That's the difference. The difference for a couple of reasons, with marquees you</i>	Description of expectations	<i>You can have a door and an exit</i>	Experience, Resource and Planning	

<i>can have a door and an exit ...</i>				
<i>T: You can have a cyclone fence around it too like at Wangaratta.</i>	Exposition – reference to another festival	<i>You can have a cyclone fence</i>	Regulatory and Governance, Planning and Resource	Narration - reference to external event controls
<i>XP: But people can sneak in too, if people are going to climb cyclone fences to sneak into [place name] venues as well.</i>	Narration - Individual experiences of customer behaviour	<i>But people can sneak in</i>	Experience Regulatory and Governance	Actor’s personal experience – (Narration) of customer behaviour

The identification of perspective shifts, and the similarities and differences in the use of language during those shifts, helps identify different hierarchies required to support the activity. For example, the identification of two hierarchies: one hierarchy to handle the creative side of the festival, and another one to handle the management of the festival. Participants naturally use language that exhibits high degrees of cohesion within a particular perspective, and relatively low degrees of cohesion between episodes of apparently disjoint perspectives.

CONCLUSION / FUTURE WORK

The objective of this research is to create an engineered ontology that is faithful to the perspectives of actors in a complex social setting (Keen, Milton & Keen, 2013). The concept formulation phase in the development of an ontology captures terms from natural language, in the form of discourse and documents, and formalises those terms as concepts and associated relationships within the ontology. Developing an ontology which represents social processes within a complex social setting requires a rigorous approach to concept formulation. In order to develop a common ontology that reflects and is recognised by the participants, the fields, knowledge and perspectives of the actors within the social processes need to be identified and incorporated into the ontological structure. A revised ontology development methodology is presented in this paper, and has been applied to dialogue, discourse and documents derived from a rich case study.

We have found that discourse analysis facilitates an understanding of the text and explains shifts in discussion between actors, and the communication techniques actors use within context of the social setting. These shifts form a basis for identifying the different perspectives evident in the discourse as indicators of ontological modularity.

Discourse analysis, by guiding the abstraction process, provides a solid linguistic foundation for the identification of actor roles and perspectives, which is needed to frame ontological modularity. Ontological modularity means the identification of the various ontologies needed to support a setting. Further, it provides a way of operationalizing perspectivism. Indeed, previously, (Keen, Milton & Keen, 2012b) we stated that the interoperability of ontologies built from identified perspectives remains an open issue. While there is considerable work in addressing the technical issues of interoperability of ontologies (Stuckenschmidt et al., 2009), the issues of semantic and organisational interoperability associated with such ontologies need to be addressed. While perspectivism cannot resolve such interoperability, it does provide a formal basis for the definition and identification of the various ontologies and is step towards addressing interoperability between them.

We have clarified a methodology which bridges the gap between term identification and class membership conditions, based on common-sense realism. This paper recognises that perspectivism influences the flow of discourse, and proposes that perspectivism, and the use of metaphors and other patterns provide the linguistic basis for achieving ontological modularity. The process of division of an ontology into modules (ontological modularity) relies on the selection and definition of modules that are self-consistent, share a common goal or goals, and express the purposes inherent in the specific perspective (Parent & Spaccapietra, 2008). Such modules need to be reflective of the structure in discourse within the social setting from which they are derived, and be meaningful partitions of knowledge for the participants in that social setting. Discourse analysis provides a way to achieve all these things.

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APPENDIX A: FRAGMENT FOR ILLUSTRATION

Key: Actors - T - Treasurer

Actor: XP - Ex-President

People Sneak In

- T: *Have you ever tried to do a marquee venue?* [Overtalking]
- T: *It's all marquees, it's out in the bush, but I'm sure it costs an arm and a leg.*
- XP: *Is it a gated festival?*
- T: *Yes.*
- XP: *That's the difference. The difference for a couple of reasons, with marquees you can have a door and an exit ...*
- T: *You can have a cyclone fence around it too like at [the] Wangaratta [Festival].*
- XP: *I know the cyclone fences.*
- T: *But people can sneak in too, if people are going to climb cyclone fences to sneak into [town name] venues as well.*
- XP: *Oh they do.*
- XP: *There's fire exits and windows and ...*
- T: *If you've got five or six people around a cyclone fence perimeter climbing it at any given time, it's ... you end up like [the] Longford [Festival] having to employ a security agency to police that sort of thing, and it just ... I'm not actually philosophically against it, there's just a practical problem.*
- XP: *Yeah, no I understand that. I was thinking of the middle of St. James in the quadrangle there, they've got buildings around the outside.*
- XP: *That's a really nice place for a public stage too.* [Overtalking]
- T: *No trees hanging over it.*
- XP: *No, shade cloths or something yeah*

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